Learning strategies in the virtuality forced by the pandemic: contributions to the design of learning contexts in the post-pandemic stage

Estratégias virtuais de aprendizagem impostas pela pandemia: contribuições para o desenho de contextos de aprendizagem na fase pós-pandemia

Estrategias de aprendizaje en la virtualidad forzada por la pandemia: aportes para el diseño de contextos de aprendizaje en la etapa postpandemia

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ABSTRACT

The purpose of the article is to describe and analyze the learning strategies used by Economics students with different academic performance in the period of remote teaching by COVID-19. Although the strategies that students use to learn were previously addressed by educational research, the study provides new evidence by placing the analysis in the unusual contexts defined by the pandemic. A non-experimental, descriptive research was conducted, using a self-report questionnaire answered by 94 students. The results reveal that resource regulation strategies were affected by the context of the health emergency. The evidence obtained is an important input for the design of learning contexts that favor the use of strategies and academic performance. According to the reported findings, hybrid proposals, which allow taking advantage of the benefits of virtuality, would be appropriate to favor students' strategic learning.

Keywords: learning strategy, university student, pandemic.

RESUMO

O objetivo do trabalho é descrever e analisar as estratégias de aprendizagem utilizadas por alunos de Ciências Econômicas com desempenho acadêmico diferenciado no período de ensino remoto devido ao COVID-19. Embora as estratégias que os alunos usam para aprender tenham sido abordadas anteriormente pela pesquisa educacional, o estudo fornece novas evidências ao situar a análise nos contextos inusitados definidos pela pandemia. Realizou-se uma investigação não experimental e descritiva, na qual se utilizou um questionário de autorrelato que foi respondido por 94 alunos. Os resultados revelam que as estratégias de regulação de recursos foram afetadas pelo contexto de emergência em saúde. As evidências obtidas são um insumo importante para o desenho de contextos de aprendizagem que favoreçam o uso de estratégias e o desempenho acadêmico. De acordo com os achados relatados, propostas híbridas, que permitam aproveitar os benefícios da virtualidade, seriam adequadas para promover a aprendizagem estratégica dos alunos.

Palabras clave: estratégia de aprendizagem, universitário, pandemia.

RESUMEN

El propósito del trabajo es describir y analizar las estrategias de aprendizaje utilizadas por estudiantes de Ciencias Económicas con diferente rendimiento académico en el período de enseñanza remota por COVID-19. Si bien las estrategias que los estudiantes usan para aprender fueron previamente abordadas por la investigación educativa, el estudio aporta nuevas evidencias situando el análisis en los inusuales contextos definidos por la pandemia. Se realizó una investigación no experimental y descriptiva, en la que se utilizó un cuestionario de autoinforme que fue respondido por 94 estudiantes. Los resultados revelan que las estrategias de regulación de recursos resultaron afectadas por el contexto de la emergencia sanitaria. La evidencia obtenida es un importante insumo para el diseño de contextos de aprendizaje favorecedores del uso de estrategias y del rendimiento académico. Conforme los hallazgos reportados, propuestas híbridas, que permitan aprovechar los beneficios de la virtualidad, serían oportunas para favorecer el aprendizaje estratégico de los estudiantes.

Palavras-chave: estrategia de aprendizaje, estudiante universitario, pandemia.

INTRODUCTION

In the post-pandemic stage, it is of crucial value to critically analyze and reconstruct the teaching and learning practices that took place within the framework of virtuality forced by isolation. Teachers and students with little previous experience and sometimes poorly developed digital skills had to face, without alternatives, teaching and learning in technology-mediated contexts. Educational contexts were radically transformed, adapting to the health emergency situation. From being face-to-face, they moved towards virtuality -with no preparation or adaptation time-, which gave rise to remote emergency teaching (Hodges et al., 2020). This unusual and unprecedented change generated a teaching-learning context never before experienced, which emerges as a new element to be considered in educational research and invites us to review issues that were already addressed previously, but that take on a new dimension after the pandemic. Among them, the variable that we will address in this article is related to the learning strategies put into play by students.

Within the framework of this article, it will be interesting to focus on university students of Economic Sciences, and in particular, on the strategies they used to face learning in a context different from the usual one.

Previous research, carried out before the outbreak of the pandemic, was extensively concerned with the study of learning strategies. In fact, since 1980 the topic has generated interest in the field of educational psychology (Rinaudo, 2006). Perhaps one of the most outstanding and consolidated findings of educational research in this line is the relationship between the constructs of learning strategies and students' academic performance. In this line, in general, studies manage to prove such linkage. (Daura, 2015; Leiva, 2021; Norzagaray-Benítez et al., 2021; Reyes et al., 2021; Vásquez-Córdova, 2021; among others).

Following the irruption of the health emergency context and the virtualization of education, it would be appropriate to advance - in relation to the learning strategies employed by students - in analyses that offer indicators about their possible affectation in the framework of a learning context that has changed radically. In fact, strategies are sensitive to learning contexts (Chiecher, 2009) and, in this sense, it is not the same to organize and manage time and the learning environment in face-to-face learning as it is in virtual learning. Similarly, collaborative work with peers in physical co-presence is not the same as with the mediation of screens, nor is it the same to ask the teacher for help in one context as in another. How have students forced to learn virtually resolved the issue? How have they adjusted their strategies to this new learning context? Have they managed to develop new skills? Is it possible to take advantage of this after returning to face-to-face learning?

In the context of the above, the article is oriented towards the objective of analyzing the learning strategies used by students of the Faculty of Economic Sciences (FCE) of the National University of Río Cuarto (UNRC), Argentina, in the period 2020. The analysis is carried out on a group of students taking two subjects, one from the accounting area and the other from the financial area, which are taught at the aforementioned Faculty. In addition, it is approached from a comparative perspective between groups of students with different academic performance.

The article is structured in three sections. The first section presents the theoretical framework of the research, as well as some relevant background information. The second section presents the methodological aspects of the study, while the third section presents the results and their discussion. Finally, the conclusions and main contributions of the research are presented

LITERATURE REVIEW

Learning strategies are included within the group of personal variables that condition academic performance. It is a complex concept, widely studied by Educational Psychology since the 1980s, in which both cognitive and metacognitive aspects are involved, as well as affective and motivational ones (García-Ripa et al., 2016; Rinaudo, 2006; Vera-Sagredo et al., 2019).

In terms of Weinstein, Husman and Dierking (2000), strategies are behaviors, thoughts, beliefs or emotions that facilitate the acquisition of knowledge and the achievement of new learning. They are characterized as *procedural*, since they involve the execution of procedures of different levels of complexity; *intentional*, since they respond to a deliberate and voluntary action of the learner in pursuit of a goal; and *facilitative*, since they facilitate the learning of new content and are usually associated with better academic performance (Chiecher, 2009; Rinaudo and Donolo, 2000; Rinaudo, 2006).

Students use different strategies to learn, which according to the classification proposed by Pintrich et al. (1991) and Pintrich & García (1993), which have been subsequently taken up by various publications, can be classified as cognitive, metacognitive or contextual resource regulation strategies. Table 1 shows the strategies included in each of the three categories mentioned.

Table 1 Classification of learning strategies

Cognitive strategies	Metacognitive strategies	Resource regulation strategies
Review strategies	Planning strategies	Organization of time and study environment
Strategies for the elaboration and organization of information	Control strategies	Effort regulation
Critical thinking	Regulatory strategies	Peer learning and help seeking

Note: Prepared by author using as source Pintrich et al. (1991), Pintrich & Garcia (1993), Moreno et al. (2020).

Cognitive strategies refer to a set of strategies (review, organization, elaboration of information and critical thinking), which allow -depending on which of them are chosen- from superficial processing of information to deeper processing, establishment of links between concepts, integration of new knowledge with pre-existing knowledge, reflective thinking about new concepts, etc. Thus, reiterating a list of items to be learned, elaborating a summary or organizing information in a concept map are examples of this group of strategies (Pintrich et al., 1991).

Metacognitive strategies are related to the knowledge and control of oneself, of the task and of the strategies used to solve it. These are strategies that are put into action both in the task planning process and in the processes of control of its execution and regulation or adjustment. Setting goals, monitoring progress towards them by self-observation, adjusting performance when necessary, are strategies considered within this category (Pintrich et al., 1991).

Resource regulation strategies refer to various behaviors that help to manage - and change if necessary - certain contextual factors in order to achieve their goals. For example, organizing, managing and regulating efficiently the time dedicated to study and the environment in which it is done. Similarly, this group of strategies includes effort regulation, understood as the ability of each student to persist in carrying out the tasks assigned to them even when they are of little interest; and, finally, peer learning and help-seeking strategies, linked to the willingness to work and interact with others, be they peers or the teacher (Pintrich et al., 1991; Pintrich & García, 1993).

As anticipated in the introduction, previous research has analyzed the relationships between learning strategies and academic performance of university students, reporting clear evidence of a higher use of strategies in students with better academic performance (Daura, 2015; Gargallo-López, 2006; Lavado-Rojas et al., 2018; Lugo et al., 2016; Trias et al., 2021). Specifically with students of economic sciences, the results are along the same lines. This is confirmed by findings showed in the works of Chiecher et al. (2014), Ficco et al. (2021), among others. Thus, several studies -both international and local- support the relationship between learning strategies and academic performance, showing differences in their use among students with different performance in their university studies. In view of this, the present study seeks to describe the learning strategies used by students with different academic performance in the context of the COVID-19 health emergency

METHODS

Research design

A quantitative, non-experimental, transectional and descriptive study was carried out, whose objective was to know and describe the learning strategies of economics students with dissimilar academic performance in the context of the suspension of attendance generated by the pandemic.

Subjects of the study

The research was carried out with students of Economic Sciences of the National University of Río Cuarto (UNRC, Argentina) who in 2020 were taking two subjects: Financial Calculus and Accounting Information Systems II (hereinafter, SIC II-2).

Two groups of students were considered according to two theoretical categories proposed by Terigi (2014) - namely: *theoretical trajectories* and *uncoupled trajectories[1]* - which refer, at the same time, to dissimilar academic performances. Thus,

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[1] *Theoretical trajectories* are defined as those paths followed by students following the linear progression foreseen by the system, in the times marked by a standard periodization (Terigi, 2014). For example, a university career extends for 5 years; in the first year a set of subjects should be passed, in the second year others, in the third year others and so on. In the fifth year, a student who follows the theoretical path should be completing his or her degree. The truth is that students follow different trajectories, many of which do not coincide with the theoretical trajectories proposed by the curriculum. These are the so-called uncoupled trajectories, since they are outside the theoretically stipulated path (Terigi, 2014).

Group 1 is made up of those students whose trajectories in the subjects coincide with that theoretically stipulated by the study plan; that is, they are students who took and passed the subject after having completed the course, within the time stipulated by the study plan. This group includes students with the best academic performance, both for having passed the course and for having done so within the time stipulated in the study plan. On the other hand, Group 2 involves those students whose itineraries did not follow exactly the course stipulated by the Curriculum. These are students who started the course but, nevertheless, either did not finish it or, if they did, did not manage to pass the final exam of the subject after its completion. In this group, students have a lower academic performance than their peers in Group 1, because they did not pass the course or, if they did, they did so in a time that exceeds that stipulated in the syllabus.

For the identification of the two groups referred to, we used data provided by the institution. According to these data, only 6 (3.75%) of the 160 students who enrolled in 2020 to take Financial Calculus, fall into Group 1 (students with theoretical trajectories, high academic performance). In the case of SIC II-2 the percentage of students whose trajectories coincided with the theoretical one is 13.11% (16 of the 122 active students)[2]. Regarding the students in Group 2 (uncoupled trajectories, lower academic performance), 96.25% of the total number of active students enrolled in Financial Calculus in 2020 fall into this group, a percentage that rises to 86.89% in the case of SIC II-2. The characterization of the study subjects, according to their distribution by sex, age and career, is presented in Table 2.

Table 2 Characterization of the study subjects

Variable	Financial Calculation		SIC II-2	
	Students with theoretical trajectories	Students with uncoupled trajectories	Students with theoretical trajectories	Students with uncoupled trajectories
Sex				
Female	50%	73%	69%	64%
Male	50%	27%	31%	36%
Age				
20 to 24 years old	75%	84%	85%	85%
25 years or more	25%	16%	15%	15%
Career				
Certified Public Accountant	100%	80%	92%*	76%*
B.A. in Administration	0%	17.7%	8%*	24%*
B.A. in Economics	0%	2.3%	0%	0%

Note: Prepared by the authors with the research data

Regarding the level of responses obtained by students in each of the groups to the questionnaire used for data collection, the average response rate was 77% for Group 1 and 30% for Group 2. Specifically, the questionnaire was answered by 48 Financial Calculus students (4 from Group 1 and 44 from Group 2) and by 46 SIC II-2 students (13 from Group 1 and 33 from Group 2). Table 3 summarizes the above information.

Table 3 Number of subjects participating in the study and level of responses to the questionnaire

Subject	Enrolled in the course	Active studends	Active students Group 1	Active students Group 2	Answers Group 1	Answers Group 2
Financial Calculus	193	160	6	154	4	44
SIC II-2	141	122	16	106	13	33

Note: Prepared by the authors with the research data

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[2] We understand that these results are strongly influenced by the changes derived from the social and health emergency context produced by COVID-19, given that in the work by Ficco et al. (2022), conducted with data from the period 2016-2019, finds a higher number of high-performing students in relation to the total number of active enrollees (26.32% for Financial Calculus and 29.96% for SIC II-2).

In accordance with ethical standards in research, the participation of the subjects was in all cases voluntary, they were informed about the study in which they would participate, consent was requested to use the data in the framework of scientific research, and confidentiality and anonymity were guaranteed.

Data collection instrument

Data collection was carried out by administering the *Academic Trajectories Questionnaire,* designed based on the instrument proposed in Bossolasco et al. (2019). Minimal adjustments were made to the wording of some items, taking into account the group of students to whom it was addressed. In this case, the subjects to whom it was administered were in their third year at university, whereas, in the original version, the questionnaire was intended to be answered by first-year students. In this sense, Bossolasco et al. (2019) describes the process of elaboration, design and validation of the referred instrument.

The questionnaire consists of 9 sections, which include a total of 44 items referring to different thematic areas. For the purposes of this study, the data referred to the learning strategies section were taken. This section presents 13 items related to different strategies that students can use to study and learn. Responses are given using a 7-point Likert scale, where 7 means complete agreement with the statement and 1 means complete disagreement.

Data analysis

The information collected through the questionnaire was processed and analyzed from quantitative perspectives, with the support of SPSS version 21, performing mean difference tests and analysis of absolute and relative frequencies.

RESULTS

A Mann-Whitney U test was performed to determine whether students present differences in the use of learning strategies according to the subject studied. The results, presented in detail in Table 4, indicate that there are no statistically significant differences between the means of the groups of students, with a significance level of 0.05. These results reveal that the subject is not a significant variable in the analysis of the level of use of learning strategies for the sample of students considered.

Table 4 Comparison of the use of learning strategies by subject matter

Learning strategies	CF			SIC			p-value
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	
Cognitive	**48**	**5.66**	**0.81**	**46**	**5.75**	**0.80**	**0.5976**
Review	48	5.31	1.96	46	5.65	1.68	0.4828
Elaborate the information	48	6.60	0.71	46	6.48	1.05	0.9365
Presenting the information	48	5.00	2.03	46	5.09	2.01	0.7897
Resolving the practical again	48	6.25	0.93	46	6.17	1.23	0.7947
Read the resolutions of the practical exercises	48	5.13	1.83	46	5.35	1.70	0.6123
Metacognitive	**48**	**5.72**	**0.96**	**46**	**5.55**	**1.21**	**0.7245**
Identify concepts to review	48	6.44	0.85	46	6.26	1.10	0.5223
Setting goals and moving forward to meet them	48	5.00	1.66	46	4.85	1.90	0.8136
Regulation of context resources	**48**	**5.47**	**0.97**	**46**	**5.29**	**0.96**	**0.2998**
Study in a group	48	6.17	1.28	46	5.96	1.35	0.5572
Ask the teacher for help	48	3.71	1.97	46	3.41	1.93	0.4732
Ask peers for help	48	5.13	1.68	46	4.85	1.78	0.4576
Manage the study environment	48	5.75	1.58	46	5.74	1.67	0.8747
Regulating the effort	48	6.10	1.22	46	6.09	1.38	0.8147
Time management and planning	48	5.98	1.49	46	5.70	1.76	0.5611

Note: Prepared by the authors with the research data

On the other hand, the comparison of students according to the type of trajectory (theoretical or uncoupled) or academic performance (high and low) shows higher means for all items in the group of students with theoretical trajectories, or better performance, with statistically significant differences for several of them. Thus, as shown in Table 5, the strategies of

elaboration of information, presentation of information, exercise by repeatedly solving practical exercises, goal setting and management of the study environment show statistically significant differences between the groups compared.

Table 5 Comparison of the use of learning strategies by subject matter and groups

Learning strategies	Group 1			Group 2			p-value	
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.		
Cognitive	17	6.12	0.67	77	5.61	0.81	0.0175	**
Review	17	5.88	1.65	77	5.39	1.86	0.3420	
Elaborate the information	17	6.82	0.73	77	6.48	0.91	0.0392	**
Presenting the information	17	6.18	1.55	77	4.79	2.02	0.0036	**
Resolving the practical again	17	6.53	1.23	77	6.14	1.05	0.0460	**
Read the resolutions of the practical exercises	17	5.18	1.85	77	5.25	1.76	0.8772	
Metacognitive	17	6.12	0.72	77	5.53	1.13	0.0607	*
Identify concepts to review	17	6.59	0.71	77	6.30	1.03	0.3117	
Setting goals and moving forward to meet them	17	5.65	1.32	77	4.77	1.83	0.0840	*
Regulation of context resources	17	5.46	0.80	77	5.37	1.00	0.7905	
Study in a group	17	6.35	1.06	77	6.00	1.36	0.3338	
Ask the teacher for help	17	2.82	1.42	77	3.73	2.01	0.1072	
Ask peers for help	17	5.24	1.79	77	4.94	1.72	0.4718	
Manage the study environment	17	6.53	1.07	77	5.57	1.67	0.0120	**
Regulating the effort	17	6.06	1.30	77	6.10	1.30	0.9502	
Time management and planning	17	5.76	1.82	77	5.86	1.60	0.8109	

Significance ** 5% *10%

Note: Prepared by the authors with the research data

In order to deepen the analysis of the differences between the groups of students according to their academic performance with respect to the use of strategies, the variables were recoded considering 3 levels of use: high (response values 6 and 7), medium (response values 3, 4, 5) and low (response values 1 and 2). Table 6 shows comparatively the level of use of each strategy in Groups 1 and 2.

Table 6 Level of use of learning strategies - Financial Calculus and SIC II-2 students.

Learning strategies	Group 1			Group 2		
	Level of use			Level of use		
	Under	Medium	High	Under	Medium	High
Cognitive						
Review	6%	24%	71%	12%	31%	57%
Elaborate the information	0%	6%	94%	0%	12%	88%
Presenting the information	6%	18%	76%	17%	42%	42%
Resolving the practical again	6%	0%	94%	0%	25%	75%
Read the resolutions of the practical exercises	12%	35%	53%	9%	43%	48%
Metacognitive						
Identify concepts to review	0%	12%	88%	1%	16%	83%
Setting goals and moving forward to meet them	0%	12%	88%	5%	32%	62%
Regulation of context resources						
Study in a group	41%	59%	0%	34%	43%	23%
Ask the teacher for help	6%	47%	47%	13%	42%	45%
Ask peers for help	6%	24%	71%	5%	19%	75%
Manage the study environment	0%	29%	71%	3%	22%	75%
Regulating the effort	0%	47%	53%	13%	45%	42%
Time management and planning	0%	18%	82%	3%	25%	73%

Note: Prepared by the authors with the research data

Among the results presented in Table 6, it is noteworthy that Group 1 students use most of the cognitive and metacognitive strategies at high levels, which exceed the levels of use of Group 2 students. As can be observed, with the exception of the strategy referred to reading practical resolutions, in all the others, more than 70% of Group 1 students are at a high level of use. Such results are to be expected and provide empirical evidence to the relationship that other studies have found between the use of strategies and academic performance. On the other hand, with regard to resource regulation strategies -those aimed at adjusting contextual factors, persisting in tasks and being available to work with others- some particularities were detected. In relation to the strategy of *studying in groups*, as shown in Table 6, none of the groups reported a high use of this strategy. Moreover, among the students in Group 1, none reported using it at a high level, while among those in Group 2, only 23% reported doing so.

With respect to the strategy of *asking for help*, either from teachers or peers, there is a greater inclination among students to ask for help from peers rather than from the teacher. In fact, 71% of the students in Group 1 said that they asked their peers for help, while only 47% said that they regularly consulted the teacher. A similar result was found among Group 2 students: 75% frequently used the strategy of asking for help from peers, while a smaller percentage (45%) was inclined to consult the teacher.

With respect to the strategy related to *regulating effort*, a greater difficulty in persisting is observed among the students in Group 2. Indeed, some students in this group indicate that their level of use of the effort regulation strategy is low (13%) while most of them make a medium use of it (45%). On the other hand, Group 1 students use this strategy to a greater extent, at high and medium levels (53% and 47%, respectively).

Finally, regarding the strategies of *planning time and managing the study environment*, they were mostly presented at a high level in both Groups 1 and 2. In fact, in both groups the percentages of those who use such strategies at a high level exceed 70% of the students surveyed.

DISCUSSION AND CONCLUSIONS

This study has addressed the problem of learning -in the context of the COVID-19 health emergency- of students of two subjects of the FCE of the UNRC, corresponding to two central thematic areas for the specific professional training in Economic Sciences: accounting and finance. Specifically, the focus was on the learning strategies used by students in the context of virtuality forced by the suspension of face-to-face attendance.

To address the question, a non-experimental, empirical investigation was conducted with the objective of advancing our knowledge of the learning strategies employed by students in the unique contexts defined by the pandemic.

The main findings reveal that, in general terms, students with better academic performance use cognitive and metacognitive strategies at high levels, which exceed the levels of use made by groups of students whose academic performance is less outstanding. These results are consistent with the findings of previous studies and are in line with expectations, insofar as it has been repeatedly proven that the use of strategies is associated with better academic achievement (Lavado-Rojas et al., 2018; Leiva, 2021; Lugo et al., 2016; Norzagaray-Benítez et al., 2021; Reyes et al., 2021; Trias et al., 2021; Vásquez-Córdova, 2021)..

On the other hand, the results obtained with respect to the strategies for regulating contextual resources, which seem to have been more affected by the context of the health emergency, are somewhat striking. In particular, the fact of studying in groups and the possibility of fluid communication with the teacher to request help were strategies that, judging by the findings of this study, were difficult for students to implement in the virtual environment.

As for the low tendency to study in groups, it is probably linked to the impossibility of face-to-face meetings during 2020. Indeed, when students could usually meet at home, in the library or wherever to study in a group, during the health emergency, and even more so in the first semester of 2020, this could not be done due to the confinement measures in force. In relation to the issue, Maggio (2021) points out that, in 2020, a year in which we lived in solitude, the pedagogical proposals were mostly designed to be carried out individually, which may explain the scarce use, at a general level, of the strategy of studying in groups.

In relation to the low tendency to ask the teacher for help, it seems likely that the screens and virtual-only communication channels between teachers and students in the virtual world have acted as barriers that are difficult to cross in order to communicate effectively with teachers. In fact, such findings are in contrast to those reported in other studies conducted prior to the pandemic, which report greater use of the strategy of asking for help from the teacher rather than from peers (Chiecher, 2009; Moreno et al., 2020)..

On the other hand, the results found regarding the use of strategies related to managing the study environment and planning time are striking because of their generalized use among students in general and because of their differences with respect to the findings of previous studies. Thus, while this research reported a frequent use of such strategies for most students regardless of their performance, previous studies reported differences in the use of such strategies in favor of students with better results (Chiecher et al., 2014; Umerenkova & Flores, 2017). Probably, given the novel context of learning during the health emergency, in which time and space variables changed radically, more students became aware of the need to manage these aspects, seeking environments where family life did not intrude and seeking to manage time more effectively. Indeed, time and space were the most affected variables in educational contexts during 2020. We had a time organized by the places we went to and by the activities that occurred there and a space clearly defined by the buildings of the educational institutions (Maggio, 2021).

With the confinement and closure of the buildings, academic time overlapped with other domestic times and the space became every home. The time to attend to learning became perhaps more flexible, for example, through the possibility of accessing recorded classes and watching them at any time. Learning environments diversified significantly, becoming as diverse as each home. However, learning virtually, with more flexible and diverse times and spaces, demands greater self-regulation of these aspects, which seems to be reflected in the results presented.

Implications of the findings for the design of learning contexts in the post-pandemic stage.

As a whole, the findings of this research provide important elements for the definition of actions that, from a teaching perspective, could promote better learning outcomes in Economics science careers. Specifically, the evidence obtained reveals at least two considerations to be addressed in the design of teaching practices. First, to design hybrid proposals that allow taking advantage of the benefits of virtuality. Second, to encourage the use of different learning strategies, such as time management, study environment and social interaction.

In line with the above, there are at least two reasons why it would be advisable to maintain in force didactic proposals in which face-to-face and virtuality are harmoniously combined.

The first reason is linked to the fact that, as the results of this study show, virtuality and the pronounced changes it required in the management of time and learning environments resulted in a high use of this strategy among students in general. In view of these results, the importance of combining, in the didactic proposals, face-to-face and virtual instances, which seem to promote the regulation of learning times and environments, stands out.

The second reason is related to those results that show difficulties of adaptation of students to communicate with their teachers and peers in virtual contexts. In fact, the predisposition to communicate with the teacher and ask for help was not generalized among the students, while the fact of studying in a group, with peers, was an infrequent event. Similarly, these same aspects of less communication with peers and classmates were experienced by students as negative aspects of virtuality. In this line, combining face-to-face learning with virtual contexts in which teacher-student and student-student interaction is promoted would probably contribute to improving students' digital competence in the communicative dimension. Virtual consultation channels, such as e-mail or a synchronous virtual communication space, alternating with traditional face-to-face spaces, would favor greater communication skills in digital environments. Likewise, the proposal of group activities, in virtual modality, technologically mediated, would also be advisable to favor the development of this competence.

In summary, hybrid, multimodal proposals that combine face-to-face and virtuality, and that capitalize on the learning about technologies and their educational uses achieved by teachers during the pandemic, will undoubtedly contribute to what Elisondo (2015) calls *increasing* education, generating more possibilities for social interactions, favoring greater regulation of time and study environment and promoting more and new learning in the post-pandemic stage.

Study limitations and future agenda

Although the findings of the study constitute a valuable input for the design of learning contexts involving students of Economic Sciences, its theoretical and methodological limitations are also recognized. Regarding the former, it should be noted that the study is based on one of the various existing taxonomies and classifications of strategies. Methodologically, the type of survey administered is based on subjective perceptions of the participants and, in this sense, the responses may tend to adjust to social desirability criteria. Therefore, in the future, it would be appropriate to continue this type of study by including interviews and observations of students' strategic actions in practice. As for the sample, the response rate in the groups considered is uneven. On the other hand, the group of respondents is made up of students who are in their third year of Economic Sciences careers. In the future, it would be advisable to advance in comparative studies that consider the strategies used in the first years, as well as in the last years, when students have a greater accumulation of experience. Finally, it would be appropriate to replicate the data collection in the future in the same curricular areas taken for this study, in order to analyze similarities and differences in the results after returning to full face-to-face attendance in 2022.

REFERENCES

Bossolasco, M. L., Chiecher, A. C., & dos Santos, D. A. (2019). Diseño y validación de un instrumento para el análisis de trayectorias académicas en el primer año universitario. *Educación Superior*, *18*(27), 11–38.

Chiecher, A. (2009). Aprender en contextos presenciales y virtuales. Motivación, uso de estrategias y percepción del contexto por parte de los estudiantes. En A. Chiecher, D. Donolo, M. Rinaudo, R. Cabello, & C. Asaad (Eds.), *Enseñar y aprender. Motivación, estrategias y percepción del contexto en entornos presenciales y virtuales* (pp. 30–132). EFUNARC.

Chiecher, A., Paoloni, P., & Ficco, C. (2014). Ingreso a la Universidad en modalidad a distancia. El papel de aspectos motivacionales y cognitivos en la configuración de logros académicos. *Revista de Educación a Distancia*, *43*, 1–25. https://revistas.um.es/red/article/view/236741

Daura, F. (2015). Aprendizaje autorregulado y rendimiento académico en estudiantes del ciclo clínico de la carrera de Medicina. *Revista Electrónica de Investigación Educativa*, *17*(3), 28–45.

Elisondo, R. C. (2015). La creatividad como perspectiva educativa. Cinco ideas para pensar los contextos creativos de enseñanza y aprendizaje. *Actualidades Investigativas En Educación*, *15*(3), 1–23. https://doi.org/10.15517/aie.v15i3.20904

Ficco, C., Bersía, P., García, G., & Martellotto, R. (2022). Factores personales que condicionan el rendimiento académico en las asignaturas Cálculo Financiero y Sistemas de Información Contable II de la FCE de la UNRC. En I. Capaldi & S. Mussolini (Eds.), *XXVIII Jornadas de Intercambio de Conocimientos Científicos y Técnicos de la Facultad de Ciencias Económicas de la UNRC* (pp. 565–595). UniRío Editora.

Ficco, C., Chiecher, A., & Bersía, P. (2021). Estudiantes de Cálculo Financiero con trayectorias de logro. ¿Qué estrategias utilizan para "aprender" y con qué asocian dicho concepto? En J. Clerici, J. M. Gallarado, G. García, & C. Ficco (Eds.), *Sextas Jornadas Institucionales sobre Investigaciones y Experiencias Educativas en carreras de Ciencias Económicas. Articulación docencia e investigación: evaluación y perspectivas* (pp. 111–117). UniRío Editora.

García-Ripa, M. I., Sánchez-García, M. F., & Risquez, A. (2016). Estrategias de aprendizaje y autorregulación motivacional: identificación de perfiles para la orientación de estudiantes universitarios de nuevo ingreso. *Revista Iberoamericana de Diagnóstico y Evaluación Psicológica*, *41*(1), 39–57.

Gargallo-López, B. (2006). Estrategias de aprendizaje, rendimiento y otras variables relevantes en estudiantes universitarios. *Revista de Psicología General y Aplicada*, *59*(1–2), 109–130.

Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020, marzo 27). *The Difference Between Emergency Remote Teaching and Online Learning*. EDUCAUSE Review. https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning

Lavado-Rojas, B., Zárate-Aliaga, E., & Pomahuacre-Gómez, W. (2018). Estrategias de aprendizaje y rendimiento académico en estudiantes de lenguas extranjeras. *Investigación y Postgrado*, *33*(2), 229–248.

Leiva, H. (2021). *Estrategias de aprendizaje y rendimiento académico de los estudiantes de la asignatura de ética y deontología del II ciclo de la Facultad de Derecho y Ciencias Políticas de la Universidad Peruana de Ciencias e Informática* [Tesis de Maestría, Universidad Peruana de Ciencias e Informática]. http://repositorio.upci.edu.pe/handle/upci/506

Lugo, C. S. J., Hernández, G. R., Ponce de León, M. del C. E., & Montijo, E. L. (2016). Relación de los estilos y estrategias de aprendizaje con el rendimiento académico en estudiantes universitarios. *Revista de Estilos de Aprendizaje*, *9*(17), 268–288. https://doi.org/10.55777/rea.v9i17.1054

Maggio, M. (2021). *Educación en pandemia*. Paidós.

Moreno, J. E., Claudia Chiecher, A., & Paoloni, P. V. (2020). Trayectorias de ingresantes universitarios y estrategias de aprendizaje: sus implicancias en el rendimiento académico. *Revista Educación*, 244–263. https://doi.org/10.15517/revedu.v44i2.40055

Norzagaray-Benítez, C. C., Sevillano-García, M. L., & Valenzuela, B. A. (2021). Estrategias de aprendizaje y rendimiento académico: La perspectiva del estudiante de psicología. *Riaices*, *3*(1), 59–68. https://doi.org/10.17811/ria.3.1.2021.59-68

Pintrich, P., & García, T. (1993). Intraindividual differences in students' motivation and selfregulated learning. *German Journal of Educational Psichology*, *7*(3), 99–107.

Pintrich, P., Smith, D., García, T., & McKeachie, W. (1991). *A Manual for the Use of the Motivated Strategies for Learning Questionnaire (MSLQ)*. National Center for Research to Improve Postsecondary Teaching and Learning.

Reyes, B., Georgieva, S., Martínez-Gregorio, S., de los Santos, S., Galiana, L., & Tomás, J. M. (2021). Evaluación de las estrategias de aprendizaje con las escalas ACRA y ACRA-Breve: Modelos competitivos, invarianza de medida, y predicción del rendimiento académico en estudiantes de secundaria de la República Dominicana. *Revista de Psicodidáctica*, *26*(1), 1–9. https://doi.org/10.1016/j.psicod.2020.07.001

Rinaudo, M. (2006). *Estudios sobre la lectura. Aciertos e infortunios en la investigación de las últimas décadas*. Asociación Internacional de Lectura.

Rinaudo, M. C. Y Donolo, D. (2000). Casandra y la educación. La universidad como contexto de aprendizaje. En Guerci de Siufi, B. (comp.). *Pensando la Universidad*. San Salvador de Jujuy: Universidad Nacional de Jujuy.

Terigi, F. (2014). Trayectorias escolares e inclusión educativa: del enfoque individual al desafío para las políticas educativas. En Marchesi A., Blanco R., Hernández L., (Coords.) *Avances y desafíos de la educación inclusiva en Iberoamérica*. Madrid: Organización de los estados Iberoamericanos.

Trias, D., Huertas, J. A., Mels, C., Castillejo, I., & Ronqui, V. (2021). Self-regulated learning, academic achievement and socioeconomic context at the end of primary school. *Revista Interamericana de Psicología/Interamerican Journal of Psychology*, *55*(2), e1509. https://doi.org/10.30849/ripijp.v55i2.1509

Umerenkova, A. G., & Flores, J. G. (2017). Gestión del tiempo en alumnado universitario con diferentes niveles de rendimiento académico. *Educação e Pesquisa*, *44*, 1–16. https://doi.org/10.1590/s1678-4634201708157900

Vásquez-Córdova, A. S. (2021). Estrategias de aprendizaje de estudiantes universitarios como predictores de su rendimiento académico. *Revista Complutense de Educación*, *32*(2), 159–170. https://doi.org/10.5209/rced.68203

Vera-Sagredo, A., Poblete-Correa, S., & Díaz-Larenas, C. (2019). Percepción de estrategias y estilos de aprendizaje en estudiantes universitarios de primer año. *Revista Cubana de Educación Superior*, *38*(1).

Weinstein, C., Husman, J. y Dierking, D. (2000). Self-regulation interventions with a focus on learning strategies. En Boekarets, M.; Pintrich, P. y Zeidner, M. (coords.) Hanbook of self-regulation. San Diego: Academic Press.

Contribution of each author to the manuscript:

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A. theoretical and conceptual foundations and problematization:	50%	50%	-	-
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C. elaboration of figures and tables:	-	-	50%	50%
D. drafting, reviewing and writing of the text:	50%	50%	-	-
E. selection of bibliographical references	50%	50%	-	-
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