

ARTIFICIAL INTELLIGENCE AND SOCIOEMOTIONAL DEVELOPMENT IN STUDENTS WITH SPECIFIC EMOTIONAL SUPPORT NEEDS: A CASE STUDY AT TECNOPOLIS GUAYAQUIL – 2025

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ABSTRACT: This qualitative case study, conducted with five students at Tecnopolis Guayaquil who have specific emotional support needs, aimed to describe and interpret the influence of artificial intelligence on their social-emotional development. We collected data through in-depth, semi-structured interviews and participant observation. A field journal and anonymized records of students' use of the artificial intelligence platform served as supplementary sources. The results revealed an ambivalent influence: AI promoted self-awareness and emotional regulation, but some participants also reported risks of technological dependence and reduced interpersonal connection. The study concluded that AI's benefits depend on intentional pedagogical support, clear institutional policies, and teacher training. Because this qualitative case study included five participants, the findings are limited to the context analyzed and are not intended to be generalized to other populations.

Keywords: Artificial intelligence, socioemotional development, emotional support, emotional diversity.

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INTRODUCTION

Contemporary education addresses students' emotional diversity. In contexts where social disparities, violence, and health crises intensify the need for support, emotional artificial intelligence—systems designed to detect and interpret emotional states—is emerging as an alternative for personalizing social-emotional support. However, there is still insufficient evidence regarding its implementation in Latin American schools with adolescents who have specific emotional support needs. The study examines AI-mediated experiences at Tecnópolis Guayaquil.

Cabrera Ceballos and Alfonso Acosta (2025) document AI systems that detect emotional states based on behavioral, physiological, and linguistic patterns; these algorithms identify early warning signs. Likewise, Quinga et al. (2025) present successful therapeutic chatbots in Latin American schools: students express vulnerabilities to digital interfaces because anonymization reduces stigma.

However, Espinoza-Escobar (2025) warns of ethical risks: data privacy demands strict protocols, algorithmic transparency is non-negotiable, and biases related to gender, class, and ethnicity perpetuate discrimination. Alva-Franco et al. (2026), for their part, argue for the need for a qualified human presence, as technology complements—but does not replace—the pedagogical bond or the socioemotional skills that only human development can foster.

Calderón Carrero (2026) proposes hybrid models that integrate AI and teacher intervention. However, Onofre Galindo et al. (2025) highlight gaps in teacher training, suggesting that preparation determines success.

Tecnópolis Guayaquil concentrates technological resources in communities facing urban violence, inequality, and forced migration, where educational institutions assume compensatory roles in the absence of mental health services. The study prioritizes participants' voices through an interpretive qualitative approach.

The case study explores experiences of AI-mediated emotional support, examining perceptions, meanings, and transformations. It examines pedagogical practices that integrate

technology with relational dynamics. The central objective is to synthesize these experiences to inform inclusive, ethical, and human-centered public policies.

METHODOLOGY

Research Approach and Type

The research used a qualitative approach to gain an in-depth understanding of the subjective experiences, meanings, and perceptions students construct about using artificial intelligence tools for their social-emotional development (Álvarez Hernández & Pérez Velasco, 2025). This is an applied research study, as it sought to generate findings that teachers and educational psychologists could use directly in real-world contexts, such as Tecnópolis Guayaquil (Altamirano Gonzales, 2021).

Method and Design

We employed the instrumental case study method, in which a specific case serves as a means to understand a broader phenomenon: the relationship between artificial intelligence and social-emotional development (Avalle, 2022). The design was phenomenological-hermeneutic, with multiple embedded cases, which allowed us to analyze each student as an individual unit within a single, defined system. Noreña-Peña (2024) states that this design captures the essence of lived experience and interprets the meanings that participants ascribe to their experiences.

Study Site and Unit of Analysis

The study was conducted at Tecnópolis Guayaquil, an educational and technological center selected for its pioneering role in integrating artificial intelligence into teaching processes and student well-being initiatives during the 2025 school year. The unit of analysis was each student's experience interacting with the affective conversational AI tool, not the technology itself.

Sample and Sampling

The sample consisted of five regular students at Tecnópolis Guayaquil, selected through purposive sampling. Qualitative research does not seek statistical representativeness, but rather comprehensive depth; a small sample allows for information saturation without losing narrative richness (Stewart, n.d.). The inclusion criteria were a prior diagnosis of a specific need for emotional support—social anxiety disorder, difficulties with emotional regulation, or Level 1 autism spectrum disorder—issued by the student welfare department; ages between 12 and 18 years; informed consent signed by legal guardians; absence of severe cognitive comorbidities; and regular attendance for three consecutive months (Gordillo & Monsalve, 2025).

Techniques, Instruments, and Sources of Data Collection

The study used two main qualitative techniques for data collection: in-depth semi-structured interviews and participant observation. The interviews used a guide of open-ended questions designed to explore emotions, perceptions of the usefulness of artificial intelligence, and the transfer of social-emotional learning to everyday situations. Participant observation used a structured guide that allowed recording of social-emotional behaviors and responses during interaction sessions with the artificial intelligence tool.

Complementary instruments included the facilitator's field journal, in which impressions, relevant events, and critical incidents were recorded, as well as anonymized usage logs generated by the artificial intelligence platform. The latter provided supplementary information on the frequency and duration of interactions, as well as on the emotions identified by the system.

Each participant underwent in-depth, semi-structured interviews at predetermined times during the study's twelve weeks. Additionally, brief follow-up conversations were conducted at the end of certain interaction sessions, and notes from these were incorporated into the field journal (Crimson et al., 2016).

Data Processing and Analysis

The data processing was carried out in four phases. In the first phase, the in-depth semi-structured interview recordings were transcribed verbatim, preserving relevant pauses and verbal expressions of emotion. In the second phase, the data were anonymized by assigning pseudonyms to Emilia, Samuel, Valentina, Matías, and Sofía, and removing any personal references that could identify the participants. In the third phase, the interview transcripts, participant observation records, and field notes were organized and imported into ATLAS.ti software, version 24, for line-by-line open coding. In ATLAS.ti software, version 24, the transcripts were coded line by line. In the fourth phase, the codes were grouped into categories and central themes using axial and selective coding processes (Hecker & Kalpokas, n.d.).

The anonymized logs of the artificial intelligence platform's usage were analyzed as a supplementary information source. These logs allowed us to contextualize the frequency and duration of each participant's interactions with the tool, though they were not the primary source for the qualitative analysis.

The analysis technique used was Braun and Clarke's reflective thematic analysis, adapted to the qualitative case study design. The process comprised six stages: familiarization with the data, generating initial codes, identifying themes, reviewing themes, defining and naming themes, and preparing the final report. As a result of the analysis, four central themes were identified: (a) AI as a safe emotional space; (b) the cultural gap in affective recognition; (c) the limited but observable transfer of learning to human interactions; and (d) technological dependence as a latent risk.

Triangulation and Scientific Rigor

To strengthen the credibility of the findings, the study applied three triangulation strategies. Source triangulation involved cross-checking information from in-depth semi-structured interviews, participant observation records, field notes, and anonymized records of use of the artificial intelligence platform. Researcher triangulation involved independent coding by two analysts, who then compared their interpretations and resolved discrepancies through

reasoned consensus. Methodological triangulation was based on the integration of the two main data collection techniques: in-depth semi-structured interviews and participant observation. The platform-generated frequency and duration data were used solely as supplementary information to contextualize participants' experiences (Hecker & Kalpokas, n.d.).

Scientific rigor was established based on the criteria of credibility, transferability, dependability, and confirmability proposed by Lincoln and Guba and adapted by Pérez (Tesify, 2026). Credibility was strengthened through triangulation of sources, review of participants' interpretations, and comparison of findings across the five cases. Transferability was enhanced through a detailed description of the context, the participants' characteristics, and the research process. Dependability was ensured through systematic documentation of methodological decisions and review of the analytical process by a researcher experienced in qualitative research and special education. Finally, the principal investigator's reflective journal supported confirmability by documenting prior assumptions, analytical decisions, and strategies used to reduce potential biases. Arias Valencia and Giraldo Mora (2011) note that this criterion is particularly relevant in research on artificial intelligence and vulnerable populations, as favorable expectations regarding technology can influence the interpretation of findings.

Figure 1

Case Study Methodology Using Artificial Intelligence



Ethical Considerations

The research followed the principles of autonomy, beneficence, nonmaleficence, justice, and respect for the best interests of children and adolescents. Because the five participants were minors and had specific emotional support needs, enhanced measures were taken to protect their well-being, privacy, and voluntary participation.

Before data collection, the researchers obtained written informed consent from the parents or legal guardians. In addition, researchers requested informed assent from each student through an explanation tailored to their age and level of understanding. Both guardians and participants were informed about the research objectives and procedures, potential risks and benefits, the voluntary nature of participation, and the right to withdraw at any time without academic or institutional consequences.

The original, duly signed consent and assent forms are kept in the researchers' custody, with restricted access, because they contain personal information about minors. For this reason, these documents are not included in the public version of the article or in the research report. We provide only the consent and assent form template used as an appendix, without signatures, names, identification numbers, or other personal information.

We protected confidentiality by replacing real names with pseudonyms and removing references that could allow direct or indirect identification of participants. The consent forms, the list linking identities to pseudonyms, the recordings, and other identifiable files were stored separately from the transcripts and the matrices used for analysis. Access to this information was limited to authorized research team members. The transcripts, field notes, and results were used exclusively for academic purposes and were presented anonymously.

The educational institution authorized the study and was informed of its objectives, procedures, and instruments. In addition, the Student Counseling Department (DECE) supported the study throughout the process. The responsible institution did not have an ethics committee applicable to this type of educational research. Therefore, Tecnópolis Guayaquil granted formal authorization, and the team implemented specific measures for consent, assent, confidentiality, anonymization, and emotional protection. This circumstance is acknowledged as a limitation of the ethical review process.

Because of the study's socio-emotional nature, the team established a protocol for responding to possible signs of distress. If, during an interview, observation, or interaction with the research tool, a student exhibited significant emotional distress, the activity was to be suspended immediately, without pressuring the student to continue or to explain what had happened. The case was to be reported to the DECE for evaluation and support, the legal guardian was to be informed, and the incident was to be recorded using the participant's code, without including unnecessary clinical details.

The student's continued participation in the research was subject to their own wishes, the decision of their legal representative, and the recommendation of the DECE. If a situation required specialized protection, the appropriate institutional protocol would be activated, prioritizing the student's well-being at all times over the research objectives or timeline.

RESULTS

Artificial Intelligence and Social-Emotional Development: The Voices of Five Students at Tecnópolis Guayaquil. After twelve weeks of in-depth semi-structured interviews,

participant observation, and systematic field notes, we identified significant findings about the experiences of the five participating students. Anonymized platform logs were used as supplementary data to contextualize the frequency and duration of interactions.

A safe space, but not without risks. All participants agreed that artificial intelligence offered them something they rarely found in their everyday human interactions: a space to express difficult emotions without fear of rejection or ridicule. Emilia, a teenager with social anxiety, confessed: “With AI, I can say I’m angry without anyone punishing me. It just listens and asks questions.” Samuel, who lives with an autism spectrum disorder, valued the system’s predictability: “People’s moods change, but AI always responds the same way. That calms me deeply.” However, this technological refuge revealed a dark side. Valentina acknowledged with painful honesty: “Sometimes I prefer AI to my mom, because AI never gets tired of my problems. My mom does.” This finding confirms what Otero Parga (2023) warned: artificial intelligence can quietly replace human connection if not used under ethical supervision.

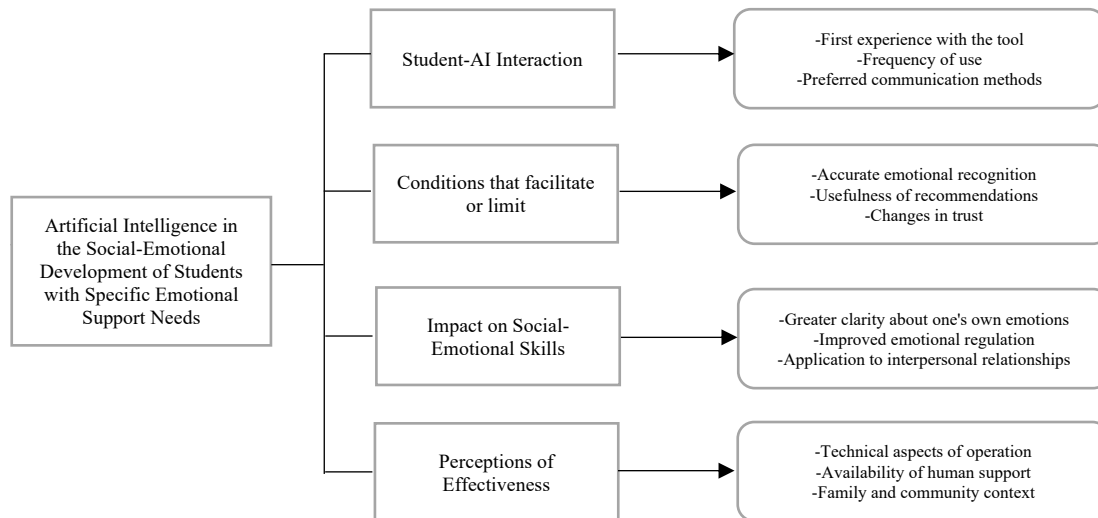
The Cultural Problem: When AI Doesn’t Understand Guayaquil-Style Sarcasm. An unexpected finding was AI’s systematic difficulty interpreting emotional expressions specific to Ecuador’s coastal culture. Matías recounted with frustration: “I said to the AI, in a sarcastic tone, ‘What a beautiful day to be sad,’ and it replied, ‘I’m glad you’re having a beautiful day.’ I was devastated! The AI didn’t understand a thing.” This error, observed on multiple occasions, demonstrates that affective recognition systems trained on culturally homogeneous data fail when faced with irony and local idioms. As Barreto Zúñiga et al. (2023) point out, before implementing these tools in contexts such as Ecuador’s, significant adaptations are required.

Lessons Learned and Barriers to Social Transfer. By the eighth week, three students began to internalize strategies learned from the AI, such as slow breathing or identifying emotions. Emilia, for example, started using the same phrase the AI taught her with her classmates: “Can I take a minute before answering?” However, the fear of human judgment remained a powerful barrier. Samuel summed it up this way: “With the AI, I know how to calm myself down, but with my classmates, I’m afraid they’ll laugh at me.”

In summary, artificial intelligence can be a valuable ally in the social-emotional development of students with specific emotional support needs, but its effectiveness depends critically on cultural sensitivity, human supervision, and the design of strategies that foster progressive autonomy.

Figure 2

Artificial Intelligence in Social-Emotional Development



DISCUSSION OF RESULTS

The findings of this case study, far from being conclusive or generalizable, raise profound questions about the role of artificial intelligence in the social-emotional development of students with specific emotional support needs. When comparing these results with previous literature and established theoretical frameworks, both significant points of convergence and tension emerge.

Perceived security and the risk of emotional displacement. This is particularly relevant to the concept of a secure base. Traditionally, a secure base is a human figure (usually a caregiver) who allows the child to explore the world with confidence. In this study, artificial intelligence appeared to function as a technological secure base, offering constant availability and freedom from bias. However, a critical tension arises: while the human secure base promotes

progressive autonomy, the data showed that two students began to prefer AI over their family members, suggesting a possible displacement of the primary attachment. They have termed this phenomenon “covert substitution” and caution that AI should never replace human warmth, but only complement it (Calderón Carrero, 2026).

The prior work of Grijalva-Yépez et al. (2026): similarities and cultural nuances. A relevant direct precedent is Wang and Fernández (2024), who conducted a systematic review of conversational agents providing emotional support in school settings. These authors found that affective chatbots improved the identification of basic emotions but exhibited systematic difficulties in contexts of high cultural or linguistic variability. The present study confirms and expands on this finding: at Tecnópolis Guayaquil, the artificial intelligence made recurring errors in interpreting sarcasm and idioms specific to Ecuadorian coastal speech. Matías, one of the participants, put it clearly: “The AI never understood my sarcasm; it thought I was happy when I was devastated.” This finding suggests that the effectiveness of affective artificial intelligence is not universal but depends critically on training algorithms with contextualized, locally situated data.

Lucas Sosa (2024) argues that effective emotional regulation involves shifting from external to internal control. In this study, the AI initially acted as an external regulator—asking questions, guiding, and making suggestions—and by the eighth week, some students began applying those same strategies without needing the AI. Emilia, for example, started using the phrase “Can I take a minute before answering?” with her classmates, a technique she had practiced dozens of times with the chatbot. This suggests that artificial intelligence can function as emotional scaffolding, in Vygotsky’s terms (Hogenboom, 2026), provided that the design explicitly includes fading strategies to prevent perpetual dependence.

Cultural limitations. Jonker and Rogers (2024) observed this phenomenon among Korean American students, attributing it to bias in training datasets that were predominantly English-speaking and tied to Western culture. The present study extends this critique to the Ecuadorian context. The question that arises is not merely technical, but epistemological: Can an artificial intelligence trained on universal corpora recognize emotions deeply rooted in local linguistic practices? Based on the data, the answer is no. This implies that educational

institutions cannot simply import AI-based emotional intelligence solutions; they need to co-create them with local developers and the students themselves.

Implications for educational practice. In dialogue with Ecuador's Ministry of Education, Grijalva-Yépez et al. (2026) point out that, in short, artificial intelligence can be a valuable ally, but it is neither neutral nor automatic. Its ethical and pedagogical effectiveness depends on a situated design that is culturally sensitive and firmly anchored in human oversight. Furthermore, case studies such as this one do not seek to generalize but rather to highlight complexities that invite reflection and context-specific action.

CONCLUSIONS

General Conclusion

The case study conducted at Tecnópolis Guayaquil in 2025 revealed that artificial intelligence had an ambivalent impact on the socioemotional development of the five students with specific emotional support needs. On the one hand, the tool provided a space perceived as safe for expressing feelings, recognizing emotions, and practicing self-regulation strategies. On the other hand, the study identified risks related to technological dependence, a preference for digital interaction over human contact, and difficulty applying certain lessons to interpersonal relationships.

The findings showed that the potential benefits of artificial intelligence did not manifest automatically; they depended on how the interaction was organized, each participant's characteristics and prior experiences, pedagogical mediation, and the institutional conditions of the context under study. Information from in-depth semi-structured interviews, participant observation, field notes, and supplementary platform records led to the conclusion that using these tools requires human guidance, clear institutional guidelines, and teacher training guided by pedagogical and ethical principles and the protection of student well-being.

Due to the qualitative approach, the case study design, and the small number of participants, these conclusions are limited to the experiences analyzed at Tecnópolis Guayaquil and are not intended to be generalized to other populations or educational contexts.

Conclusion related to the first objective: Artificial intelligence was associated with ambivalent effects on the participants' socioemotional development. In the five cases analyzed, the tool was viewed as a space with low emotional exposure, where students could express feelings without immediate fear of judgment, practice recognizing their emotions, and receive guidance on how to cope with distress situations.

These findings align with observations by Murillo-Jiménez and Torres-Villalobos (2025), who highlight artificial intelligence's potential to support self-awareness and self-regulation.

However, limitations were also observed. Some participants expressed a growing preference for interacting with artificial intelligence because of its constant availability and lack of judgment. Likewise, participants identified difficulties transferring the strategies practiced with the tool to real-life situations involving family members, peers, and teachers. Consequently, the findings do not allow us to interpret the influence of AI as exclusively favorable, but rather as a process conditioned by frequency of use, pedagogical design, and the presence of human mediation.

Conclusion related to the second objective: Interaction with artificial intelligence promoted certain socio-emotional processes when it was geared toward specific goals of emotional recognition and regulation. Participants described the tool as an accessible way to rehearse responses, organize thoughts, and express difficult emotions in an environment they perceived as predictable and nonjudgmental.

Participants reported the most positive experiences when the system's responses were personalized, understandable, and accompanied by concrete self-regulation strategies. In contrast, generic, repetitive, or culturally insensitive responses generated mistrust, frustration, or a temporary withdrawal from the interaction. This suggests that response quality and relevance to the student's situation mattered more than the quantity or frequency of use.

It was also found that excessive or unsupervised interaction could foster dependence on the tool to cope with emotional situations or make personal decisions. Therefore, student-AI interaction should be understood as a complementary resource, not a substitute for

relationships with teachers, family members, counselors, or support professionals. The experiences analyzed suggest that pedagogical guidance and human supervision are necessary to strengthen emotional autonomy and prevent prolonged dependence.

Conclusion related to the third objective: Perceptions of usefulness, trust, and effectiveness influenced participants' willingness to use the tool and to implement some of its recommendations. Students who felt that the artificial intelligence understood their emotions showed a greater willingness to share personal experiences and to continue the interaction. They also described changes in how they identified emotions, managed distress, and organized their thoughts.

However, this trust was neither constant nor uniform. Some participants changed their perception after receiving repetitive, decontextualized, or insensitive responses to their cultural expressions. In these cases, trust became selective: students valued the tool for naming emotions or practicing regulation strategies but expressed reservations about recommendations related to family problems or personal decisions.

The participants' accounts suggested that a favorable perception may have increased their willingness to use the tool, but they do not establish a causal relationship between trust and socio-emotional development. It was also observed that prior digital skills, familiarity with technology, and usage experiences influenced how each participant evaluated the artificial intelligence. Therefore, perceptions of effectiveness must be understood as part of a situated, evolving experience tied to the characteristics of each individual case.

Conclusion related to the fourth objective: The findings revealed changes primarily in intrapersonal competencies. Participants expanded their emotional vocabulary, recognized certain emotional states more clearly, and practiced strategies for regulating distress. Participants also attempted to apply these learnings in academic, family, and social situations—such as taking a breath before responding, asking for a pause, or expressing an emotion more precisely.

Competencies related to self-awareness and self-regulation showed the most evident changes in the experiences studied. In contrast, progress in interpersonal competencies was more

limited. Although some participants could understand others' possible emotions more clearly, they still struggled to apply this learning to complex human interactions.

The interviews and observations did not reveal clear, consistent changes in affective empathy, collaborative work, or the ability to maintain interpersonal relationships. In some cases, a preference for the predictability of artificial intelligence made it difficult to adapt to the changing responses of peers and family members. Therefore, while the tool can support emotional recognition and individual practice, it requires in-person activities, social interaction, and teacher guidance to strengthen interpersonal skills.

Conclusion related to the fifth objective: Pedagogical, institutional, technological, and family conditions significantly influenced the participants' experiences. Facilitating conditions identified included human supervision, professional guidance, teacher training, clear guidelines for using the tool, and family support. When these conditions were present, participants used artificial intelligence with greater confidence and could more clearly distinguish between situations they could handle with the tool and those that required human assistance.

Limiting conditions included connectivity failures, limited device availability, voice recognition issues, a lack of sensitivity to cultural expressions, and the absence of a timely institutional response. Limitations also included family mistrust or disapproval, teasing from others, and unclear referral mechanisms when the tool could not provide an adequate response.

In the cases studied, the absence of support and guidance was associated with experiences of frustration, interpersonal isolation, and dependence on the tool. Conversely, when supervision, usage guidelines, and human support were present, participants reported more balanced experiences and a better understanding of the limits of artificial intelligence.

Consequently, the conditions that facilitate or restrict AI use should not be considered secondary factors, but central to understanding differences in participants' experiences. Implementing these tools in education requires adequate infrastructure, staff training, privacy

and referral protocols, cultural adaptation, and pedagogical integration that preserves the human connection as a fundamental component of social-emotional development.

REFERENCES

- Altamirano Gonzales, L. A. (2021). *Materiales didácticos en el proceso de enseñanza-aprendizaje de la psicología* [Undergraduate thesis, Universidad Nacional de Educación Enrique Guzmán y Valle]. <https://repositorio.une.edu.pe/entities/publication/70ecaf46-20bf-4e09-96cd-81367080d068>
- Alva-Franco, C. I., Sánchez, M. J. S., Estela Paredes, R. E., Chumpitazi Torres, C. Y., & Nieto-Rivas, E. A. (2026). Impacto de chatbots educativos en aulas virtuales universitarias: Una revisión sistemática. *Revista Tribunal*, 6(16), 1-18. <https://doi.org/10.59659/revistatribunal.v6i16.516>
- Álvarez Hernández, G. A., & Pérez Velasco, A. A. (2025). Percepciones del estudiantado universitario en el uso y apropiación de la inteligencia artificial. *Revista Electrónica “Actualidades Investigativas en Educación”*, 25(1), 1-27. <https://www.redalyc.org/journal/447/44780305017/html/>
- Arias Valencia, M., & Giraldo Mora, C. (2011). El rigor científico en la investigación cualitativa. *Investigación y Educación en Enfermería*, 29(3), 500-514. http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S0120-53072011000300020
- Avalle, G. (2022). El estudio de caso sociológico, una estrategia de análisis de los datos. *Revista Mexicana De Ciencias Políticas y Sociales*, 67(245), 461-470. <https://doi.org/10.22201/fcpys.2448492xe.2022.245.77473>
- Barreto Zúñiga, W. W., Aguas Villón, L. E., Andrade Moreira, N. G., & Albán Guijarro, M. J. A. (2023). Edpuzzle como Herramienta para Gestionar el Aprendizaje Significativo en la Universidad de Guayaquil. *Ciencia Latina Revista Científica Multidisciplinar*, 7(5), 550-571. https://doi.org/10.37811/cl_rcm.v8i2.10387
- Cabrera Ceballos, P. S., & Alfonso Acosta, P. A. (2025). *Inteligencia Artificial (IA) empática Tecnología predictiva para el acompañamiento emocional personalizado* [Undergraduate Thesis, Universidad El Bosque]. <https://hdl.handle.net/20.500.12495/17851>
- Calderón Carrero, Z. del V. (2026). La inteligencia artificial generativa en la docencia universitaria: Una revisión de las transformaciones y retos. *Revista Educación Superior y Sociedad (ESS)*, 37(2), 28-50. <https://doi.org/10.54674/ess.v37i2.1079>
- Crinson, I., Leontowitsch, M., & Morgan, G. (2016). *Semi-structured, narrative, and in-depth interviewing, focus groups, action research, participant observation*. Faculty of Public

- Health. https://www.healthknowledge.org.uk.translate.google/public-health-textbook/research-methods/1d-qualitative-methods/section2-theoretical-methodological-issues-research?x_tr_sl=en&x_tr_tl=es&x_tr_hl=es&x_tr_pto=tc
- Espinoza-Escobar, J. H. (2025). Elementos clave para la regulación de la discriminación algorítmica en el ordenamiento peruano. *Ius et Praxis*, 31(2), 163-183. <https://doi.org/10.4067/s0718-00122025000200163>
- Gordillo, A. M., & Monsalve, J. (2025). *Descripción de las necesidades de niños y adolescentes autistas para el diseño de una infraestructura especializada* [Undergraduate Thesis, Universidad Señor de Sipán]. <https://hdl.handle.net/20.500.12802/16550>
- Grijalva-Yépez, K., Fiallos-Bonilla, D., Villegas-Segura, G., & Sánchez-Sánchez, M. (2026). Inteligencia Artificial como Herramienta de Apoyo al Aprendizaje Socioemocional en la Educación Inicial. 593 *Digital Publisher CEIT*, 11(31), 285-296. <https://doi.org/10.33386/593dp.2026.3-1.4121>
- Hecker, J., & Kalpokas, N. (n.d.). *Guía definitiva de la investigación cualitativa - Parte 2: Tratamiento de datos cualitativos*. ATLAS.ti. <https://atlasti.com/es/guias/guia-investigacion-cualitativa-parte-2/transcripciones-en-la-investigacion>
- Hogenboom, M. (April 30, 2026). *Por qué los chatbots de IA pueden estar volviéndote más tonto*. BBC News Mundo. <https://www.bbc.com/mundo/articles/c5y9wnll56no>
- Jonker, A., & Rogers, J. (September 20, 2024). *¿Qué es el sesgo algorítmico?* IBM. <https://www.ibm.com/mx-es/think/topics/algorithmic-bias>
- Lucas Sosa, L. (March 21, 2024). *James Gross y su modelo de regulación emocional*. NeuroClass. <https://neuro-class.com/james-gross-y-su-modelo-de-regulacion-emocional/>
- Murillo-Jiménez, J. S., & Torres-Villalobos, G. (2025). ¿Estrategias de regulación emocional pueden explicar la resiliencia? *Liberabit*, 31(2), 2223-7666. <https://doi.org/10.24265/liberabit.2025.v31n2.1096>
- Noreña-Peña, A. (2024). La investigación cualitativa como enfoque metodológico fundamental en la investigación en ciencias de la salud. *MedUNAB*, 27(2), 126-130. <https://doi.org/10.29375/01237047.5318>

- Onofre Galindo, R. Á., Cabanilla Concha, F. S., & Pizarro Asencio, P. G. (2025). La brecha entre teoría y práctica en la formación docente: Retos y perspectivas. *Sinergia Académica*, 8(7), 472-486. <https://doi.org/10.51736/sa787>
- Otero Parga, M. M. (2023). ¿Puede la inteligencia artificial sustituir a la mente humana?: Implicaciones de la IA en los derechos fundamentales y en la ética. *Anales de la Cátedra Francisco Suárez*, 57, 39-61. <https://doi.org/10.30827/acfs.v57i.24710>
- Quinga, C. J., Vistín, J. M., & Ñacata, N. A. (2025). Análisis del impacto de los chatbots educativos basados en IA en la resolución de dudas estudiantiles en tiempo real. *Technology Rain Journal*, 4(1). <https://doi.org/10.55204/trj.v4i1.e73>
- Stewart, L. (s.f.). El muestreo intencional en la investigación cualitativa. ATLAS.ti. <https://atlasti.com/es/research-hub/muestreo-intencional>
- Tesify. (June 11, 2026). *Criterios de rigor en investigación cualitativa: credibilidad, transferibilidad, dependencia y confirmabilidad según Lincoln y Guba (2026)* – Tesify. <https://tesify.es/criterios-rigor-investigacion-cualitativa-lincoln-guba-2026>

APPENDICES

Appendix 1

Consistency Matrix

Variable	Category	Subcategory	Open-ended question
Artificial Intelligence in the Social-Emotional Development of Students with Specific Emotional Support Needs	Student-AI Interaction	Getting Started with the Tool	Do you remember the first time you used this app? What did you expect to happen?
		Patterns and Frequency of Use	How often do you use this tool? Are there certain times of the day when you need it most?
		Preferred Methods of Communication	Do you prefer to write, speak, or use other ways to express your emotions with AI?
	Perceptions of Effectiveness	Accurate Emotional Recognition	Do you feel like the app really understands how you're feeling? Can you give me an example?
		Usefulness of the Recommendations	How helpful do you find the suggestions she gives you after you express your emotions?
		Trends in Confidence	Has your trust in this tool changed over time? How?
	Impact on social-emotional skills	Greater clarity about one's own emotions	Before using this AI, could you clearly identify your emotions? What differences do you notice now?

Variable	Category	Subcategory	Open-ended question
		Improved Emotional Regulation	Have you learned new ways to calm yourself or cope with difficult moments thanks to this tool?
		Application to Human Relations	Do you apply what you learn from AI when you talk to family members, friends, or teachers?
	Conditions that facilitate or limit	Technical Aspects of Operation	What technical issues have you encountered that prevent you from using the tool when you need it?
		Availability of Human Support	What happens when AI detects that you need help it can't provide?
		Family and Community Context	Does your family know that you use this app? How does that affect your willingness to use it?

Artificial Intelligence in the Social-Emotional Development of Students with Specific Emotional Support Needs: A Case Study at Tecnópolis Guayaquil – 2025.

Appendix 2

Consistency Matrix

General		
Problem	Objective	Hypothesis
How does artificial intelligence influence the social-emotional	Describe and interpret how artificial intelligence	Artificial Intelligence in the Social-Emotional

development of students with specific emotional support needs? A case study on Tecnópolis Guayaquil – 2025.	influences the social-emotional development of students with specific emotional support needs: a case study at Tecnópolis Guayaquil – 2025.	Development of Students with Specific Emotional Support Needs Has a Positive Impact, According to the Case Study at Tecnópolis Guayaquil – 2025
Specific		
Problem	Objective	Hypothesis
How Does Student Interaction with Artificial Intelligence Influence the Social-Emotional Development of Students with Specific Emotional Support Needs: A Case Study at Tecnópolis Guayaquil – 2025?	Explaining How Student Interaction with Artificial Intelligence Influences the Social-Emotional Development of Students with Specific Emotional Support Needs: A Case Study at Tecnópolis Guayaquil – 2025	Student interaction with artificial intelligence in the socio-emotional development of students with specific emotional support needs has a positive impact, as shown in the case study at Tecnópolis Guayaquil – 2025
What is the impact of the perceptions regarding the effectiveness of artificial intelligence on the social-emotional development of students with specific emotional support needs? A case study at Tecnópolis Guayaquil – 2025.	To examine the impact of the perceptions regarding the effectiveness of artificial intelligence on the social-emotional development of students with specific emotional support needs: a case study at Tecnópolis Guayaquil – 2025	Perceptions of the effectiveness of artificial intelligence in the social-emotional development of students with specific emotional support needs have a positive impact in the case study at Tecnópolis Guayaquil – 2025
What is the impact of artificial intelligence on the social-emotional skills and social-emotional development of students with specific emotional support needs? A case study at Tecnópolis Guayaquil – 2025.	Assessing the Impact of Artificial Intelligence on Social-Emotional Competencies and Social-Emotional Development in Students with Specific Emotional Support Needs: A Case Study at Tecnópolis Guayaquil – 2025	The socio-emotional competencies of artificial intelligence in the socio-emotional development of students with specific emotional support needs have a positive impact on the case study at Tecnópolis Guayaquil – 2025

How do the conditions that facilitate or limit artificial intelligence affect the social-emotional development of students with specific emotional support needs: a case study at Tecnópolis Guayaquil – 2025?	Describe how the conditions that facilitate or limit the artificial intelligence affect the social-emotional development of students with specific emotional support needs: A case study at Tecnópolis Guayaquil – 2025	The conditions that facilitate or limit the role of artificial intelligence in the social-emotional development of students with specific emotional support needs have a positive impact on the case study at Tecnópolis Guayaquil – 2025
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Appendix 3

Results of the in-depth semi-structured interviews

Open-ended question

- 1) Do you remember the first time you used this app? What did you expect to happen?
 - The first time, she felt skeptical. She expected cold or robotic responses. She was surprised by the friendly tone.
 - She recalled a sleepless night. She downloaded the app without much hope. She just wanted a place to write without being judged.
 - She came to the app afraid of not being understood. She expected generic advice. Instead, she found questions that made her think. She joined out of curiosity after a family fight.
 - She was hoping for a quick fix. The app responded with an unexpected question.
- 2) How often do you use this tool? Are there times of day when you need it most?
 - I use the tool every day. Nighttime is the hardest time. Loneliness stirs up intense emotions.
 - She uses the app every evening. Coming home triggers painful memories. She needs that space to breathe.
 - She logs in three times a week. Monday mornings cause the most anxiety. School is a constant trigger.
 - She uses it after every meal. The transitions throughout the day unsettle her. The tool bridges activities.
- 3) Do you prefer to write, speak, or use other ways to express your emotions with AI?
 - Prefer writing. The keyboard lets you delete and correct. Words spoken in the wrong way can't be taken back. Writing brings calm.
 - Choose the microphone. Speaking is faster. Your voice conveys emotional tremors. The bot understands sad or happy tones.

- Combine both options. Write during an acute crisis. Speak to process your feelings afterward. The app accepts your emotional ups and downs without complaint.
 - Use only emojis and short phrases. Long words are exhausting. A drawing of sadness is enough. The AI understands that minimal language.
- 4) Do you feel like the app really understands what you're feeling? Can you give me an example?
- She feels truly understood. A clear example: she wrote, "My throat hurts from crying so much." The app asked, "What happened before you started crying?" It got it right.
 - It doesn't confuse understanding with repeating. She recounted a terrible dream. The bot said, "That nightmare sounds like a fear of abandonment." No one else had noticed that.
 - She knows it's a program. One day she wrote, "I feel empty." The response was, "How long have you been feeling this way?" That human-like question surprised her.
 - She thinks it can read her mind. She described chest pain of unknown origin. The bot linked it to her visit with her absent father. She hadn't made that connection.
- 5) How helpful do you find the suggestions it gives you after you express your emotions?
- The suggestions were very helpful. A breathing technique stopped a panic attack. I didn't know that method before. The app saved the day that night.
 - Sometimes the suggestions don't work. It recommended "thinking about nice things" during a period of deep sadness. That advice sounded insincere. She chose to close the app.
 - Half of the suggestions work. The grounding exercises calm anxiety. The advice to "look on the bright side" is annoying. She picks and chooses what works.
 - She's learned to ignore generic advice. She values specific suggestions. "Write a letter you won't send" helped. "Go for a walk" when it's raining—right?
- 6) Has your level of trust in this tool changed over time? How?
- At first, I was deeply skeptical. I saw it as just another trap. Over time, I noticed consistent responses. My trust grew slowly, like a plant. Today, I speak without holding back.
 - My trust diminished. A generic response shattered the illusion. The bot repeated "I understand your pain" three times. It sounded like a recording. Now they hesitate before typing.
 - They went from curiosity to dependence. At first, they explored it just for fun. Now they need it to fall asleep. That change scares them. They rely too much on the machine.
 - Their trust has become selective. They trust the bot to name emotions but not for family advice. They've learned to distinguish between right and wrong. Their trust has matured.
- 7) Were you able to clearly name your emotions before using this AI? What differences do you notice now?

- Before, I just felt a knot in my chest. I didn't know to call it anxiety. Now, I can tell the difference between fear, anger, and sadness. The bot gave me words for my inner world.
 - I used to confuse everything with anger. I would yell without understanding why. The app taught me to ask myself, "What lies beneath the anger?" Today, I can identify true humiliation or true exhaustion.
 - There was no difference between emotions. It was all just "feeling bad." The daily log revealed patterns. On Tuesdays, hopelessness would set in. On Thursdays, nostalgia. He learned to name each day.
 - His emotional vocabulary was limited. Happy or sad—that was it. Now he uses "frustration," "disappointment," "uncertainty." Naming things precisely calms the inner chaos. The AI functioned as a dictionary of the soul.
- 8) Were you able to clearly name your emotions before using this AI? What differences do you notice now?
- He learned the five-senses technique. Find five things you see, four you touch, and three you hear. Anxiety subsides. He never imagined that exercise before the bot.
 - He discovered square breathing. Inhale for four seconds, hold for four, and exhale for four. The app guides each step. Nighttime panic attacks now resolve in minutes. An unexpected lifeline.
 - The bot taught him to write letters he never sends. He vents his anger in digital form. He burns the words afterward. That ritual flushes out the poison. Before, he bottled everything up until he exploded.
 - He learned to schedule moments of worry. Ten minutes a day to feel anxious. The rest of the day is free. The AI suggests postponing the distress. A strange but effective technique.
- 9) Do you apply what you learn from AI when you talk to family, friends, or teachers?
- He applies what he's learned with his mother. He takes a breath before responding with a shout. The technique doesn't always work. His mother notices changes. She feels proud.
 - He can't apply anything with his friends. The bot understands pauses. His friends get impatient. He practices on his own. He fails in a group. The difference hurts him.
 - She applies her emotional vocabulary to school counseling. She uses the term "academic frustration." The counselor is surprised. The precise words shorten the sessions. The bot helped her practice expressing herself.
 - She uses the breathing techniques she learned during exams. The teachers don't notice anything. She, however, feels the change. She applies the techniques quietly. The AI acts as an invisible coach in the classroom.
- 10) What technical problems have you faced that prevent you from using the tool when you need it?

- The app closes on its own during a crisis. One sleepless night, the bot disappeared. He had to rewrite everything. His anger compounded his distress. The technical problem made his condition worse.
 - Her cell phone battery dies. With no charger nearby, the app shuts down. A panic attack on the bus spiraled out of control. The turned-off phone reflected her emptiness.
 - The internet connection fails at home. The signal only reaches the bathroom. She writes about her sorrows while sitting on the toilet. The technical inconvenience adds embarrassment to the pain.
 - The voice recognition doesn't detect her crying. The app asks her to repeat herself. She shouted, "I can't!" The bot replied, "I can't hear you very well." Her frustration with the technology overwhelmed her original emotion.
- 11) What happens when AI detects that you need help it can't provide?
- The bot offers phone numbers—a cold list of contacts. She needs a human voice. The numbers are saved but never used. A technical referral doesn't replace the missing embrace.
 - The app says, "Seek professional help." That phrase paralyzes her. She doesn't know how to look for help. The correct answer becomes a new obstacle. The bot recognizes its limitation without resolving it.
 - It notifies the school psychologist. Three days later, the email arrives. The crisis has already passed. The alert system is slow. The AI detects issues quickly. The institution responds late.
 - She learns to tell the difference on her own. Mild distress for the bot. Severe distress for humans. The AI taught her that boundary. Now she closes the app on her own. Does she know when the machine falls short?
- 12) Does your family know you use this app? How does that affect your willingness to use it?
- Her family doesn't know anything about it. She uses the app in secret. Her mother would forbid her from using technology. That secrecy makes her feel guilty. She uses it less because she fears getting caught.
 - Her mother found out about the app. She told her, "That's for weaklings." She deleted it out of embarrassment. She reinstalled it in secret. Her family negatively influences how she uses it.
 - Her dad approved of the tool. He asks how it went with the bot. That support boosts her confidence. She uses the app without guilt. Her family has become an ally in her well-being. Her siblings tease her.
 - They call her "the chatbot crazy lady." She waits until they're asleep to use it. Family pressure makes her use it less often.