




ORIGINAL

Emotional intelligence and academic performance: a review of their relationship in hybrid learning contexts

Inteligencia emocional y rendimiento académico: una revisión de su relación en contextos de enseñanza híbrida

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ABSTRACT

Emotional intelligence (EI) has become a determining factor in understanding academic performance in higher education, as it influences self-regulation, motivation, and stress management. In Ecuador, the growth of hybrid learning—which combines face-to-face and online activities—raises the need to analyse how EI impacts students' adaptation and performance in this context. The aim of this study was to explore the relationship between EI and academic performance in Ecuadorian higher education institutions implementing hybrid models. A sequential mixed-methods approach was employed. In the quantitative phase, 280 students from three Ecuadorian universities participated. EI was assessed using the WLEIS inventory, while performance was measured through grade point averages. Descriptive analyses, Pearson's correlation, and linear regression were applied. In the qualitative phase, 10 semi-structured interviews were conducted with students and lecturers selected through purposive sampling. Thematic analysis allowed for a deeper understanding of perceptions and experiences related to EI in hybrid learning. The quantitative phase revealed a positive and significant correlation between EI and academic performance ($r = 0,43$; $p < 0,01$), highlighting the dimensions of self-regulation and use of emotions as predictors. Qualitatively, participants indicated that EI facilitates time management, technological adaptation, and motivation in hybrid environments. The findings confirm that EI constitutes a key resource for enhancing performance among Ecuadorian university students in hybrid education. It is suggested that institutions incorporate emotional training programmes and teaching support strategies to strengthen these competences.

Keywords: Emotional Intelligence; Academic Performance; Mixed-Methods; Hybrid Education; Ecuador.

RESUMEN

La inteligencia emocional (IE) se ha convertido en un factor determinante para comprender el rendimiento académico en la educación superior, al incidir en la autorregulación, la motivación y el manejo del estrés. En Ecuador, el crecimiento de la enseñanza híbrida—que combina actividades presenciales y virtuales—plantea la necesidad de analizar cómo la IE influye en la adaptación y desempeño de los estudiantes universitarios en este contexto. El objetivo de este estudio fue explorar la relación entre IE y rendimiento académico en instituciones de educación superior ecuatorianas que aplican modelos híbridos. Se empleó un enfoque mixto secuencial. En la fase cuantitativa, participaron 280 estudiantes de tres universidades ecuatorianas. La IE se evaluó con el inventario WLEIS y el rendimiento mediante el promedio de calificaciones. Se aplicaron análisis

descriptivos, correlación de Pearson y regresión lineal. En la fase cualitativa, se realizaron 10 entrevistas semiestructuradas a estudiantes y docentes seleccionados por muestreo intencional, cuyo análisis temático permitió profundizar en percepciones y experiencias vinculadas a la IE en la modalidad híbrida. La fase cuantitativa evidenció una correlación positiva y significativa entre IE y rendimiento académico ($r = 0,43$; $p < 0,01$), destacando las dimensiones de autorregulación y uso de emociones como predictores. En el plano cualitativo, los participantes señalaron que la IE facilita la gestión del tiempo, la adaptación tecnológica y la motivación en entornos híbridos. Los hallazgos confirman que la IE constituye un recurso clave para potenciar el rendimiento en estudiantes universitarios ecuatorianos en educación híbrida. Se sugiere a las instituciones incorporar programas de formación emocional y estrategias de acompañamiento docente que fortalezcan estas competencias.

Palabras clave: Inteligencia Emocional; Rendimiento Académico; Metodología Mixta; Educación Híbrida; Ecuador.

INTRODUCTION

Emotional intelligence (EI) has established itself as an essential factor in understanding academic performance in higher education, as it influences self-regulation, motivation, and stress management in complex learning scenarios. In Ecuador, the advancement of hybrid teaching, which combines face-to-face and virtual activities, raises the need to analyze how EI facilitates student adaptation and performance in contexts where technological, cognitive, and emotional demands converge.^(1,2)

Various studies have shown that there is a positive association between EI and academic performance in university students. A meta-analysis of 19 861 students showed a significant effect of EI on academic performance, which was greater when EI was assessed as a skill.^(3,4)

In hybrid teaching environments, EI has also been shown to be a key predictor of student adaptation. A study during the COVID-19 pandemic in China found that self-awareness and self-motivation positively influence study habits, with cognitive engagement as a mediator.⁽⁵⁾

Meanwhile, Bereded et al.⁽⁶⁾, in a study of 1 351 university students in Ethiopia, found a positive relationship between EI and academic engagement ($r = 0,350$) and performance ($r = 0,407$), confirming the mediating role of academic engagement.

In Arab contexts, a study with Kuwaiti students shows that emotional self-assessment and the use of emotions are relevant predictors of academic success.⁽⁷⁾

The conceptualization of EI originates with Salovey and Mayer, who define it as the ability to perceive, understand, regulate, and use emotions to guide thought and action, which is key to adaptation.^(8,9)

Based on Bar-On's model, EI is understood as a set of emotional and social competencies that promote effective functioning in life and studies.⁽¹⁰⁾

Positive psychology provides a complementary view, emphasizing that emotional competencies strengthen resilience, stress management, and motivation, which are fundamental to success in hybrid environments.⁽¹¹⁾

The literature on hybrid learning emphasizes that cognitive and emotional engagement is key to satisfactory academic outcomes, directly linking EI to the effectiveness of these models.⁽¹²⁾

A mixed approach was adopted: the quantitative phase used the WLEIS inventory to measure EI and grade point average as an academic indicator, with descriptive analyses, correlations, and regression; the qualitative phase included semi-structured interviews and thematic analysis to delve deeper into the perceptions of students and teachers.

This work provides contextualized evidence in Ecuador, where hybrid teaching has accelerated, and guides universities to strengthen emotional programs and teacher support, improving adaptation and academic success.⁽¹⁴⁾

The main objective is to examine the relationship between EI and academic performance in Ecuadorian higher education with hybrid models, drawing on previous studies that highlight the positive influence of EI on habits, commitment, and academic achievement.^(3,6,7,15)

METHOD

This study adheres to the positivist paradigm, which assumes the existence of an observable and measurable reality and promotes the use of systematic procedures to identify regularities and relationships between variables in education. In this logic, the quantitative phase prioritizes objectivity, statistical validity, and replicability of findings, aspects widely defended in recent methodological literature.⁽¹⁶⁾

In line with the above, a mixed approach is adopted that integrates quantitative and qualitative strategies in order to achieve a more holistic understanding of the phenomenon. The combination of numerical and narrative data allows us to capitalize on the strengths of each method, improve triangulation, and produce

better-founded inferences in complex educational studies.⁽¹⁷⁾

The objective of the study is applied: it seeks to generate useful evidence for the design of institutional interventions that strengthen emotional intelligence and, with it, academic performance in hybrid modalities. Applied research is aimed at solving practical problems in real contexts and improving educational decision-making based on empirical findings.⁽¹⁸⁾

In terms of scope, the research is descriptive—characterizing levels of EI and academic performance in the population of interest—and simultaneously exploratory, investigating emerging relationships in a little-studied context such as the hybrid model in Ecuador. The contemporary classification of non-experimental designs in behavioral sciences places this type of study within observational approaches aimed at describing and generating hypotheses.⁽¹⁹⁾

In terms of methods, fieldwork and documentary research were combined. Fieldwork included administering the WLEIS inventory, obtaining academic averages, and conducting semi-structured interviews; documentary research comprised the systematic analysis of relevant scientific literature and institutional regulations. Triangulation between empirical and documentary sources strengthens the credibility and validity of findings in educational and social studies.^(20,21)

The design is *ex post facto*, since variables that have already occurred are analyzed without manipulation by the researcher; and synchronous cross-sectional (sectional), since information is collected at a single point in time to describe the situation as it stands. These designs are appropriate when the aim is to estimate associations between variables and generate useful evidence for decision-making without experimental intervention.⁽²²⁾

Finally, analytical instruments and procedures were selected for their relevance and evidence of validity in the literature. The WLEIS, widely used in higher education and with psychometric support in different contexts, was used to measure EI. For the qualitative analysis, thematic analysis was applied with systematic coding and theme construction procedures in order to capture patterns of meaning relevant to understanding the phenomenon.^(23,24)

Techniques and instruments

For the quantitative phase, the main instrument used was the Wong and Law Emotional Intelligence Scale (WLEIS), which has been widely validated in the university setting and consists of 16 items distributed across four dimensions: self-assessment of emotions, assessment of emotions in others, use of emotions, and regulation of emotions. This inventory has shown adequate psychometric properties in various international studies.⁽²⁵⁾ Academic performance was measured using the grade point average provided by the participating institutions.

In the qualitative phase, a semi-structured interview was used, designed to explore the perceptions and experiences of students and teachers regarding the role of EI in hybrid learning. This technique allows for a balance between the comparability of responses and the flexibility to probe deeper, favoring the richness of discourse.⁽²⁶⁾

Data collection procedure

Data collection was carried out in two stages. First, the WLEIS questionnaire was administered to the selected students, accompanied by an informed consent form in compliance with the ethical considerations of educational research. Subsequently, the academic average was obtained from institutional records. In the second stage, semi-structured interviews were conducted synchronously, either in person or online, depending on the availability of the participants. This procedure ensured triangulation between quantitative and qualitative data, strengthening the consistency of the findings.⁽²⁷⁾

Population and sample

The population consisted of university students enrolled in degree programs at higher education institutions in Ecuador that implement hybrid teaching models. Intentional non-probabilistic sampling was used, selecting those students with proven experience in the hybrid modality. The final sample included 280 students distributed across three universities, which is considered adequate for correlational studies with multivariate analyses.⁽²⁸⁾ For the qualitative phase, 10 participants (8 students and 2 teachers) were interviewed, in accordance with the criteria of theoretical saturation.

Data analysis and software used

In the quantitative phase, the data were processed using IBM SPSS Statistics v.26 software, applying descriptive statistics, Pearson's correlation, and multiple linear regression, which allowed us to determine the magnitude and direction of the relationship between emotional intelligence and academic performance. As Field points out, the application of these analyses in the social sciences ensures robustness in the interpretation of linear relationships.^(29,30)

The descriptive analysis showed that the participating students had medium-high levels of emotional intelligence ($M = 3,78$; $SD = 0,64$ on a Likert scale from 1 to 5). In terms of academic performance, the overall

grade point average was 8,34/10 (SD = 0,72), indicating satisfactory academic performance in the majority of the sample. These findings are consistent with previous studies that have reported positive associations between adequate levels of EI and academic achievement in higher education.⁽³¹⁾

Subsequently, Pearson's correlation analysis revealed a positive and significant relationship between emotional intelligence and academic performance ($r = 0,43$; $p < 0,01$), indicating that higher levels of EI correlate with better academic performance. Among the dimensions of EI, self-regulation ($r = 0,39$; $p < 0,01$) and emotion use ($r = 0,36$; $p < 0,01$) were the ones that showed the greatest explanatory power in predicting performance. These results are consistent with research that has highlighted the importance of self-regulation and self-motivation as key predictors of academic success.⁽³²⁾

Finally, the multiple linear regression model showed that emotional intelligence explains 21 % of the variance in academic performance ($R^2 = 0,21$; $F(4,275) = 18,6$; $p < 0,001$). The self-regulation dimension had the highest coefficient ($\beta = 0,28$; $p < 0,01$), followed by the use of emotions ($\beta = 0,22$; $p < 0,01$). These findings reinforce the idea that emotional competencies are a fundamental resource for enhancing student performance in hybrid environments.⁽³³⁾

Thematic analysis of the 10 interviews, processed using NVivo 12 software following the method proposed by Braun and Clarke⁽³⁰⁾, identified three emerging categories: (a) time and stress management, (b) adaptation to technology in hybrid environments, and (c) intrinsic motivation sustained by emotional competencies.

Students noted that EI helped them organize their activities, cope with their academic workload with lower levels of anxiety, and maintain motivation in the face of the demands of virtual learning. Teachers, for their part, highlighted that students with greater emotional competencies showed a greater willingness to collaborate and greater resilience in hybrid activities. These findings are in line with recent studies that show how EI promotes self-regulation and academic engagement in blended learning contexts.⁽³⁴⁾

RESULTS

In order to evaluate the relationship between emotional intelligence and academic performance in Ecuadorian university students in a hybrid modality, descriptive, correlational, and multiple linear regression analyses were applied to the data obtained through the WLEIS questionnaire and grade point averages. The results are presented below, including the means and standard deviations for each dimension of EI, as well as their correlations with academic performance and the regression coefficients that allow the predictive weight of each factor in student performance to be identified.

Table 1 shows that the dimensions of emotional intelligence are at medium-high levels, with means ranging from 3,68 to 3,85 on a scale of 1 to 5. Among them, emotion regulation (ER) had the highest mean ($M = 3,85$; $SD = 0,68$), indicating that students perceive greater mastery in their ability to manage their emotional states in demanding academic situations. All dimensions showed positive and significant correlations with academic performance, with emotion regulation ($r = 0,39$; $p < 0,01$) and emotion use ($r = 0,36$; $p < 0,01$) standing out, reflecting that these competencies are most closely associated with student performance in the hybrid modality. Overall, the total emotional intelligence score had the highest correlation with performance ($r = 0,43$; $p < 0,01$), confirming the relevance of EI as an integral factor in academic achievement. In the linear regression analysis, emotional self-regulation emerged as the strongest predictor ($\beta = 0,28$; $p < 0,01$), followed by emotion use ($\beta = 0,22$; $p < 0,01$), suggesting that skills related to the control and strategic use of emotions are key resources for enhancing academic performance in hybrid teaching contexts.

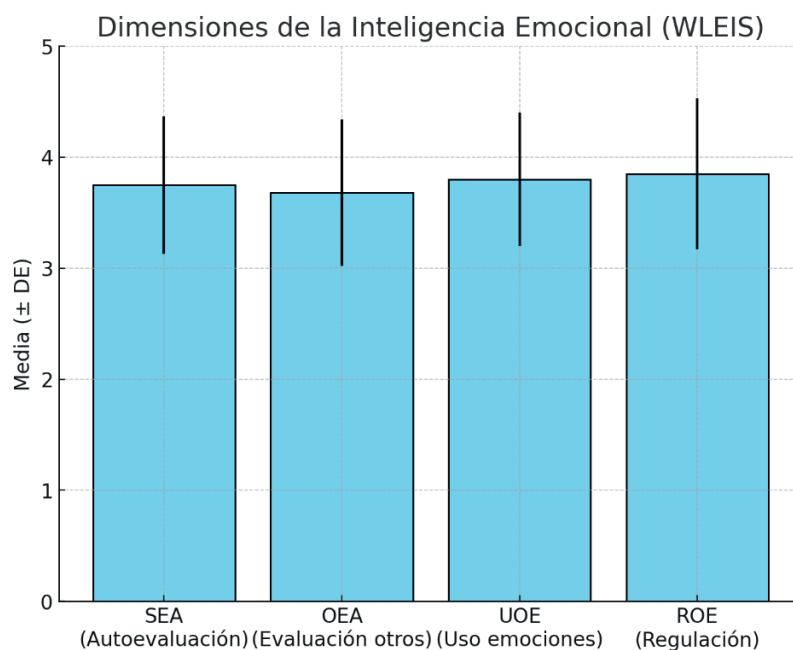
Table 1. Descriptive results, correlations, and regression coefficients between EI dimensions and academic performance

Dimension (WLEIS)	Mean	Standard Deviation	Correlation with Academic Performance (r)	Coefficient B (Regression)
Self-assessment of emotions (SEA)	3,75	0,62	0,34	0,18
Assessment of emotions in others (OEA)	3,68	0,66	0,29	0,12
Use of emotions (UOE)	3,80	0,6	0,36	0,22
Emotion regulation (ER)	3,85	0,68	0,39	0,28
Total IE score	3,78	0,64	0,43	—

Note: Likert scale from 1 to 5. All correlation and regression coefficients are significant ($p < 0,01$)

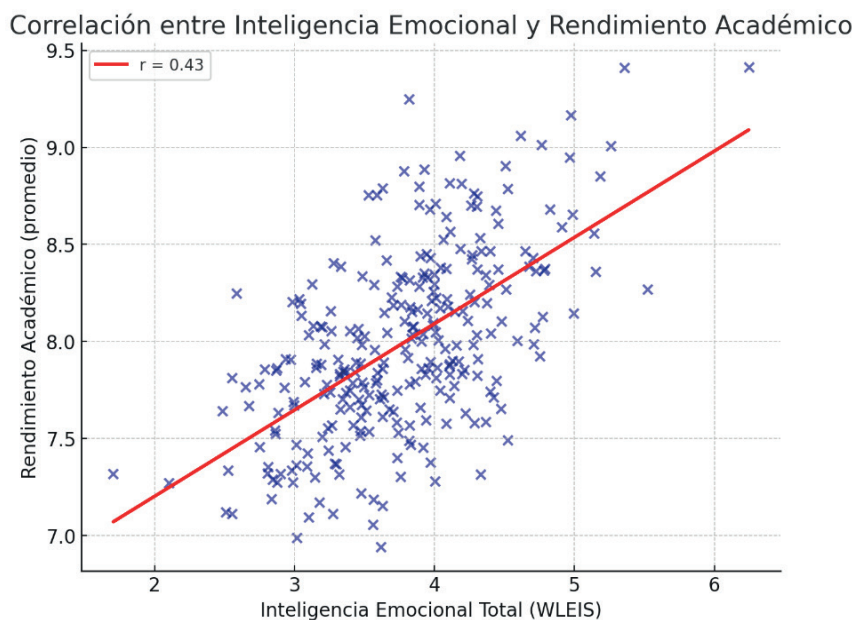
Figure 1 shows the means and standard deviations of the four dimensions of emotional intelligence assessed using the WLEIS. It can be seen that all dimensions are at a medium-high level, with values ranging from 3,68 to 3,85 on a scale of 1 to 5. Emotion regulation (ER) has the highest mean ($M = 3,85$), followed by emotion use (EU) ($M = 3,80$), indicating that students report greater mastery in managing and applying their emotions to achieve academic goals. In contrast, the dimension with the lowest mean was the evaluation of emotions in

others (OEA) ($M = 3,68$), although this was also within a positive range. These results suggest that intrapersonal skills are more developed than interpersonal skills in the sample analyzed.



Note. Means and standard deviations of the dimensions of emotional intelligence (WLEIS). SEA = Self-assessment of emotions; OEA = Assessment of emotions in others; UOE = Use of emotions; ROE = Regulation of emotions. Likert scale from 1 to 5.

Figure 1. Dimensions of Emotional Intelligence of the WLEIS (SEA, OEA, UOE, and ROE)



Note. Correlation between total emotional intelligence and academic performance. The values are distributed positively and significantly ($r = 0,43$; $p < 0,01$), indicating that a higher level of emotional intelligence is associated with a better grade point average in hybrid university students.

Figure 2. Scatter plot showing the overall correlation between total emotional intelligence score and academic performance ($r = 0,43$)

Figure 2 represents the relationship between the total emotional intelligence score (WLEIS) and the average academic performance of university students. A positive and significant trend is observed ($r = 0,43$; $p < 0,01$),

indicating that as levels of emotional intelligence increase, so does academic performance. The regression line confirms the consistency of this association, showing that students with higher emotional competencies tend to achieve better grades. This result reinforces the importance of EI as a key predictor of academic success in hybrid teaching contexts.

The results confirm the relevance of emotional intelligence (EI) as a determining factor in the academic performance of university students in hybrid teaching contexts. The finding that emotional self-regulation and the use of emotions are the strongest predictors is consistent with previous studies that highlight these dimensions as essential for maintaining motivation, coping with academic pressure, and optimizing performance in high-demand scenarios.^(32,33)

Likewise, the positive and significant correlation between the total EI score and academic performance ($r = 0,43$) reinforces the findings of MacCann et al., who showed that EI not only promotes adaptation to the educational environment but also translates into better use of learning opportunities.⁽³¹⁾ These results are consistent with the international literature that highlights EI as a cross-cutting resource, capable of influencing both cognitive self-regulation and students' ability to establish effective interpersonal relationships within the hybrid classroom.⁽³⁴⁾

On the other hand, the qualitative findings complement the quantitative analysis by showing that EI promotes time management, technological adaptation, and intrinsic motivation, dimensions that are particularly relevant in a hybrid model where students are required to be autonomous, resilient, and digitally competent. This cross-referenced evidence confirms the relevance of the mixed approach, as it allows for a comprehensive understanding of the phenomenon and provides valuable input for the design of institutional programs aimed at strengthening emotional skills in higher education.

In this sense, the present study provides contextualized evidence from Ecuador, contributing to closing the research gap in Latin America on the link between EI and academic performance. The results suggest the need for universities to integrate emotional training into their curricula and offer support strategies that enhance student resilience and motivation in hybrid environments.

DISCUSSION

The results confirm that emotional intelligence (EI) has a significant relationship with academic performance in university students enrolled in hybrid teaching models. The correlation coefficient ($r = 0,43$) obtained in this study coincides with that reported by MacCann et al., who, in their meta-analysis of more than 40 000 students, established that EI consistently predicts performance, being especially strong when assessed as a skill. Similarly, the qualitative findings of this research, which show how EI promotes time management and resilience in the face of academic workload, support the findings of Iqbal et al.⁽³⁾ in China, who observed that self-awareness and self-motivation were determinants of student participation in blended environments.

Complementarily, the findings of this study are similar to those reported by Bereded et al.⁽⁴⁾ in Ethiopia, where EI showed a direct impact on academic engagement and achievement, confirming that this variable does not depend solely on cultural factors but has a cross-cutting effect in different regions. Likewise, the relevance of self-regulation and the use of emotions found in this research is consistent with the findings of Alrajhi and Aldhafri⁽⁵⁾ in Kuwait, who highlighted these dimensions as relevant predictors of academic success in higher education.

The results obtained reinforce the theoretical postulates of Salovey and Mayer⁶, showing that EI is not limited to the perception and understanding of emotions, but that its regulation and strategic use are essential for academic success. Similarly, Bar-On's⁽⁷⁾ model is reinforced by the finding that social-emotional competencies enable students to adapt effectively to complex environments, such as hybrid teaching. From the perspective of positive psychology, the qualitative findings corroborate the findings of Schutte et al.⁽⁸⁾, showing that EI fosters resilience and intrinsic motivation, which translates into greater commitment to learning.

Furthermore, the relationship found between EI and academic performance ties in with Pekrun's control-value theory, insofar as emotional regulation facilitates the control of effort and the management of academic emotions such as anxiety or frustration, elements that, according to this theoretical framework, directly condition the quality of learning. In this sense, EI can be understood as a mediating mechanism that favors adaptation to the hybrid model, characterized by a high demand for autonomy, self-regulation, and the use of digital resources.

In practical terms, the findings reinforce the need for universities to incorporate social-emotional learning programs into their curricula, as well as teaching support strategies that strengthen students' emotional skills. As Henrie et al.⁽⁹⁾ point out, cognitive and emotional engagement is essential in technology-mediated settings, and this study demonstrates that EI is a concrete way to enhance such engagement.

The fact that self-regulation and the use of emotions were the strongest predictors indicates that hybrid teaching requires students to have a greater ability to manage their emotions in the face of the autonomy and flexibility that characterizes this modality. Therefore, the implementation of workshops, emotional tutoring,

and digital resources focused on EI could improve not only academic results but also student satisfaction and retention.

Despite its contributions, the study has limitations. The use of non-probabilistic sampling restricts the generalization of the results to the entire Ecuadorian university population. Likewise, the cross-sectional and ex post facto design only allows for establishing associations, not causalities. Another aspect to consider is that academic performance was measured solely through grade point average, without integrating other indicators such as retention, curricular progress, or perception of academic self-efficacy. These limitations open up the possibility of expanding the analysis in future research.

Future studies should use longitudinal designs that allow for the observation of the evolution of EI and its influence on academic performance throughout different stages of education. It would be advisable to include probabilistic and representative samples from different regions in order to strengthen the external validity of the findings. In addition, it is pertinent to develop experimental or quasi-experimental interventions that integrate social-emotional training programs in university students to evaluate their impact on improving performance and adapting to the hybrid modality.

CONCLUSIONS

The results of this study confirm that emotional intelligence (EI) is a key factor in explaining the academic performance of Ecuadorian university students in hybrid teaching environments. In particular, the dimensions of emotional self-regulation and use of emotions emerged as the strongest predictors, reinforcing the idea that adequate management of emotions and the ability to use them strategically promote academic success. In this way, contextualized evidence from Latin America is provided that complements and expands on the findings reported in other regions of the world.

Likewise, qualitative findings demonstrated that EI influences time management, technological adaptation, and intrinsic motivation, which are fundamental dimensions for coping with the demands of the hybrid modality. This convergence between quantitative and qualitative results highlights the importance of understanding EI not only as an individual skill but also as a strategic resource that facilitates the effective integration of face-to-face and virtual components in higher education.

On a practical level, the conclusions of this study underscore the need for universities to implement social-emotional learning programs and teaching support strategies that strengthen students' emotional competencies. Similarly, it is recommended that future research delve deeper into the analysis of EI through longitudinal and intervention designs in order to establish causal relationships and measure the impact of training programs on improving academic performance and adaptation to hybrid learning.

For universities

It is recommended that higher education institutions design and implement social-emotional learning programs that strengthen skills such as self-regulation and the strategic use of emotions, as these were identified as significant predictors of academic performance. Likewise, emotional intelligence modules should be integrated into the university curriculum, along with tutoring and psychological support systems that help students adapt to the hybrid modality.

For teachers

It is important for teachers to incorporate emotionally sensitive teaching strategies into their pedagogical practices that promote intrinsic motivation, resilience, and stress management. The inclusion of dynamics that encourage emotional reflection, collaborative work, and positive feedback can contribute to greater academic engagement. In addition, teachers should receive ongoing training in social-emotional and technological skills, which will enable them to more effectively guide learning in hybrid environments.

For students

It is recommended that students actively develop their self-regulation and personal motivation skills, recognizing that these competencies directly impact their academic performance. Participation in emotional intelligence workshops, the use of digital applications for time management, and the practice of mindfulness or emotional self-control techniques can contribute to strengthening their performance in hybrid settings.

For future research

Future studies need to delve deeper into the relationship between emotional intelligence and academic performance through longitudinal and experimental designs, which will allow for the measurement of the effects of socio-emotional interventions at different stages of university education. It would also be valuable to extend this analysis to other Latin American countries in order to compare cultural similarities and differences in the influence of EI on learning.

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