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Explanatory Factors of Student Perceptions of Online Learning Experience

Factores explicativos de la percepción estudiantil en la experiencia educativa en línea

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Abstract

This study aimed to identify factors that influence how students perceive their online learning experience. The sample consisted of 150 university students, with a mean age of 32.48 years. Three instruments were used, which have demonstrated adequate reliability and validity in university populations: The Self-Regulated Learning Scale, the Academic Stress Questionnaire, and the Questionnaire on Perception of Online Learning. Data were analyzed using descriptive statistics, bivariate correlations (Pearson's product-moment coefficient), and a multiple linear regression model. Results showed that perception of online learning was significantly correlated with age, academic stress, and self-regulation. The model suggested that age and academic self-regulation patterns were significant predictors of perceived online learning experience, while academic stress did not appear to influence this outcome. The study highlights the importance of understanding the factors that shape perceptions of online university education, in order to improve virtual learning by taking into account specific course characteristics and student attributes, such as self-efficacy and technological competencies.

Keywords: distance education, perception, learning processes

Resumen

El objetivo de este estudio fue identificar algunos factores que influyen en la manera en que los estudiantes perciben su experiencia de aprendizaje en línea. La muestra estuvo compuesta por 150 estudiantes universitarios, con una edad media de 32.48 años. Se emplearon tres instrumentos, los cuales han demostrado adecuada fiabilidad y validez en poblaciones universitarias: la Escala de aprendizaje autorregulado, el Cuestionario de estrés académico y el Cuestionario sobre la percepción del aprendizaje en línea. Los datos se analizaron mediante estadísticos descriptivos, correlaciones bivariadas (coeficiente producto-momento de Pearson) y un modelo de regresión lineal múltiple. Los resultados muestran que la percepción del aprendizaje en línea está significativamente correlacionada

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con la edad, el estrés académico y la autorregulación. El modelo sugiere que la edad y los patrones de autorregulación académica son predictores significativos de la experiencia percibida de aprendizaje en línea, mientras que el estrés académico no parece influir en esta variable. El estudio enfatiza la importancia de comprender los determinantes de las percepciones de la educación universitaria en línea, para mejorar el aprendizaje virtual teniendo en cuenta características específicas de los cursos, así como atributos de los estudiantes, como la autoeficacia y las competencias tecnológicas.

***Palabras clave*:** educación a distancia, percepción, procesos de aprendizaje

I. Introduction

The global health emergency caused by the SARS-CoV-2 virus prompted the introduction of containment measures such as lockdowns, accelerating the use of digital technologies in all areas of society. These technologies were rapidly adopted across all levels of schooling to support educational communities, even though for some this meant an abrupt change that was quickly improvised due to a lack of time to properly adapt and prepare in the rush of the moment (Torres & Monge, 2023).

Before the pandemic, substantial progress had already been made in integrating technologies to support online education, including an increase in distance and blended learning options; the creation of massive open online courses (MOOCs) open to students of all time zones, nationalities, and languages; and the use of increasingly accessible, flexible, and personalized learning management systems (LMS).

Every advance in online education should aim to overcome geographical and time zone barriers while promoting inclusion, without neglecting the quality of teaching-learning processes. As Meza et al. (2023) highlight, such progress requires clear criteria to ensure educational relevance. However, this is no easy task because, as noted by Suárez-Guerrero et al. (2023), certain myths or exaggerations, although widely accepted and disseminated, convey falsehoods about the benefits of online education and the integration of technologies into teaching and learning.

Even though information and communication technology (ICT) incorporates a wide range of innovative elements to deliver education and meaningful learning, providing tools that contribute to the management of the teaching-learning process, new conceptions of these technologies are required as their use grows. These approaches are analyzed through the convergence of various theories about the nature and context of learning, and they often highlight the importance of psychological factors in the teaching process to promote autonomous learning in students, as proposed by Villegas et al. (2019).

Psychological factors that support guidance and training in the use of technology warrant particular attention. In some cases, insecurity, stress (mainly due to a lack of knowledge), or a lack of planning, organization, motivation, or interest due to past negative experiences, become obstacles (Fernández-Batanero et al., 2021).

Part of the educational challenge lies in narrowing the gap between rapid technological change and the lack of preparedness of many teachers and students to use technology effectively. For this reason, although indispensable in today's world, technology alone is insufficient to meet educational needs. An adequate combination of technological resources with clear quality criteria is important to ensure that the online experience can be truly enjoyed.

To explore the quality of online education, some authors have opted to measure students' perceptions of their online experience, since, as "customers," their perceptions and opinions become key for continuity, evaluation, and the implementation of necessary improvements in a non-classroom educational process mediated by technologies. Olivera (2020) argues that the quality of teaching can be assessed through students' satisfaction based on their experiences as users, as they can rate the service they receive and evaluate their own performance and learning.

Student perception has been examined in various studies that have identified the need to investigate both student and course-related factors. It has also been approached from the perspective of students' satisfaction with their online experience, defined by Zambrano (2016) as the degree of consistency between students' prior expectations and the results

obtained through online learning (p. 16). Zambrano found that the instructor's attitude towards online learning and course flexibility are the strongest predictors of student satisfaction.

As for other factors that may mediate the relationship between students' expectations and perceived outcomes, it has been found that students feel satisfied if they perceive a contribution to their learning processes in terms of personalization, flexibility, interaction, mobility, satisfaction, and motivation (Humanante-Ramos et al., 2019). Another important factor is students' use and acceptance of technology (Sholikah & Sutirman, 2020). They also value effective support from teachers and an appropriate teaching methodology, together with accessible and reliable virtual infrastructure (Olivera, 2020).

In addition, Díaz-Camacho et al. (2021), after reviewing 50 publications on satisfaction with online education, find that a negative perception is most commonly associated with an inability to participate, a feeling of low self-efficacy and low motivation to use digital technologies, unmet performance expectations, a lack of timely communication with the teacher, poor feedback from the teacher or a failure to send material on time, non-user-friendly platforms, and limited experience in online courses.

A literature review by Asalde and Cárdenas (2022) also highlights the importance of teachers' skills, online support, and feedback in shaping student satisfaction online. Similarly, in their studies on students' perception of online classes, Castellano et al. (2021) and Uribe et al. (2023) confirm that teachers who adopt a flexible and empathetic approach to students contribute to a positive or non-negative opinion of the experience.

These findings are all consistent with the conclusions of Manrique and Sánchez (2019), who find that students perceive their learning experience negatively when there is an excessive workload, non-user-friendly platforms, little feedback from teachers, poor quality content, and a lack of practical application.

Segovia-García and Said-Hung (2021) caution against comparing different types of learning experiences due to differences in internal and external factors that influence student satisfaction across courses. These include the presence of robust local technological infrastructure (adequate internet speed and latency), and the duration of the learning process (short courses, full online degrees, or long-term courses). For example, a study by Canova-Barrios et al. (2023) finds more positive perceptions of online education among students with children, older students, those with greater time availability to connect to the internet, and those who reported no connectivity difficulties.

As can be seen, student perceptions of online educational experience are shaped by multiple factors, including convenience, effectiveness, competence, motivation, satisfaction, communication, and preferences. In addition, students' ability to use self-regulation strategies to cope with academic demands in online education may influence their satisfaction.

1.1. Factors influencing the perception of online experience

Requena (2020) notes that online environments demand greater self-regulation by students, before, during, and after the learning process, and students must control aspects likely to affect their self-regulation for effective learning. Garzón and Organista (2021) recognize that students learning online need more metacognitive tools to define their learning goals, manage their time, make decisions, select strategies based on academic demands, and plan, monitor, and make changes to their own process. All this requires a certain degree of student self-regulation.

Mora et al. (2020) affirm that online learning requires autonomous learning habits and strategies and conclude that there is a relationship between self-regulation processes (motivation, self-efficacy, self-concept) and good performance. Similarly, according to Machuca et al. (2021), the effectiveness of online learning is positively correlated with self-regulated learning, supporting the hypothesis that students need to develop good self-regulation habits to learn successfully online, and teachers need to observe the cognitive, metacognitive, affective, and behavioral processes of their students in order to provide the necessary corrective measures.

After comparing the self-regulation patterns of two groups participating in online courses (one group using MOOCs, and another group using technology but with teacher support), Makhno et al. (2022) identify a moderate positive relationship between students' success and their self-regulation. Similarly, a study by Almoslamani (2022) also underscores the benefits of applying self-regulation strategies, adding that a higher level of self-regulation fosters openness to and acceptance of online learning experiences. This is confirmed by Torres and Monge (2023) who note that students displayed more positive perceptions of participatory teaching and learning methodologies that stimulated active learning.

Similarly, Cobo-Rendón et al. (2022) confirm that satisfaction with online education is associated with self-regulated learning, finding that students who use self-regulated learning strategies (managing time, preparing the environment for learning, making themselves available for studying, and monitoring and evaluating the process) find it easier to participate in online learning experiences. However, despite the benefits of self-regulation, Castro et al. (2021) caution that not all students are able to self-regulate in virtual learning contexts, which translates into difficulties with autonomous learning.

Academic stress is also related to students' perceptions of the online learning experience and their self-regulation. According to Chávez et al. (2021), stress arises due to an imbalance between the demands placed on an individual and that individual's ability to cope with them, which causes a series of endocrine, immunological, emotional, and behavioral responses to a perceived threat or danger.

Chávez et al. (2021) also outline two ways in which stress can occur in an academic environment. The first involves difficult and distressing situations in which students feel that they are not in control, which may arise as a result of the number of subjects taken, the difficulty of course assignments, fairness in evaluation by teachers, and the inability to receive personalized attention in a large virtual course. The second form of stress drives the student to self-regulate and work independently to achieve positive results.

Likewise, García and González (2022) find that academic self-regulation strategies are related to coping strategies, while procrastination and delaying activities are associated with stress. They find that students who felt stressed by activities delayed their completion and delivery, accomplishing only activities they found enjoyable. Dávila et al. (2022) also confirmed that academic procrastination can contribute to academic stress.

Salinas et al. (2022) set out to describe students' perceptions of their role as learners in online education, and how this context influenced their emotions and feelings. They find that 50% of students surveyed reported feelings of frustration, sadness, anger, and stress due to the introduction of online learning during the pandemic. The researchers recognize that self-management, discipline, collaborative work, and self-learning allow students to cope with virtual learning successfully, and they highlight the importance of students' awareness of these capacities.

On the other hand, Moawad's (2020) study found that the higher levels of stress exhibited by some students were associated with the uncertainty of end-of-term online exams and evaluations. Research by Santana et al. (2022) concluded that 67.9% of participants reported

considerable stress levels, with abrupt changes to learning formats resulting in sleeping difficulties and mental health problems, mainly due to a rejection of change and fear of failure. Finally, Dávila et al. (2022) determine that higher levels of teachers' digital and pedagogical skills in online instruction are associated with lower levels of student academic stress. Therefore, stressful situations can be the result of different factors.

Santana et al. (2022) recognize that, in stressful situations, individuals resort to coping strategies as adaptive responses, and expect that greater use of coping strategies is associated with lower stress levels. The authors recognize that teachers play a fundamental role in generating stress triggers and promoting protective behaviors.

In a more direct study of students' stress and satisfaction with their online learning experience, conducted during the COVID-19 pandemic with students at an Italian university, Cofini et al. (2022) find that higher stress scores are related to lower satisfaction scores and note that having positive coping strategies could contribute to reducing stress. Additionally, they find satisfaction is not related to gender but does increase with age. By contrast, in findings by Ramírez-Gil et al. (2022), men showed lower levels of self-regulation, problematic social network use, and stress, compared to women.

Some relationships involving stress and perception of online classes are inconclusive and require further research. Therefore, the goal of this research is to identify key student factors that influence students' perception of their online learning experience. These include variables such as academic stress, age, and academic self-regulation patterns.

II. Method

2.1. Participants

This descriptive, correlational non-experimental research used a non-probability convenience sample of 150 university students, comprising 135 women and 15 men, with an average age of 32.8 years. All participants were enrolled in online university education programs offered by Spanish institutions and were able to reside in any region of the country due to the remote nature of their studies. They were contacted through institutional emails, with the highest voluntary response rate observed among women.

2.2. Instruments

Self-Regulated Learning Scale (SRLS). This is a self-report instrument that assesses patterns of self-regulated learning. It was designed and validated by Elvira-Valdés and Pujol (2015) and consists of 18 items grouped into four dimensions: self-efficacy, goal orientation, strategy use, and self-evaluation. Responses are given on a 5-point Likert scale ranging from strongly disagree to strongly agree. The total score ranges from 18 (low level of self-regulation) to 108 points (high level of self-regulation). To validate the scale, the authors employed a sample of 402 students, and content validity was established using a panel of five experts in psychology and education who evaluated the theoretical alignment of the items. Exploratory factor analysis showed adequate sampling (KMO = 0.856) and a factor structure aligned with the theoretical dimensions. Reliability was assessed using Cronbach's alpha, yielding a coefficient of $\alpha = .788$ for the overall instrument, and the following coefficients for each dimension: self-efficacy ($\alpha = .771$), strategy use ($\alpha = .733$), self-evaluation ($\alpha = .709$), and goal orientation ($\alpha = .675$). These values are considered appropriate for exploratory contexts (Nunnally & Bernstein, 1995). The overall scale score reflects the level of academic self-regulation, with higher scores indicating greater self-regulation.

Academic Stress Questionnaire. The questionnaire was developed by de Pablo et al. (2002) to assess the level of academic stress in university students using self-report. The questionnaire consists of 15 questions and students are asked to rate their level of stress on a 10-point scale, ranging from not at all stressful (0) to very stressful (10). During the instrument validation process, the authors established content validity through expert review by psychologists who verified the theoretical alignment of the items. An exploratory factor analysis supported the theoretical structure of the construct, explaining 62% of total variance. Reliability was verified using Cronbach's alpha, yielding α = 0.788 in a Spanish sample, which meets the psychometric criteria for applied studies (AERA et al., 2018). The overall score is computed as the sum of item responses. A higher overall score indicates a higher level of stress perceived by the student during the four weeks prior to completing the questionnaire.

Questionnaire on Perception of Online Learning. A questionnaire was also administered on students' perceptions of seven aspects of their online experience: convenience, effectiveness, competence, motivation, satisfaction, communication, and preference. This instrument is answered on a 5-point Likert scale, ranging from 1 (total disagreement) to 5 (total agreement), with a higher score indicating a better perception of the online experience. The items were evaluated by four education experts with experience in online education formats, and the exploratory factor analysis identified a 7-dimension structure explaining 68% of total variance, aligning with the proposed theoretical categories (AERA et al., 2018). Cronbach's alpha for the overall scale was α = .82. The overall score reflects students' general perception of the online learning experience, with higher scores indicating greater satisfaction.

2.3. Procedure

The instruments were administered through the Google Forms platform, which collected the data and ensured the confidentiality and anonymity of participants (Google LLC, 2024). The study was approved by the Ethics Committee of UDIMA and complied with applicable regulations. Likewise, all participants were informed about the objective of the study and their informed consent was obtained prior to completing the instruments. Participants were free to choose whether to participate, with no risk to their physical or psychological integrity.

2.4. Data analysis

The data collected in this study were analyzed using the statistical package SPSS (v.23). Firstly, descriptive analyses were conducted, which showed the fundamental characteristics of the study variables (age, academic stress, self-regulation patterns, and perception of education), as well as distribution behavior and data trends. Secondly, correlational analyses were carried out to examine the relationships between the factors considered and the students' perception of their educational experience. Finally, a linear regression model was used to examine and explain the influence of the research variables on students' perception of their online environment.

III. Results

Table 1 presents descriptive statistics for the variables, calculated based on summed scale scores for each construct (see the section on instruments). The mean age is 32.84 years, with a standard deviation of 7.502. The age distribution appears to be relatively normal, with positive skewness (.627) and negative kurtosis (-.595). As for academic self-regulation patterns, the mean is 74.89 with a standard deviation of 7.135. Distribution appears to be

slightly skewed to the left, as skewness is negative (-.203), although kurtosis is close to zero (-.179).

Table 1. Descriptive Statistics

Statistic	Age	Academic self-regulation	Academic stress	Perception of education
Minimum	22	55	51	16
Maximum	55	90	131	40
Average	32.84	74.89	94.4	28.91
Standard deviation	7.02	7.135	16.433	6.35
Skewness	.627	-.203	-.295	-.124
Kurtosis	-.595	-.179	-.269	-.842

Academic stress has a mean of 94.40, with a standard deviation of 16.433. Distribution appears to be quite left-skewed as skewness is negative (-.295), and kurtosis is close to zero (-.269). For perception of online education, distribution appears to be relatively normal; skewness is close to zero (-.124) and kurtosis is negative (-.842).

Table 2 shows the bivariate correlations between academic self-regulation, academic stress, perception of education, and age. The correlation between age and perceived online learning experience is positive and moderate (r = .289, p < .01), suggesting that as age increases, perceived online learning experience also tends to be more positive. The relationship between patterns of academic self-regulation and perception of online learning experience is positive and moderate (r = .375, p < .01), indicating that students who exhibit stronger academic self-regulation also tend to perceive their online learning experience more positively.

Table 2. Bivariate Correlations

Variables	1	2	3	4
1 Age	1			
2 Academic self-regulation	.048	1		
3 Academic stress	-.084	-.265**	1	
4 Perception of education	.289**	.375**	-.173*	1

Note: ** Correlation is significant at the .01 level
* Correlation is significant at the .05 level

The correlation between academic stress and perceived online learning experience is negative and low (r = -.173, p < .05), suggesting that there is no clear relationship between these two factors. Furthermore, the correlation between academic self-regulation patterns and academic stress is negative and moderate (r = -.265, p < .01), suggesting that students who score more highly on academic self-regulation tend to experience less academic stress.

Finally, age did not show a significant relationship with self-regulation patterns or academic stress, so there is no clear relationship between these factors.

3.1 Multiple linear regression

The statistical results and the overall fit of the multiple linear regression model are presented in Table 3.

Table 3. Model Summary

R	R^2	Std. Error	Change statistics					Durbin-Watson
			R2 Change	F Change	df1	df2	Sig. F Change	
.466	.218	5.674	.218	13.531	3	146	>.001	1.83

Note: Predictor variables: (Constant), academic stress, age, patterns of academic self-regulation. Dependent variable: Perception of online learning experience.

Table 4 shows the coefficients resulting from the model. The age variable has a positive and significant standardized coefficient (β_1 = .268, p < .001), suggesting that as age increases, the perception of online learning experience also tends to be more positive. Patterns of academic self-regulation also have a positive and significant standardized coefficient (β_2 = .346, p < .001), suggesting that students with stronger patterns of academic self-regulation tend to perceive their online learning more positively.

Table 4. Coefficients

Model	Unstandardized coefficients		β	t	p	95% confidence interval for B		Collinearity statistics	
	B	Std. error				Lower bound	Upper bound	Tolerance	VIF
(Constant)	.546	6.736		.081	.936	-12.767	13.859		
Age	.227	.062	.268	3.643	.000	.104	.350	.992	1.008
Self-regulation	.308	.068	.346	4.561	.000	.175	.442	.929	1.076
Stress	-.023	.029	-.059	-.778	.438	-.081	.035	.925	1.081

Note: Dependent variable: Perception of online learning experience.

On the other hand, academic stress does not have a significant standardized coefficient (β_3 = -.059, p > .05), suggesting that there is no clear relationship between this variable and perceived online learning experience.

IV. Discussion and conclusions

In relation to the study's aim of identifying key student factors that influence how students perceive online learning, the results suggest that most participants report a moderately positive perception of online education, consistent with the findings of Humanante-Ramos et al. (2019), Sholikah and Sutirman (2020), and Uribe et al. (2023). In addition, they exhibit a moderate level of academic self-regulation, with moderate variability in responses, which aligns with findings by Mora et al. (2020). Levels of academic stress were found to be moderate to low, contrasting with Cofini et al. (2022), where levels were moderate to high.

4.1 Bivariate correlations

The moderate positive correlation between age and perceived online learning experience is consistent with findings by Cofini et al. (2022) and Canova-Barrios et al. (2023), suggesting that as age increases, perceptions of online learning tend to be more positive. This may be associated with greater willingness by older participants to familiarize themselves with and take on the commitments of the online learning process.

Meanwhile, the moderate positive relationship between academic self-regulation and perceptions of online learning among students in this sample is consistent with correlational research by Mora et al. (2020), Machuca et al. (2021), and Makhno et al. (2022), who find that students with stronger academic self-regulation skills display an increased ability to adapt to virtual learning environments and make the most of the opportunities they offer.

Nevertheless, the low negative correlation between academic stress and students' perception of their online learning experience suggests that lower levels of student stress are associated with a more positive perception, consistent with findings by Cofini et al. (2022), in which higher stress scores were related to lower satisfaction scores. However, this cannot be established conclusively based on these results, as participants' academic stress may not be directly related to their online environment, but rather to other external or personal factors.

Finally, age did not exhibit a significant relationship with either self-regulation patterns or academic stress, suggesting no clear relationship between these factors.

4.2 Multiple linear regression

The model suggests that age and academic self-regulation are significant predictors of perceived online learning, while academic stress does not appear to be significantly associated with this outcome. It is worth remembering that students who perceive online learning positively value its convenience and the ability to communicate with teachers and receive timely feedback and evaluations (Humanante-Ramos et al., 2019; Sholikah & Sutirman, 2020; Olivera, 2020). Furthermore, according to various authors such as Mora et al. (2020), Machuca et al. (2021), and Makhno et al. (2022), these students tend to be motivated by the academic demands of online education and are often proficient users of technology. This means that students who are better able to manage their learning processes, including planning, monitoring, and evaluating their academic tasks, are more likely to adapt successfully to online learning environments and perceive them more positively.

These factors are associated with a maturation process as students become older and more experienced and develop self-regulation skills, taking ownership of their learning processes. However, a significant number of students still have a negative perception of their online experience, and their use of technologies and electronic devices remains more closely associated with leisure than with learning.

It is helpful to understand that when some students associate digital devices and technology with a hobby or distraction, they fail to think of them in connection with a new lifestyle that includes formal learning mediated by an institution. Consequently, despite possessing technological skills and abilities, they may be reluctant to use them in education, often resulting in a negative perception of online learning.

On the other hand, the relationship between online learning experience and stress requires further study. In line with findings by Dávila et al. (2022) and García and González (2022), stress may be associated with students' ability to use regulation strategies that help them to cope better with the demands of online learning. In turn, this may lead them to feel more or less satisfied with their learning outcomes.

Other possible relationships associated with stress that have not been addressed in this study include technical difficulties that often hinder participation in online activities. Additionally, the lack of interaction with peers can cause students to feel isolated, affecting their emotional stability. Lastly, an excessive workload can overwhelm students as they struggle to manage academic demands.

These findings have implications for guiding the planning of future online experiences as they confirm that not all students perceive online learning in the same way; it is therefore necessary to consider students' individual characteristics. In addition, it is very important to promote the development of self-regulation skills to help manage academic demands online. Above all, younger students may be the least equipped to cope with online education and thus may require the most training, support, and monitoring to achieve success.

However, this study has limitations. First, it uses a small, non-probability sample, which limits the generalizability of the results. In addition, higher participation by women than men introduces an uncontrolled gender bias. Furthermore, the cross-sectional design is not able to establish causal relationships, and the use of self-report instruments to measure variables such as academic stress could be influenced by social desirability.

Likewise, it should be noted that currently many teachers exhibit resistance to technology and refuse to use it as a means of teaching and learning. Some teachers recognize the benefits of technology but lack the necessary knowledge to implement digital tools in their work. It is crucial that teachers develop skills to enhance their teaching practice and adapt to the demands of an increasingly digitized educational environment. At the same time, students should be given greater support to acquire the skills needed to navigate a digital world.

4.3. Future research

Although the results are comparable with those of other studies, much research is still needed on this topic. It is important to bear in mind that other factors not considered in this model may be influencing the perception of online learning experiences. Therefore, further studies are needed to better understand the relationships between the variables explored here and to identify other factors that may influence the perception of online learning.

Future research should consider the course characteristics or instructional design (duration, demands, required activities), the online learning platform (usability, design), technological development (Internet access and speed), device characteristics (access to PCs, laptops, tablets, mobile phones). Likewise, models could incorporate other variables associated with students' internal processes, including their technological self-efficacy, academic motivation, digital competencies, experience of online education, academic workload, and academic performance.

In addition, studies should explore the possible influence of the teacher's competence or ability to manage online learning, in terms of technology proficiency but also the appropriate selection of resources and tools based on learning objectives. Furthermore, it is important to assess how this promotes meaningful learning and experiences that contribute to metacognition and the development of critical and creative thinking, problem-solving, and decision-making skills.

Finally, to measure academic stress, future research should employ an instrument specifically adapted to assess stress in relation to online learning. It would also be useful to conduct mixed methods research combining multivariate analysis techniques and in-depth interviews to gain more nuanced insights into perceptions of online learning.

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Contribution of each author

María Antonieta Elvira-Valdes: conceptualization (50%), methodology (50%), data curation, formal analysis.
Emilse Durán-Aponte: conceptualization (50%), investigation (50%), methodology (50%), writing - review & editing (50%).
Diana Arias-Gómez: investigation (50%), visualization (50%), writing – review & editing (50%).
Romy Ure-de-Oliveira: visualization (50%), writing – original draft.

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