Digital Uses of Students and College Success

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While, at an educational level, the supposedly innovative nature of digital tools is the subject of passionate debate among teachers, the question of enhancing learning is raised less frequently. To capture this variable, this research was carried out in the first semester of 2020. The objective was to identify the place that digital technology occupies in the way university students study and to measure the effects of certain uses of digital technology on exam results. The quantitative approach and the field design were applied. Data were collected through a survey conducted among 325 volunteer Peruvian university students enrolled in three teacher training specialties: Social Sciences, Mathematics, and Language and Literature. The analyzes show that students make little use of digital tools to study in-depth and that when they use them, it is for instrumental purposes. Likewise, the statistical models reveal the absence of a significant effect of the student body's digital activities on the exams' results.

Keywords: college success, ways to study, digital use

INTRODUCTION

Computers, tablets, smartphones, the Internet, and digital applications are gradually invading conference rooms and classrooms without anyone knowing how students use them and the effects they produce. If, from a pedagogical point of view, the supposedly innovative nature of these tools has been the subject of passionate debates among the teaching staff (Piscitelli, 2021), the question of improving learning has definitely been less frequent. In other words, does digital technology change the ways of studying (Crovi, 2017), that is, how students organize their university work and appropriate the resources offered by higher education institutions? In addition, do students who frequently use digital tools perform better on exams than those who do not? To give some answers to these questions, it is necessary to identify the materials, tools, and digital services offered by universities. Also, it is necessary to ensure, beyond the mere provision of these resources, that the students use them and that the teaching staff effectively take them as part of their pedagogical activities. On this last point, the recent study by Pedró (2016) on the pedagogical practices of university students shows that these practices are still very "traditional" and that the teaching staff enters, with great reservation, the "digital era" so desired. The Ministry of Education of Peru is facilitating the pedagogical transformation in universities to make students more successful and prepared for the learning society through the systematic use of digital technology in training and evaluating students. This need to enter the digital world is not questioned nor totally justified, as if this need were enough.

Digital indeed offers different possibilities to study: follow a distance course, access scientific productions or databases, download free software, work collaboratively, etc. But the multiplicity of connected equipment (computer, smartphone, tablet, etc.) and digital resources can lead students to adopt uses different from those prescribed by the institution or by teachers: use a smartphone as a calculator or to send text messages (SMS), download lessons produced by other students instead of taking notes during lessons or plagiarize documents. The apprehension of a potential digital effect on ways of studying conducive to success is, therefore, delicate. Other difficulties are: study conditions, teacher evaluation practices, and success factors vary according to training contexts (Álvarez and López, 2020). Therefore, some digital activities could be beneficial to learning in some academic disciplines and harmful to others. In short, it would be necessary to measure this digital effect on academic performance, list all the digital uses (including games) of the students, and control their school characteristics and the teaching contexts (pedagogical organization of training, pedagogical practices of teachers) in which they study.

To capture all these dimensions, this exploratory research has been carried out with 325 students enrolled in the disciplines belonging to the study programs of Social Sciences, Mathematics, and Language and Literature. The research has proposed, on the one hand, to identify the sociodemographic and academic characteristics of the student body that may or may not resort to certain student digital activities (downloading or not of the digital materials deposited by the teaching staff on a platform, remote interactions between students, taking notes or not on a computer, time spent on the Internet to study, etc.) and, on the other hand, to evaluate the effect of these different activities on the results of the students in the exams of the first semester of 2020, controlling the academic characteristics of the students, including their previous schooling.

To establish this relationship, it is first necessary to address the main classic factors of university failure and success identified by research before presenting some studies that have measured the effect of specific digital uses on exam results.

THEORETICAL FRAMEWORK

Factors of Failure and University Success

In the conclusion of their book on success, failure, and neglect in higher education, Romainville and Michaut (2018) synthesized the primary individual and contextual factors associated with student trajectories (Figure 1). Without going into detail about the set of factors, it is worth remembering some actual results: the school past is decisive (Álvarez and López, 2020).

Among the psychological characteristics that lead to success, student motivation appears to be essential. The latter is influenced by different psychological factors: the value of the goal, expectation of success, feeling of control over the learning situation, and feeling of being competent in the field (Amadieu and Tricot, 2015). However, it should be noted that motivational factors correlate with students' cognitive abilities and have a less predominant weight than schooling prior to the beginning of their university career (Lambert-Le Mener, 2012).

Sociodemographic characteristics play a more measured role than the previous two dimensions. Recent research shows that all other things being equal, students of modest origin do not perform worse in exams than students from privileged social classes (Álvarez and López, 2020). On the other hand, female students have a more linear path and validate their years of study more often than male students. This is because they have more studious practices (dedication and rigorous schedule management), allow themselves less entertainment, and get better results than boys.

FIGURE 1
SYNTHESIS OF THE MAIN SUCCESS AND FAILURE FACTORS IN HIGHER EDUCATION
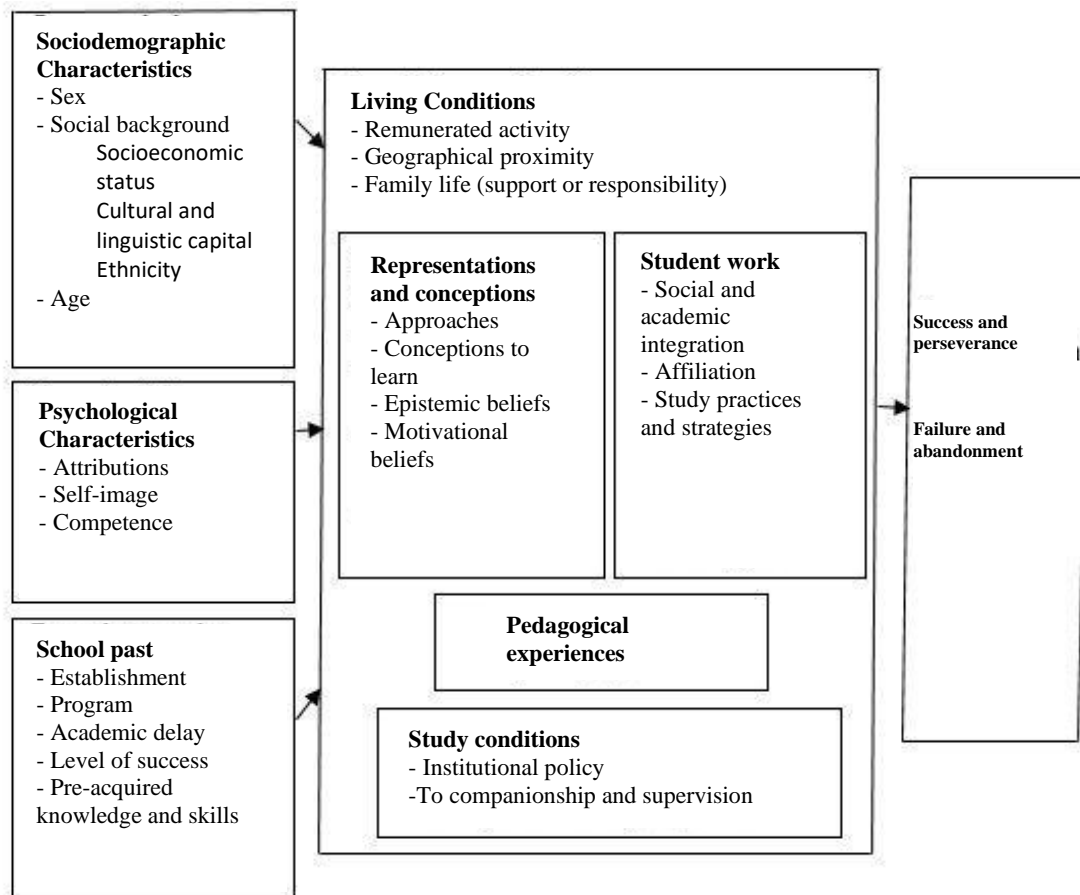
Note. Adapted from Réussite, échec et abandon dans l'enseignement supérieur (p. 257), by Romainville and Michaut, 2018, De boeck.

A final dimension refers to the activities of the student trade (Coulon, 2017): personal time and dedication are often associated with success. More generally, adopting in-depth learning strategies (further reading, synthesis, summary, etc.) is usually more cost-effective than simple strategies (re-reading notes).

Impact of Digital Use on Exam Results

Before examining research on the effectiveness of digital use, an account of students' perception of it sheds light on how they may or may not take advantage of it in the framework of their studies. Thus, the researchers (Llopis et al., 2021) questioned the students to know their opinion about the advantages and disadvantages that digital technology presents. Among the uses considered advantageous is the possibility of collaborating with other students and communicating more efficiently with teachers or deepening the contents seen in class. However, a study by (Casas, 2018) argued that students and teachers made little use of collaborative tools (wiki, blog, journal, etc.) and that they were content with standard technological tools (email, word processor, slideshow).

Dahmani and Ragni (2009) investigated, for their part, to measure the effects of information and communication technologies on student performance. More specifically, the authors attempted to explain the performance of a sample of 146 undergraduate students in economics by their degree in technological skill, their use of digital technology, and their socioeconomic status. As far as digital technology is concerned, the student body showed, all other things being equal, that the use of the Internet has a

contrasting influence on the results of exams: surfing the Internet or going to discussion forums leads to lower performance in three main lessons. Conversely, using an online encyclopedia or resources made available by teachers on the Internet allows students to achieve better results. What about the effects of student practices during lessons? Gaudreau et al. (2014) focused on ways to use laptops during master classes and directed works. A survey of 1,129 students (in Letters, Health, Sciences, Humanities, and Social Sciences) from a Canadian university concluded that using a computer to take notes or search for additional information on the Internet does not correlate significantly with academic outcomes. In addition, certain behaviors (surfing the Internet to entertain or exchange on social networks, sending text messages during classes) are detrimental to the results of the student body. They recall several hypotheses that can explain students' misuse: difficulties in self-regulation, lack of motivation, Internet addiction, inability to organize their learning, and academic disenchantment (boredom, anxiety, exhaustion). The authors support the hypothesis that campus internet access has stimulated student learning by offering them new ways to enrich course content. It has also increased sources of distraction that could compromise their concentration and interaction with faculty.

Junco (2012) moderates the harmful effects of digital activities carried out together with study practices. It shows that multitasking activities with specific technologies (Facebook and text messaging) negatively affect the half-yearly average while others (email, internet search, chat) have no effect. However, it is difficult to interpret the differences in success according to the technologies used since it is not known whether Facebook and text messages are mainly used to distract and communicate and whether sending an email and searching the Internet are mainly used for academic purposes.

At the end of this brief literature review, it is challenging to decide on the effects of digital technology. Some resources seem to increase results; others are inconsequential or even lead to underperformance.

Objective of the Research

This research has focused on the usual digital uses, whether or not they are related to the studies (browsing time on the Internet or social networks), and the use of specific digital resources offered by the university (email, online catalog of the university library, etc.). The objective has been to identify the place that digital technology occupies in university students' studies and measure the effects of specific uses of digital technology, controlling previous schooling and their commitment to studies (personal work and assiduity). It is hypothesized that digital activities affect exam results marginally without calling into question the traditional determinants of university success.

METHODOLOGY

Approach

In this research, the quantitative approach has been employed in the field of the influence of individual and contextual characteristics on university success, and the field design has been adopted for the collection of data from the subjects in the reality where the facts occur.

Participants

The field of research has been the Professional School of Education of a Peruvian public university composed of 04 Teacher Training Programs, in which 916 students were enrolled in the first semester of the 2020 academic year. Three programs have been required in this research: Language and Literature, Social Sciences, and Mathematics. These three programs have the advantage of bringing together a variety of situations. In fact, the student body, the teaching contents, and the working methods are diverse and varied. This diversity of situations has made it possible to study the influence of digital technology on university success in different contexts.

The sample comprised 160 students of Language and Literature, 110 students of Social Sciences, and 55 students of Mathematics, a total of 325, who, via signature of consent, freely decided to practice in the study and provided an online questionnaire.

TABLE 1
CHARACTERISTICS OF THE STUDENTS AND THE RESULTS IN THE EXAMS OF THE SAMPLE AND POPULATION

	Language and Literature		Social sciences		Mathematics	
	Population	Sample	Population	Sample	Population	Sample
% Women	40.6	57.2	58.4	78.5	85.5	94.6
% Passed in the first semester	75.3	85.5	68.0	70.3	76.2	84.6
First-semester average	12.3	14.2	12.8	13.4	12.3	13.7

Source: Own elaboration, with information on the academic coordination of the Programs

The table shows that more female students in the three programs completed the questionnaire. The differences are also significant for the approval of the first semester in Language and Literature and Mathematics, being higher than the semester averages for the students who answered the questionnaire.

Collection Techniques

The data were collected through an online questionnaire (Annex 1) sent to students via the university's email between August 18 and September 16, 2020. Of the 916 registered in one of the Study Programs, 325 answered the questionnaire. The dissemination of this instrument did not cease to raise problems of representativeness. Students who did not consult their email were excluded, and students enrolled in courses that disseminate little information through this channel consult their email. However, due to the isolation by Convid-19, the dissemination of the questionnaire by email was chosen.

The questionnaire consists of nine parts. The first four focused on the digital environment of students: possession or not of digital devices, level of self-declared competencies of specific applications, frequency of use in the context of university activities and extra-university activities during the first semester of studies. The following two parts asked students about their ways of studying and their learning strategies with or without digital tools. The evaluation of success is based on the results of the first semester exams self-declared by the students. Finally, the last two parts were related to school and sociodemographic characteristics.

Analysis Processing

The collected data were processed as follows: first, all questions were tabulated. Then, cross-tabulations to check if there is a relationship between the qualitative variables. We chose to perform a multivariate analysis on the mean obtained in the first semester, corresponding to linear regression. Thus, each coefficient indicates whether the effect is positive or negative on the semi-annual grade according to its sign.

The multiple linear regression model is a generalization of simple linear regression (between two variables). The objective is to try to explain a variable's values as accurately as possible. The variable that we sought to explain, Y, is the grade obtained in the first semester. The variables that will explain are represented by X. The model used is called the least squares line; it has the following formula: $Y_i = a_i X_i + b_i + \varepsilon_i$

The significance of the model is evaluated from the model's coefficient of determination, R^2. This indicates the percentage of variance explained. The higher it is, the more explanatory the model. The goal is to obtain a coefficient of determination as high as possible. Therefore, variables are added to check if the model is more significant.

RESULTS

Before evaluating the effects of digital uses on university success, students' uses are described according to their characteristics and the context in which they study.

Digital Uses of Students

Well-Equipped Students

The student body is equipped with digital equipment. The majority (70.6%) have a laptop with an Internet connection, and more than three-quarters have a smartphone with an Internet connection. It is also the tool they use most on a daily basis, even for academic activities during classes.

Use of the Digital Services Offered by the University

Students value access to an intranet (Piscitelli, 2021), mainly to facilitate access to information (notes, schedules, course documents, etc.). The university studied offers several digital services common to all its programs: Internet, university messaging, online hours, a digital library, and a platform for depositing and exchanging documents between teachers and students. Among these services, the online platform deserves special attention: 93% of students find it useful for their studies, and 55% go to it one or more times a day.

Working With or Without the Internet

51.9% of students declare a study time with the Internet less than 30 minutes daily. Compared to total personal working time, working time with the Internet does not exceed a third of the time on average. A deeper examination of users reveals that men are weaker academically, less diligent, and work irregularly.

Analysis of the Influence of Digital Uses on University Results

To analyze the effects of digital uses on student success, linear regression models were carried out that allowed us to know, under similar conditions, the effect of one variable controlling the others. This method is essential because the uses vary according to the study contexts and the student's characteristics. The first set of models was developed taking into account the standard digital uses, the use or not of the digital services offered by the university, and the different ways of studying or distracting oneself during classes with digital tools. A second set of models took up the previous variables and included some sociodemographic characteristics, the elements that characterize the students' previous schooling, and their commitment to the studies (dedication, regularity at work). The dependent variable measurement was based on the semester average of the student body.

Moderate Effect of Digital on the Half-Yearly Average

The results of the first model, presented in Table 2, show that student qualifications depend little on digital uses. Depending on the training field, the determination coefficient (R^2) is between 3.6% and 6.1%, which translates into low explanatory power of the variables introduced in the model. However, it shows that the effects differ depending on the nature of the uses. For example, sending text messages or playing on a mobile phone during class negatively affects the results obtained in the first semester. Conversely, checking your mailbox regularly has positive effects. It should also be noted that the purpose of working time on the Internet adversely affects students' performance in Language Literature, and Social Sciences.

TABLE 2
LINEAR REGRESSION OF THE GRADE OBTAINED IN THE FIRST SEMESTER ACCORDING TO DIGITAL USES

Reference modalities	Active modalities	Models		
		Language and Literature	Mathematics	Social sciences
Constant		11.8 9 ***	16.03 ***	11.68 ***
Digital uses				
Internet weather outside the weekend (hours/day)		0.008 ns	-0.03 ns	-0.06 ns
Time spent sending text messages (SMS) outside the weekend (hours/day)		-0.05 ns	-0.04 ns	-0.19 ns
Time spent watching videos or TV outside of the weekend (hours/day)		-0.04 ns	-0.09 ns	0.02 ns
Time spent on social media outside the weekend (hours/day)		0.02 ns	0.04 ns	0.02 ns
Use of the resources offered by the university during the first semester				
Check your e-mailbox less than once/day	Check your electronic mailbox daily	0.56 *	0.57 ns	-0.11 ns
Check your schedule less than once/day	Check your schedule daily	0.27 ns	0.75 ns	-0.29 ns
Check the digital platform less than once/day	Consult the digital platform daily	-0.37 ns	0.002 ns	0.35 ns
Has never reviewed the digital catalog of the university library	Has consulted the digital catalog of the university library	0.03 ns	-0.57 ns	-0.30 ns
Ways to study with digital				
Percentage of personal working time with the Internet (in%)		-1.35 **	-1.10 ns	-2.90 ***
Do not participate in the digital working group	Participate in a digital working group	0.06 ns	-0.30 ns	0.18 ns
Take notes with a pen	Take notes with a computer or tablet	-0.15 ns	-0.79 ns	-0.56 ns
Use a computer for software	Use a computer for the Internet	0.07 ns	-0.17 ns	-0.16 ns
	Use a computer for messaging	0.60 ns	-0.86 ns	-0.02 ns
	Use a computer to print	-0.07 ns	0.33 ns	0.13 ns
Rarely send SMS in class	Send SMS in class often	0.47 ns	-0.62 **	-0.21 ns

Ways to study with digital				
Does not play during class	Play during class	-0.44 *	-2.65 ns	-0.97 **
Does not sail during class	Surf the Internet during class	-0.03 ns	0.77 *	1.16 **
Calculated R^2 (percentage of variance explained)		3.6%	5.8%	6.1%

Note. The coefficients indicate the value to be added or subtracted from the half-yearly average. For example, students of Language and Literature who consult their mailbox daily, deserve, on equal terms, 0.57 points (out of 20) more than those who use it less than once a day.

The significance of the differences between the reference modality and the active modality is indicated by: ns when the difference is not significant; * insignificant difference (10% threshold); ** significant difference (threshold 5%); very significant difference (threshold 1%).

Source: Own elaboration, with information from the questionnaire on digital activities and school success, 2020.

Overall, these early models do not show a significant influence of digital uses on test results. However, having a playful use of digital technology without an orientation towards studies has a negative impact on university success. This is in line with the survey findings

Previous Schooling and Academic Performance

The second model (Table 3) considers the elements that influence university success. The average obtained in high school explains in a very significant way the university results. The students who obtained one more point in secondary school achieved, on average, a higher semester grade of half a point. Working regularly and being diligent in class also positively impact the semester average. The school past remains a determining factor in explaining college success.

TABLE 3
LINEAR REGRESSION OF THE GRADE OBTAINED IN THE FIRST SEMESTER ACCORDING TO DIGITAL USES AND THE SOCIAL AND ACADEMIC CHARACTERISTICS OF STUDENTS

Reference modalities	Active modalities	Models		
		Language and Literature	Mathematics	Social sciences
Constant		1.69 *	7.80 ***	1.77 ns
Sociodemographic characteristics				
Man	Woman	-0.10 ns	-0.11 ns	-0.43 ns
Previous schooling				
Secondary education	Higher education	1.59 ***	0.81 *	0.80 *
Average 20 obtained in high school		0.60 ***	0.50 ***	0.61 ***
Personal work and assistance				
Work irregularly	Work every day	0.77 ***	0.94 **	1.98 **
Does not attend all classes	Attend all classes	0.46 **	0.25 ns	0.20 ns
Personal working time in hours/week (outside the weekend)		-0.005 ns	0.004 ns	-0.05 ns

Digital uses				
Internet weather outside the weekend (hours/day)		0.03 ns	-0.42 ns	-0.001 ns
Time spent sending text messages (SMS) outside the weekend (hours/day)		-0.02 ns	0.02 ns	-0.07 ns
Time spent watching videos or TV outside of the weekend (hours/day)		-0.01 ns	-0.07 ns	-0.005 ns
Time spent on social media outside the weekend (hours/day)		0.005 ns	0.05 ns	0.05 ns
Use of the resources offered by the university during the first semester				
Check the e-mailbox less than once/day	Check the electronic mailbox daily	0.21 ns	0.33 ns	0.41 ns
Check the schedule less than once/day	Check the schedule daily	-0.10 ns	0.64 ns	-0.9 ns
Check the digital platform less than once/day	Consult the digital platform daily	-0.18 ns	0.08 ns	0.05 ns
Has never reviewed the digital catalog of the university library	Has consulted the digital catalog of the university library	0.06 ns	-0.41 ns	-0.52 ns
Ways to study with digital				
Percentage of personal working time with the Internet (in%)		-0.46 ns	-0.30 ns	-1.21 ns
Do not participate in the digital working group	Participate in a digital working group	-0.13 ns	-0.04 ns	-0.7 ns
Take notes with a pen	Take notes with a computer or tablet	0.13 ns	-0.46 ns	-0.33 ns
Use a computer for software	Use a computer for the Internet	0.21 ns	0.25 ns	-0.02 ns
	Use a computer for messaging	0.57 *	-0.33 ns	-0.40 ns
	Use a computer to print	0.18 ns	0.03 ns	-0.08 ns
Rarely send SMS in class	Send SMS in class often	0.57 ns	-1.02 ns	0.32 ns
Does not play during class	Play during class	-0.35 ns	-0.68 *	-0.97 ***
Does not sail during class	Surf the Internet during class	0.07 ns	0.51 ns	0.66 ns
Calculated R^2 (percentage of variance explained)		**38.0%**	**50.9%**	**31.9%**

Source: Own elaboration, with information from the questionnaire on digital activities and school success, 2020.

The estimates in Table 3 further reduce the scope of digital: most of the variables that had a significant effect in the first model no longer have a significant effect on the second. For example, the proportion of working time with the Internet that had a significant effect on the first model for students of Language and Literature and Social Sciences has no effect here. On the other hand, certain variables negatively influence the semester average: playing in the class for Social Science students and watching videos or television in the mathematics program.

In the end, the introduction of the variables in the second model related to the ways of studying, sociodemographic characteristics, and previous schooling significantly increases the explanatory power of the model. The coefficient of determination, which was included, according to the programs, between 3.6% and 6.1%, is now between 38.0% and 50. 9%.

Discussion

This research aimed to identify the place of digital technology in the ways of studying and measuring the effects of specific uses of digital technology on test results. For the latter, it seemed necessary to put these uses into perspective with the school's past and the ways of studying, recognizing these last two dimensions as having a proven influence on university success (Romainville and Michaut, 2018). It should be remembered that research on the subject does not reach a consensus. On the one hand, the Non-Significant Theory, developed by Russel (2001, in Endrizzi, 2012) in the late 90s in the United States, states that there can be no significant effect on the results of the mere presence of digital technology in the classroom. On the other hand, studies show positive impacts on student performance (Dahmani and Ragni, 2009).

The results of the multivariate analyses for the three Curricula show that the most discriminating variable is the average obtained in secondary education. The explanatory power of the models is essential, thanks to the latter. Gender and living conditions are not determinants of student success.

As for the use of digital technology, only the frequency of sending SMS in class significantly impacts the success of Social Science students. Students who reported sending SMS rarely in class earned points in their semester average compared to those who sent them in a row.

A linear regression of the grade obtained in the first semester has been carried out, taking as explanatory variables the digital uses of Table 3. It is noted that these models are weakly explanatory, $R^2 = 4$ in Language and Literature and Mathematics. The model is more explanatory for students enrolled in Social Sciences, 11%. This can be translated by a more significant effect of these factors, in particular the part of working time on the Internet. That is, having a high personal work time on the Internet is more harmful to Social Sciences students. Therefore, digital technology may offer distractions that distract them from their work and negatively affect their average. Another conjecture would be that they need less digital technology than other students, as they must concentrate on the documents transmitted by teachers.

As for the ways of studying, the understanding of the note can be achieved without taking into account personal working time and the way of taking notes, the latter not being decisive in equal conditions. The variables chosen weakly explain the variance compared to the school's past. This is in line with studies on the determinants of college success. The coefficient of determination is higher in Mathematics 22.6%, compared to 9.6% in Language and Literature and 10.3% in Social Sciences. In other words, the selected factors have a more significant effect and a higher explanatory power in this Program. Therefore, working regularly is more important in Mathematics to get good grades.

CONCLUSIONS

The models carried out within the framework of this research provide two conclusions. The first model shows a moderate and negative effect of recreational digital uses on the score obtained in the exams, as shown by Dahmani and Ragni, (2009). This result is obviously not surprising. Moreover, none of the university's digital services differentiates students' performance. The second model, which includes other factors such as ways of studying, sociodemographic characteristics, and previous schooling, confirms the absence of a significant effect of digital activities.

It should be noted, however, that the results presented come from an exploratory survey with certain limitations. The first refers to the context, particularly the sample on which the statistical analyses are based. The latter does not claim to represent the population of the university studied and even less the population of students at Peruvian universities. Similar research should be conducted with students enrolled in other programs and at other levels of study. The second limitation relates to the choice of quantitative variables

that characterize digital activities. The conclusions could be different with a more refined measurement of digital activities.

How to interpret this weak influence of digital uses on university success? If assessments are more oriented towards course presentation than the use of knowledge sought on the Internet or skills acquired through digital technology, it is better understood why students are content with course materials. Fusaro and Couture (2012) had already made this hypothesis. The computer is, according to them, more used to make presentations or write texts than to prepare for an exam. Vega-Hernández et al. (2018) also pointed out that technology is not identified as a need beyond the facilities of communication, access to courses, and search for information. This may explain why students do not take full advantage of the possibilities offered by digital technology for their studies since it is associated with specific tasks. Kozlova and Pikhart (2021) reveal that students remain attached to traditional lectures and struggle to transfer their personal uses to the university environment, which may also explain this low investment since students do not want digital technology to occupy more space in their ways of studying. Faced with these analyses, it is necessary to question the students' intentions to use or not the digital tools and then relate them to university expectations. The skills acquired, or the information collected through the Internet by the student body, is unlikely to meet the expectations of teachers or institutional expectations. Also, likely, students do not want digital technology to be used more during classes. At a time when university education policies aim to replace part of face-to-face teaching with digital means and distance accompaniment, it is legitimate to ask about the relevance of this orientation.

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ANNEX 1: STUDENT DIGITAL USES AND COLLEGE SUCCESS QUESTIONNAIRE

Digital Access Outside the University
1. Did you have the following devices at home in the first semester?
   You can check several boxes (maximum 7)
   - ☐ Desktop computer with internet access
   - ☐ Laptop with internet access
   - ☐ Portable phone with internet access
   - ☐ Tablet
   - ☐ The desktop computer without internet access
   - ☐ A laptop without internet access
   - ☐ A mobile phone without internet access
   - ☐ None

How often did you use the following devices in the first semester?
Several times a day (1), Once a day (2), One to four times a week (3), One to four times a month (4), Less than once a month (5), Never (6).

	1	2	3	4	5	6
2. Desktop	☐	☐	☐	☐	☐	☐
3. Laptop	☐	☐	☐	☐	☐	☐
4. Mobile phone	☐	☐	☐	☐	☐	☐
5. Tablet	☐	☐	☐	☐	☐	☐

During the first semester, outside of weekends, how much time do you spent, on average, per day, on the following:

Less than 15 min (1), From 15 to 30 min (2), From 30 to 45 min (3), From 45 min to 1h (4), From 1h to 1h15 (5),
From 1h15 to 1h30 (6), From 1h30 to 1h45 (7), From 1h45 to 2h (8).

	1	2	3	4	5	6	7	8
6. Enter the social networks	☐	☐	☐	☐	☐	☐	☐	☐
7. Browse internet without relationship with your formation	☐	☐	☐	☐	☐	☐	☐	☐
8. Watch videos or TV	☐	☐	☐	☐	☐	☐	☐	☐
9. Send the SMS	☐	☐	☐	☐	☐	☐	☐	☐

Uses of digital technology for studies

10. Is a group (Facebook, Google group or, WhatsApp...) formed by students of your program?
    - ☐ Yes
    - ☐ No
    - ☐ I do not know

11. If so, how do you participate in this group?
    You can check multiple boxes (maximum 3)
    - ☐ I participate in exchanges
    - ☐ I only verify the information
    - ☐ Sending additional course materials (articles, exercises, etc.)
    - ☐ I deliver my course notes
    - ☐ Other: _____

12. During the first semester, have you participated in a MOOC (Free Online Courses)?
    You can check multiple boxes
    - ☐ I don't know about it
    - ☐ I never signed up
    - ☐ I signed up but didn't follow the training
    - ☐ I signed up and finished the training
    - ☐ I signed up and followed some courses

13. If you signed up for a MOOC, what was the theme?
    You can check multiple boxes
    - ☐ Related to your training
    - ☐ Related to his research project
    - ☐ No Relation, it was out of curiosity

14. Which of the following services were helpful to you in studying the first semester?
    You can check more than one box
        ☐   University messaging
        ☐   The online schedule
        ☐   The Virtual Library
        ☐   Teachers' WhatsApp
        ☐   The university platform

How often did you use the following services outside the weekend in the first semester?
Several times a day (1), Once a day (2), One to four times a week (3), One to four times a month (4), Less than once a month (5), Never (6).

	1	2	3	4	5	6
15. University messaging	☐	☐	☐	☐	☐	☐
16. The online schedule	☐	☐	☐	☐	☐	☐
17. The virtual library	☐	☐	☐	☐	☐	☐
18. Teachers' WhatsApp	☐	☐	☐	☐	☐	☐
19. The university platform	☐	☐	☐	☐	☐	☐

20. Did you use digital to cheat in the first semester?
    You can check several boxes (maximum 4)
        ☐   Yes, with a cell phone during written exams
        ☐   Yes, with the Internet to plagiarize files
        ☐   No, I didn't cheat
        ☐   Yes, with a calculator during written exams
        ☐   No, but I used another way to cheat

Interest in digital technology for our studies
21. What are, among the following propositions, the three main advantages of using digital technology in your university studies?
    You can check multiple boxes (maximum 3)
        ☐   Communication with teachers
        ☐   Facilitates group work
        ☐   Time-saving
        ☐   Improves learning
        ☐   Communication with other students
        ☐   Facilitates the search for information
        ☐   Increase motivation
        ☐   Other

22. If it is other, specify
    _____

23. What are, among the following propositions, the three main obstacles related to the use of digital technology in the context of university studies?
You can check multiple boxes (maximum 3)
   - ☐ Lack of time
   - ☐ Lack of human contact
   - ☐ Lack of interest and need
   - ☐ Internet connection problems
   - ☐ The feeling of wasting time
   - ☐ Lack of equipment or obsolete equipment
   - ☐ Lack of mastery of digital hardware and applications
   - ☐ Other

24. If it is other, specify
   _____

25. In the first semester, what was the main reason you used a computer for your studies?
   - ☐ Research on the Internet concerning the course
   - ☐ Use other software
   - ☐ Use a printer or scanner
   - ☐ Use office software (word processor, spreadsheet, etc.)
   - ☐ Check your emails
   - ☐ Other

The results of the exam

26. Did you take the exams for the first semester?
Check only one box
   - ☐ All tests
   - ☐ Almost all tests
   - ☐ No

27. Generally, did you turn in your test at least 15 minutes before the end?
Check only one box
   - ☐ Very often
   - ☐ Frequently
   - ☐ From time to time
   - ☐ Rarely
   - ☐ Never

28. Did you pass the first semester?
   - ☐ Yes
   - ☐ No

29. What average did you get?
If you are enrolled in two programs, indicate the average obtained in the main program. The answer must be between 0 and 20
   _____

University and school career

30. In which Study Program are you enrolled?
    - ☐ Social sciences
    - ☐ Language and Literature
    - ☐ Mathematics

31. What level of training are you currently pursuing?
    - ☐ The first semester of undergraduate
    - ☐ Second semester of undergraduate

32. What average did you get in high school?
    The answer must be between 0 and 20
    _____

33. During your education (primary, secondary, and university), did you repeat one or more classes?
    - ☐ Yes
    - ☐ No

Some personal data

34. Are you?
    - ☐ Female
    - ☐ Male

35. How old are you?
    _____

36. Did you have an exemption of attendance in the first semester?
    - ☐ Yes
    - ☐ No

37. Did you exercise a professional activity parallel to your studies during the first semester?
    - ☐ Yes
    - ☐ No

38. If so, how many hours per week did you work in your professional activity during the first semester?
    The answer must be between 1 and 200
    _____