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Cultural intelligence and its influence on critical thinking: a study from the perspective of intercultural education

Inteligencia cultural e influencia en el pensamiento crítico: un estudio desde la educación intercultural

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Abstract

The objective of this research was to determine the influence of cultural intelligence on critical thinking from an intercultural education perspective in students at the Virgen de Natividad Pedagogical Institute in Paruro. A quasi-experimental design with a quantitative approach was applied to a sample of 70 students in the bilingual intercultural early childhood education program, divided into two groups: experimental (n = 40) and control (n = 30). A validated instrument was used to measure critical thinking and its dimensions—interpretation, analysis, evaluation, inference, explanation, and self-regulation. The intervention consisted of a structured cultural intelligence development program, applied only to the experimental group. Data were analyzed using descriptive and inferential statistics, using the Student t-test for independent samples, and calculating the effect size. The results showed statistically significant differences between the two groups, with $t(68) = 5.694$, $p < .001$, and a very large effect size (Cohen's $d = 1.375$). Ninety percent of the experimental group achieved a "Good" level in critical thinking, compared to 4.4% of the control group, with a mean difference of 5.45 points. The analysis by dimension significantly favored the experimental group in comprehension (97.5% vs. 60%), analysis (92.5% vs. 60%), and inference (90% vs. 40%). It is concluded that cultural intelligence has a positive impact on intercultural critical thinking, acting as a trigger for the development of high-level cognitive skills essential for intercultural teacher training.

Keywords: intercultural education, cultural intelligence, critical thinking.

Resumen

La investigación tuvo como objetivo determinar la influencia de la inteligencia cultural sobre el pensamiento crítico desde un enfoque de educación intercultural en estudiantes del Instituto Pedagógico Virgen de Natividad de Paruro. Se utilizó un diseño cuasiexperimental con enfoque cuantitativo, aplicándose a una muestra de 70 estudiantes de la carrera de educación inicial intercultural bilingüe, divididos en dos grupos: experimental (n = 40) y control (n = 30). Para medir el pensamiento crítico y sus dimensiones —interpretación, análisis, evaluación, inferencia, explicación y autorregulación— se empleó un instrumento validado. La intervención consistió en un programa estructurado de desarrollo de inteligencia cultural, aplicado únicamente al grupo experimental. Los datos se analizaron mediante estadística descriptiva e inferencial, usando la prueba t de Student para muestras independientes y calculando el tamaño del efecto. Los resultados evidenciaron diferencias estadísticamente significativas entre ambos grupos, con $t(68) = 5.694$, $p < .001$, y un tamaño del efecto muy grande (d de Cohen = 1.375). El 90% del grupo experimental alcanzó un nivel "Bueno" en pensamiento crítico, frente al 4.4% del grupo control, con una diferencia de medias de 5.45 puntos. El análisis por dimensiones favoreció significativamente al grupo experimental en comprensión (97.5 % vs. 60 %), análisis (92.5 % vs. 60 %) e inferencia (90 % vs. 40 %). Se concluye que la inteligencia cultural tiene un impacto positivo en el pensamiento crítico intercultural, actuando como detonante para el desarrollo de habilidades cognitivas de alto nivel indispensables para la formación docente intercultural.

Palabras clave: educación intercultural, inteligencia cultural, pensamiento crítico.

Introduction

In recent years, the topic of cultural intelligence has been underexplored in educational contexts, despite the fact that critical thinking has been fundamental to student development, particularly for future educators. In an increasingly interconnected, modern, and diverse world, there is a pressing need to train professionals who can navigate heterogeneous cultural environments, developing competencies that transcend academic boundaries.

From an educational perspective, it has been observed that future educators require not only the technical knowledge mandated by regulations and ministries but also the ability to understand and appreciate cultural differences, as well as to engage in critical reflection regarding their own practices. Internationally, recent studies have highlighted cultural intelligence as an essential competency for effective cross-cultural interaction. Sternberg et al. (2023) demonstrated that this capability, understood as the skill to adapt to intercultural challenges, is applicable both within one's own culture and in external contexts.

This evidence supports the need to train professionals who develop cognitive and attitudinal skills to operate in multicultural environments. Thus, cultural intelligence and critical thinking converge by enabling individuals to analyze and respond to diversity with openness, reflection, and well-founded judgment.

Furthermore, contact with various cultural contexts, according to Pidduck et al. (2022), fosters the construction of a multicultural identity that strengthens cultural intelligence and facilitates effective performance in diverse scenarios throughout life. Integrated with critical thinking, this process supports the formation of educators capable of analyzing, questioning, and responding to the demands of a pluralistic and globalized society.

Brislin et al. (2006) define cultural intelligence as a set of behaviors valued in specific contexts and the ability to adapt flexibly and under stress to different environments, involving sensitivity and a willingness to adjust behaviors in transcultural experiences.

In a globalized context, cultural intelligence is conceived as the ability to understand and act effectively in culturally diverse environments, shifting from a linguistic focus to a holistic one that integrates cognitive, affective, and conative dimensions, associated with improved adaptation, decision-making, and performance in multicultural teams (Ruiz et al., 2024).

Although cultural intelligence has been extensively studied in organizational and international settings (Earley & Ang, 2003), its approach within the Peruvian educational context remains limited, making this research an innovative contribution.

On the other hand, critical thinking is indispensable for fostering innovation, creativity, continuous improvement, and social commitment, highlighting the need to promote it from basic education through pedagogical and university levels. It is not about imposing reason but valuing diverse possibilities and trusting logic over emotion, avoiding biases that distort decision-making (Kurland, 2005). This capability is particularly necessary in a society influenced by social media.

In a broader sense, critical thinking is essential for achieving a sustainable society; it entails a transformative commitment to oneself, society, and the environment, based on principles such as freedom, autonomy, sovereignty, and truth (Wals & Jickling, 2002; Lipman, 1987).

Intercultural education, which theoretically underpins this study, is an inclusive proposal that promotes knowledge, exchange, and positive appreciation of cultural diversity, fostering coexistence, curricular innovation, and community participation (Pedrero et al., 2017).

In a country like Peru, which hosts multiple cultures, the educational challenge is to train professionals with critical thinking and robust cultural intelligence to interact in diverse contexts. Intercultural education, which recognizes diversity as a source of mutual enrichment and promotes horizontal dialogue among cultures, offers a valuable framework for developing these competencies in teacher training.

At the Virgen de Natividad Pedagogical Institute in Paruro, within the Bilingual Intercultural Initial Education program, it is observed that many students face limitations in navigating diverse cultural scenarios, despite being educated in a context where diversity is a transversal axis. This reality reflects difficulties in integrating academic knowledge with a critical appreciation of local cultural practices, as well as a limited capacity to engage in dialogue and reflect on realities different from their own. Specifically, it has been identified that students face challenges in establishing critical connections between Western academic knowledge and the ancestral Quechua knowledge present in their environment, often reproducing dichotomies instead of promoting intercultural syntheses.

These limitations are particularly evident during pedagogical practices, where future educators display few strategies for mediating between different systems of knowledge and facilitating constructive dialogues among students from various cultural backgrounds. Given that the institutions where they conduct practices are primarily located in Quechua-dominant rural communities, there is an urgent need to develop competencies in cultural intelligence and critical thinking that enable them to understand, appreciate, and respond appropriately to the linguistic and cultural diversity of their surroundings.

Therefore, this research aims to analyze how cultural intelligence influences the development of critical thinking from the perspective of intercultural education among students at the Virgen de Natividad Pedagogical Institute. The objective is to understand the relationship between these two competencies and their impact on teacher training aimed at addressing Peru's cultural diversity.

In this context, the central question of the study is: How does cultural intelligence affect the development of critical thinking in students from an intercultural perspective? The primary purpose is to determine this influence among the students of the aforementioned institute.

Methodology

The study was framed within applied research, as its objective was to generate knowledge with practical purposes to address a specific educational problem. According to Hernández-Sampieri et al. (2014), applied research focuses on the practical and immediate solution of specific needs through the use of scientific knowledge.

The level of research in this study was explanatory, as it sought to determine how the independent variable (cultural intelligence) influences the dependent variable (critical thinking) among initial education students. Additionally, it aimed to understand the causal relationships between both variables, thereby addressing the "why" of educational phenomena (Hernández-Sampieri et al., 2014).

In terms of approach, a quantitative process was adopted, based on the collection of numerical data and statistical analysis, which allows for measurable and comparable results. As indicated by Taherdoost (2022), the quantitative approach utilizes numerical data and statistical techniques to answer questions such as "what," "how much," and "how many," thus providing a solid foundation for variable analysis.

The methodological design employed was quasi-experimental, due to the inability to randomly assign participants; intact groups from the educational context where the study was implemented were utilized. According to Campbell & Stanley (1973), this design is suitable in educational settings where modifying institutional dynamics would affect the natural development of the classroom. The experimental group consisted of students from the IX cycle of the Initial Education program, while the control group included students from the X cycle.

The study population comprised all students enrolled in the Bilingual Intercultural Initial Education program at the Virgen de Natividad Pedagogical Institute in Paruro. Working with the entire population resulted in a census sample, thus allowing the results to directly reflect the characteristics of the participants without the need for statistical inference techniques (Otzen & Manterola, 2017).

Table 1
Students by cycle

Cycle	Population per classroom	Proportion
IX	40 students	57.1 %
X	30 students	42.9 %
TOTAL	**70 students**	**100 %**

Note. List of students by cycle

The intervention was based on a cultural intelligence proposal grounded in the local culture of Paruro, incorporating myths, customs, artistic expressions, and daily practices into the teaching-learning process. This proposal, applied exclusively to the experimental group over an academic period, aimed to stimulate the development of critical thinking through activities contextualized in the sociocultural reality of the students. The control group, in contrast, continued with traditional teaching methods.

The cultural intelligence development program was implemented over six consecutive weeks, with two weekly sessions of 90 minutes each, totaling 12 sessions for the experimental group. This program was designed following the theoretical framework of Las Heras & Lee (2010) on cultural intelligence and intercultural leadership, structured into three dimensions: cognitive (sessions 1 to 4), motivational (sessions 5 to 8), and behavioral (sessions 9 to 12). The sessions were conducted by the principal investigator and included activities such as analyzing the Legend of the Ayar Brothers, creating cultural maps of the institute, cultural circles to share local customs, debates on practices that strengthen coexistence, intercultural communication workshops, and culminated in a cultural fair where students showcased local traditions (food, music, and history).

Each session combined participatory dynamics, group reflection, and concrete outputs, utilizing culturally situated resources such as Cusqueña narratives, local symbols, and regional materials. The achievement indicators progressively evaluated the capacity to recognize one's own cultural elements, compare diverse practices, show a positive disposition towards diversity, and adjust communicative behaviors according to specific cultural contexts.

For data collection, the testing technique was employed, considered the most appropriate for objectively measuring the level of critical thinking achieved by the students. As noted by Hernández-Sampieri et al. (2014), this technique facilitates obtaining standardized and self-administered responses, ensuring the reliability and validity of the information.

The instrument used was an ad hoc critical thinking test, composed of 20 multiple-choice items with four alternatives, of which only one was correct. The test was designed based on the classical dimensions of critical thinking: interpretation, analysis, evaluation, inference, explanation, and self-regulation (Facione, 2007).

Its validation was conducted through expert judgment, ensuring the validity and applicability of the instrument. Additionally, the statistical content validity coefficient proposed by Hernández-Nieto (2011) was applied, yielding a value of 0.91, indicating an excellent level of validity and agreement among evaluators.

Regarding reliability, this was supported by the Kuder-Richardson KR-20 coefficient, which estimated the internal consistency of the instrument with values of 0.76 for the experimental group and 0.70 for the control group. Although the questions had four response options, the scoring was converted to dichotomous (correct = 1; incorrect = 0), allowing for precise evaluation of consistency by reflecting the proportion of variance attributable to true performance versus measurement error. Anselmi et al. (2019) highlight that KR-20 is a more accurate option than other classical methods for dichotomous items, confirming its suitability for this study.

Results

This section presents the results obtained from the descriptive analysis of the data collected in the study.

The descriptive results reveal significant differences between the two groups regarding the variable of critical thinking. The experimental group achieved a mean score of 16.65 points (SD = 3.75) on a 25-point scale, while the control group obtained a mean score of 11.20 points (SD = 4.23). This represents a difference of 5.45 points in favor of the experimental group. Additionally, the lower relative dispersion in the experimental group indicates greater homogeneity in the results following the intervention based on cultural intelligence, although both groups exhibit similar ranges in minimum and maximum scores.

Table 2
Descriptive statistics of critical thinking by groups

Groups	N°	Minimum	Maximum	Mean	Standard deviation
PC_EXP	40	7.00	23.00	16.65	3.75
VAR_GC	30	7.00	22.00	11.20	4.23

Note. Descriptive statistics calculated in SPSS

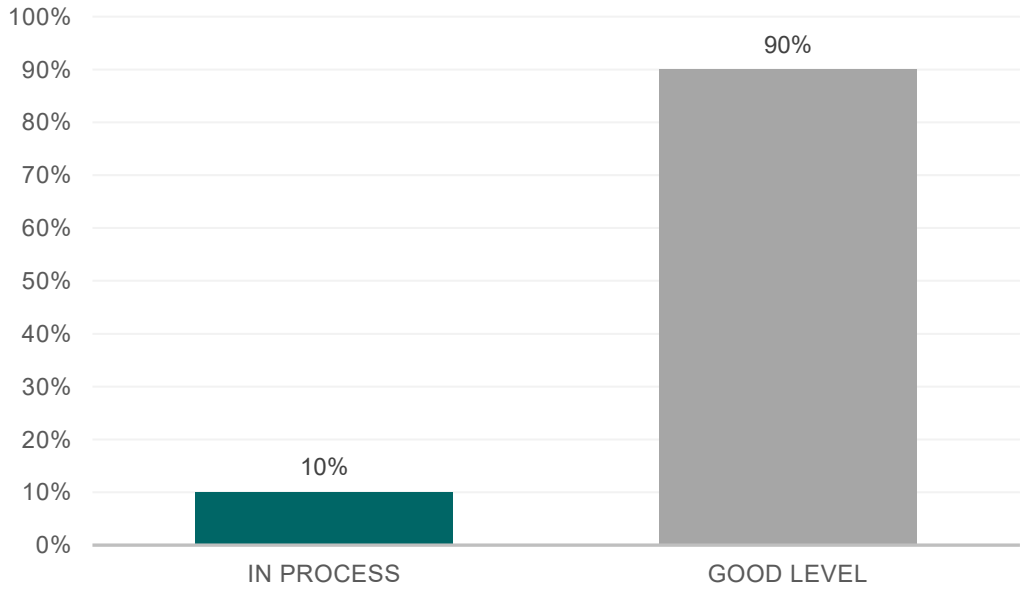
For the categorization of scores, a scale was established using the constant amplitude method. The interval was determined by dividing the total range of the scale (25 points) by the desired number of categories (2 levels), resulting in an amplitude of 12.5 points. The resulting intervals were: "In Process" (0–12 points) and "Good Level" (13–25 points), ensuring a balanced distribution on the measurement scale.

Table 3
Estimation level of the dependent variable: critical thinking – Experimental group

Critical thinking	Scale	N°	%
In process	0–12	4	10%
Good level	13–25	36	90%
Total		**40**	**100%**

Note. Estimation according to the instrument applied for the dependent variable

Figure 1
Estimation level of the dependent variable: critical thinking – Experimental group



Note. Results from SPSS

From Table 3 and Figure 1, clear results emerge regarding the experimental group, demonstrating a significant impact of cultural intelligence on the development of critical thinking from an intercultural education perspective. The distribution shows a notable concentration at the "Good Level" (90%, n = 36), while only 10% (n = 4) remain in the "In Process" category. This suggests that the intervention based on cultural intelligence was highly effective in stimulating higher cognitive processes in students.

These findings indicate that exposure to culturally diverse contexts not only fosters tolerance and mutual respect but also acts as a powerful catalyst for the development of critical thinking. By encountering different cultural realities, students are prompted to question their prior frames of reference, analyze various viewpoints, and develop more complex reflective analysis skills. The predominance of the "Good Level" over "In Process" demonstrates that intercultural education transcends mere cultural exchange to become an essential pedagogical tool, strengthening cognitive competencies vital for global citizenship.

Table 4
Information by dimensions of the critical thinking variable – Experimental group

Critical thinking level	Interpretation		Analysis		Evaluation		Inference		Explanation		Self-regulation	
	N°	%	N°	%	N°	%	N°	%	N°	%	N°	%
In process	1	2.5	3	7.5	10	25.0	4	10.0	27	67.5	28	70.0
Good level	39	97.5	22	92.5	30	75.0	36	90.0	13	32.5	12	30.0
Total	**40**	**100**	**40**	**100**	**40**	**100**	**40**	**100**	**40**	**100**	**40**	**100**

Note. Estimation of the instrument for the dependent variable

In the Interpretation dimension, nearly all participants (97.5%, n = 39) reached the "Good Level," with only 2.5% (n = 1) in the process category. This indicates that cultural intelligence significantly strengthened students' ability to understand, decode, and make sense of information from diverse cultural frameworks, facilitating a more accurate and profound interpretation of different perspectives.

For the Analysis dimension, 92.5% (n = 22) achieved the "Good Level" compared to 7.5% (n = 3) in the process category, evidencing that the intervention enhanced the ability to decompose complex information, examine specific cultural elements, and systematically relate different components of intercultural knowledge.

Regarding Evaluation, 75% (n = 30) reached the "Good Level," while 25% (n = 10) remained in the process category. This dimension shows more heterogeneous development, suggesting that, although the majority developed competencies to judge the validity and credibility of arguments from multiple cultural perspectives, a significant portion is still consolidating these evaluative skills.

In the Inference dimension, 90% (n = 36) achieved the "Good Level" compared to 10% (n = 4) in the process category, indicating that cultural intelligence effectively stimulated the ability to draw logical conclusions, formulate hypotheses, and connect different cultural elements to generate new knowledge.

On the other hand, the Explanation dimension presents the greatest dispersion, with 32.5% (n = 13) at the "Good Level" and 67.5% (n = 27) in the process category. This reveals that, although analytical and interpretative skills were developed, articulating intercultural reasoning and conclusions clearly and coherently remains a significant challenge in the development of intercultural critical thinking.

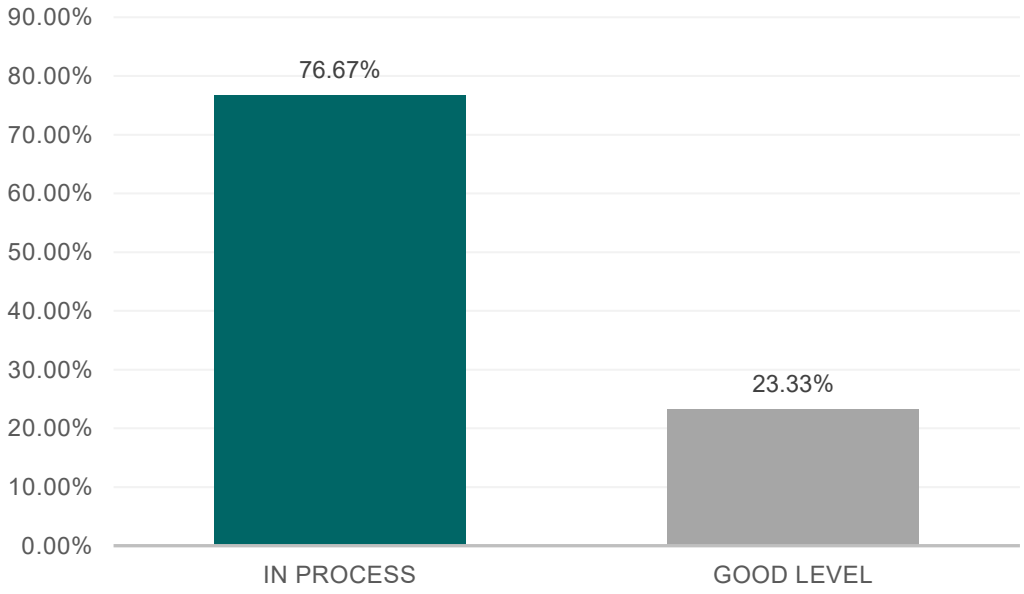
Finally, in Self-Regulation, only 30% (n = 12) achieved the "Good Level," while 70% (n = 28) remain in the process category. This indicates that metacognition, monitoring, and the conscious regulation of one's thinking processes in intercultural contexts require more time and practice to be fully consolidated.

Table 5
Estimation level of the dependent variable: critical thinking – Control group

Critical thinking / Control group	Scale	N°	%
In process	0-12	23	76.6
Good level	13-25	7	23.3
Total		**30**	**100**

Note. Estimation of the instrument for the dependent variable.

Figure 2
Estimation level of the dependent variable: critical thinking – Control group



Note. Results from SPSS

The results for the control group show a distribution that is contrary and clearly contrasting with that of the experimental group regarding the development of critical thinking from an intercultural education perspective. Both the table and the graph indicate that the majority of students (76.6%, n = 23) fall into the "In Process" level (range of 0 to 12 points), while only a significant minority (23.3%, n = 7) achieve the "Good Level" (range of 13 to 25 points). This distribution reveals a marked inclination towards the lower values of the established scale for each level.

This configuration suggests that, without the intervention of the independent variable, i.e., cultural intelligence, students exhibit significant limitations in developing skills related to critical thinking in an intercultural context, remaining at early stages of analytical and reflective competence. The notable concentration in the lower range starkly contrasts with the results observed in the experimental group, indicating that the absence of systematic intercultural stimuli maintains more rigid and underdeveloped cognitive patterns for critical analysis of diverse cultural perspectives.

Consequently, this distribution reaffirms the importance and necessity of implementing specific pedagogical interventions centered on cultural intelligence to enhance the development of critical thinking in intercultural educational contexts, where the focus is on students and their cultural particularities.

Table 6
Information by dimensions of the critical thinking variable – Control group

Critical thinking level	Interpretation		Analysis		Evaluation		Inference		Explanation		Self-regulation	
	N°	%	N°	%	N°	%	N°	%	N°	%	N°	%
In process	12	40.0	12	40.0	7	23.3	18	60.0	12	40.0	17	56.7
Good level	18	60.0	18	60.0	23	76.6	12	40.0	18	60.0	13	43.3
Total	**30**	**100**	**30**	**100**	**30**	**100**	**30**	**100**	**30**	**100**	**30**	**100**

Note. Estimation of the instrument for the dependent variable

The comparison between the groups reveals differentiated patterns in the development of dimensions of intercultural critical thinking. The dimensions of Interpretation (97.5% vs. 60%), Analysis (92.5% vs. 60%), and Inference (90% vs. 40%) show a clear superiority of the experimental group, indicating that cultural intelligence significantly enhances the cognitive skills fundamental to processing, examining, and drawing conclusions from culturally diverse information.

On the other hand, the Evaluation dimension shows similar performances in both groups (75% vs. 76.6%), suggesting that basic evaluative competencies might develop independently of intercultural intervention. However, two paradoxical findings emerge: the Explanation dimension shows better performance in the control group (32.5% vs. 60%), indicating that while students in the experimental group develop superior cognitive skills, articulating clear and coherent reasoning for complex intercultural matters represents a greater challenge than explaining in culturally familiar contexts. Similarly, the Self-Regulation dimension exhibits similar limitations in both groups (30% vs. 43.3%), revealing that metacognition and conscious monitoring of thought processes require additional specific pedagogical strategies, regardless of intercultural exposure.

Inferential method

This study aims to demonstrate whether cultural intelligence, as an independent variable, significantly influences the critical thinking of students from an intercultural education perspective.

The following hypotheses were proposed:

- **Alternative Hypothesis (H1)**: Cultural intelligence significantly influences the development of critical thinking from an intercultural education perspective among students at the Virgen de Natividad Pedagogical Institute in Paruro.
- **Null Hypothesis (H0)**: Cultural intelligence does not significantly influence the development of critical thinking from an intercultural education perspective among students at the Virgen de Natividad Pedagogical Institute in Paruro.

The application of parametric statistical tests in this study is justified by the Central Limit Theorem (CLT), considering that the total sample of 70 participants (40 in the experimental group and 30 in the control group) exceeds the critical threshold recommended to assume normality in the sampling distribution. According to Kwak & Kim (2017), the CLT establishes that the means of a random sample of size n from a population with mean μ and variance σ^2 are normally distributed with mean μ and variance σ^2/n, allowing for the development of various parametric tests based on assumptions about the parameters determining the population probability distribution.

This theoretical foundation ensures the validity of comparative analyses using tests such as the Student's t-test for independent samples, providing sufficient statistical robustness for analyzing critical thinking and its dimensions. It is noteworthy that the validity of many parametric statistical procedures depends on the fulfillment of the normality assumption (Ghasemi & Zahediasl, 2012).

Table 7

Independent samples t-test - Critical thinking variable

Variable	Levene's Test		t-test for equality of means						
	F	Sig.	t	df	Sig. (two-tailed)	Mean difference	Std. error difference	Lower 95% CI	Upper 95% CI
Critical thinking	1.064	.306	5.694	68	< .001	5.45000	.95713	3.54008	7.35992
			5.597	58.248	< .001	5.45000	.97381	3.50088	7.39912

Note. Student's t-test for independent samples SPSS

The results of the inferential statistical t-test for independent samples reveal statistically significant differences between the experimental group and the control group in the dependent variable, critical thinking, with a t-value of (68) = 5.694, p < .001. This allows us to reject the null hypothesis (H0), which posited that cultural intelligence does not significantly influence the development of critical thinking, and accept the alternative hypothesis (H1), which states that cultural intelligence does exert a significant influence on the development of

this competency from an intercultural education perspective. Thus, it is confirmed that the application of cultural intelligence as an intervention is decisive in enhancing the skills of intercultural critical thinking in students.

The mean difference of 5.45 points in favor of the experimental group (M = 16.65 vs. M = 11.20) demonstrates that systematic exposure to experiences of cultural diversity not only promotes intercultural sensitivity but also serves as a cognitive catalyst that challenges monocultural mental frameworks and stimulates more complex critical analysis processes.

Furthermore, the fulfillment of the variance homogeneity assumption (F = 1.064, p = .306) validates the application of the parametric test, while the 95% confidence interval [3.54, 7.36] confirms that the observed difference is both statistically significant and relevant from an educational standpoint.

From the perspective of intercultural education, these findings support the notion that, when interacting with multiple cultural viewpoints, students are motivated to question their prior knowledge, evaluate diverse frames of reference, and develop metacognitive skills that transcend ethnocentric thinking. This renders cultural diversity a powerful pedagogical tool for cultivating critical and reflective global citizens capable of effectively navigating complex multicultural societies.

Discussion

The findings of this study provide empirical evidence supporting the theory proposed by Sternberg et al. (2023), who consider cultural intelligence an essential competency for intercultural interaction. However, the results extend beyond mere theoretical validation, suggesting that in the context of intercultural teacher training, cultural intelligence not only facilitates cultural adaptation but also acts as a catalyst for higher cognitive development, particularly in critical thinking.

While Pidduck et al. (2022) argue that intercultural contact contributes to the construction of a multicultural identity, our findings indicate a more specific mechanism: cultural intelligence selectively enhances certain dimensions of critical thinking. The greater effectiveness observed in interpretation, analysis, and inference, contrasted with the challenges detected in the explanation dimension, suggests that exposure to intercultural experiences primarily boosts receptive cognitive processes rather than expressive ones—a nuance that has not been thoroughly explored in the existing literature.

The paradoxical finding related to the explanation dimension prompts a critical reflection on the postulates of Brislin et al. (2006) regarding flexible adaptability. Although cultural intelligence effectively reduces stress when interacting in diverse environments, the ability to verbally articulate complex intercultural reasoning represents a particular cognitive challenge that demands specific and focused pedagogical interventions.

Conclusions

This study confirms the research hypothesis by demonstrating that cultural intelligence is a significant predictor of the development of critical thinking in intercultural teacher training contexts. The observed effects exceed theoretical expectations, suggesting that intercultural education acts as a genuine mechanism for cognitive transformation rather than merely a simple cultural exchange.

The main contribution of this research lies in evidencing that cultural intelligence differentially influences the dimensions of critical thinking, particularly favoring analytical processes over expressive ones in complex intercultural environments.

However, this study also presents some limitations that should be considered when interpreting the results. The quasi-experimental design restricts definitive causal inferences, while the sample—limited to the Virgen de Natividad Pedagogical Institute—reduces the possibility of generalizing findings to other intercultural teacher training contexts. Additionally, the assessment of critical thinking through standardized instruments may not fully capture the culturally specific expressions of this competency in Andean intercultural contexts.

These findings open several promising avenues for future research: (1) longitudinal studies examining the sustainability of critical thinking development through cultural intelligence; (2) investigations exploring the neuropsychological mechanisms underlying the identified relationship; (3) comparative analyses in different cultural contexts to validate the generalizability of the results; and (4) the development of culturally situated assessment instruments that reflect the particular manifestations of intercultural critical thinking in Andean environments.

References

Anselmi, P., Colledani, D., & Robusto, E. (2019). A comparison of classical and modern measures of internal consistency. *Frontiers in Psychology, 10*, 2714. https://doi.org/10.3389/fpsyg.2019.02714

Brislin, R., Worthley, R., & MacNab, B. (2006). Inteligencia cultural. *Gestión de Grupos y Organizaciones, 31*, 40-55. https://doi.org/10.1177/1059601105275262
Campbell, D., & Stanley, J. (1973). Discursos experimentales y cuasiexperimentales en la investigación social. https://knowledgesociety.usal.es/sites/default/files/campbell-stanley-discursos-experimentales-y-cuasiexperimentales-en-la-investigacion-social.pdf
Earley, P. C., & Ang, S. (2003). *Cultural Intelligence: Individual Interactions Across Cultures*. Stanford University. https://www.ebsco.com/research-starters/diplomacy-and-international-relations/cultural-intelligence
Facione, P. A. (2015). *Critical thinking: What it is and why it counts*. Insight Assessment.
Ghasemi, A., & Zahediasl, S. (2012). Normality tests for statistical analysis: A guide for non-statisticians. *International Journal of Endocrinology and Metabolism, 10*(2), 486-489. https://doi.org/10.5812/ijem.3505
Hernández-Nieto, R. (2011). *Instrumentos de recolección de datos en ciencias sociales y ciencias biomédicas*. Universidad de los Andes.
Hernández-Sampieri, R., Fernández, C., & Baptista, P. (2014). *Metodología de la investigación* (6.ª ed.). McGraw-Hill.
Kurland, D. (2005). Lectura crítica versus pensamiento crítico. Eduteka. https://eduteka.icesi.edu.co/articulos/lectura-critica-pensamiento-critico
Kwak, S. G., & Kim, J. H. (2017). Central limit theorem: The cornerstone of modern statistics. *Korean Journal of Anesthesiology, 70*(2), 144-156. https://doi.org/10.4097/kjae.2017.70.2.144
Lipman, M. (1987). Critical thinking: What can it be? *Analytic Teaching, 8*(1), 5-12.
Otzen, T., & Manterola, C. (2017). Técnicas de muestreo sobre una población a estudio. *International Journal of Morphology, 35*(1), 227-232. https://doi.org/10.4067/S0717-95022017000100037
Pedrero, E., Moreno, O., & Moreno, P. (2017). Educación para la diversidad cultural y la interculturalidad en el contexto escolar español. *Revista de Ciencias Sociales, XXIII*(2), 11-26.
Pidduck, R. J., Shaffer, M., Zhang, Y., Cheung, S., & Yunlu, D. (2022). Cultural intelligence: An identity lens on the influence of cross-cultural. *Journal of International Management Experience*. https://doi.org/10.1016/j.intman.2022.100928
Ruiz, L., García, M., Bedoya, J., & Góngora, C. (2024). La inteligencia cultural: Un elemento decisivo en el mundo económico global. *Pensamiento Científico, 9*(3). https://doi.org/10.23857/pc.v9i3.7242
Sternberg, R. J., Co, C., Siriner, I., Soleimani-Dashtaki, A., & Wong, C. H. (2023). Cultural intelligence deployed in one's own vs. in a different culture: The same or different? *Journal of Intelligence, 11*(11), 212. https://doi.org/10.3390/jintelligence11110212
Taherdoost, H. (2022). What are different research approaches? Comprehensive review of qualitative, quantitative, and mixed method research, their applications, types, and limitations. *Journal of Management Science & Engineering Research, 5*(1), 53–63. https://doi.org/10.30564/jmser.v5i1.4538
Wals, A. E. J., & Jickling, B. (2002). "Sustainability" in higher education. From doublethink and newspeak to critical thinking and meaningful learning. *International Journal of Sustainability in Higher Education, 3*(3), 221-232. https://doi.org/10.1108/14676370210434688
World Medical Association. (2004). World Medical Association declaration of Helsinki: Ethical principles for medical research involving human subjects. *Journal International de Bioethique [International Journal of Bioethics], 15*(1), 124. https://doi.org/10.3917/jib.151.0124

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