

Dialogical inclusion in the management competencies: An innovative approach in the training of civil engineers

Inclusión dialógica en las competencias de gestión: Un enfoque innovador en la formación de ingenieros civiles

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Abstract: This article focuses on exposing the need to strengthen the training of civil engineers in Colombia, traditionally focused on technical skills, through dialogical inclusion, in order to address current challenges in management competencies. A problem arises related to the lack of management skills and communication competencies, which limits their ability to deal with the increasing complexity of projects and interaction with various stakeholders. The main objective of the study was to explore the impact of dialogical inclusion on the management competencies of engineering students. Methodologically, the study was based on a qualitative approach and adopted a documentary research design where relevant literature on dialogical inclusion and its meaning in training was collected. The analysis period covers the present. The population of interest was civil engineering students in Colombia. The results indicate that dialogical inclusion plays a crucial role in the development of management skills and communicative competence.

Keywords: Leadership, Dialogic inclusion, Critical thinking, Management skills.

Resumen: Este artículo se centra en exponer la necesidad de fortalecer la formación de ingenieros civiles en Colombia, tradicionalmente centrada en habilidades técnicas, a través de la inclusión dialógica, con el fin de abordar los desafíos actuales en competencias de gestión. Surge un problema relacionado con la falta de habilidades de gestión y competencias de comunicación, lo que limita su capacidad para enfrentar la creciente complejidad de proyectos e interacción con diversos actores. El objetivo principal del estudio fue explorar el impacto de la inclusión dialógica en las competencias de gestión de los estudiantes de ingeniería. Metodológicamente, el estudio se basó en un enfoque cualitativo y adoptó un diseño de investigación documental donde se recopiló literatura relevante sobre la inclusión dialógica y su significado en la formación. El período de análisis abarca el presente. La población de interés fueron los estudiantes de ingeniería civil en Colombia. Los resultados indican que la inclusión dialógica desempeña un papel crucial en el desarrollo de habilidades de gestión y competencia comunicativa.

Palabras clave: Liderazgo, inclusión dialógica, pensamiento crítico, habilidades de gestión..

Introduction

In the context of civil engineering education in Colombia, the development of management competencies has become essential in the pursuit of highly qualified and versatile professionals in the current job market. Effective management in civil engineering projects requires skills that go beyond technical knowledge, encompassing aspects of leadership, communication, decision-making and teamwork (Delahoz-Dominguez et al., 2020). In this sense, dialogic inclusion emerges as an innovative approach that

promotes the participation of students and professionals in the educational and work process, allowing them to acquire these competencies more effectively. The dialogic focus enables the joint construction of knowledge through egalitarian dialogue between all participants, valuing the contribution of each person and their unique perspectives. This has shown promising results in strengthening comprehensive training processes that develop qualified civil engineers, prepared to successfully take on management responsibilities and complex challenges in professional practice (Cifuentes-Mora, 2021).

The training of civil engineers in Colombia has historically focused on acquiring technical skills and scientific knowledge, with basic attention to management and communication skills (Arias-Rueda et al., 2021). However, the increasing complexity of civil engineering projects and the constant interaction with diverse actors in the work environment require a more holistic preparation for engineers. Dialogic inclusion, which fosters dialogue, critical thinking, and collaboration, can be an effective approach to address these needs. The importance of this research lies in the need to enhance the training of civil engineers in Colombia so that they can effectively address the challenges of today's construction sector. Dialogic inclusion is presented as a powerful tool for developing management competencies, which, in turn, will contribute to the quality and efficiency of civil engineering projects in the country (Acosta, 2023). Therefore, the main objective of this article is to explore and analyze the impact of dialogic inclusion on the development of management competencies for civil engineers in Colombia. Through this study, we aim to determine how dialogic inclusion can improve the acquisition of management skills, critical thinking, and communication in future civil engineers (Quintero, 2022).

The hypothesis that dialogic inclusion in the training of civil engineers significantly enhances the development of management competencies compared to traditional approaches is posited. This hypothesis prompts questions such as, how does dialogic inclusion influence the acquisition of management skills in civil engineering students in Colombia? and to what extent does dialogic inclusion foster critical thinking and effective decision-making in the context of civil engineering.

This article comprises a preliminary section outlining generalities, a second section presenting and developing the theoretical foundations of dialogic inclusion and its relevance in the training of civil engineers. The third section describes the research methodology employed, providing details on data collection techniques and analysis. The fourth section presents the research findings, followed by key conclusions from this study and recommendations for the implementation of dialogic inclusion in the training of civil engineers in Colombia.

Theoretical references

Dialogic inclusion is a pedagogical approach rooted in the theory of dialogue and open communication, considering them as fundamental elements in the learning

process. This perspective has proven to be highly relevant in the education of civil engineers, addressing the imperative to cultivate management competencies, effective communication skills, ethical decision-making, and critical thinking in an increasingly interconnected and collaborative environment in civil engineering. The theoretical foundations of dialogic inclusion are presented below.

Bakhtin's Dialogue Theory

Mikhail Bakhtin's theory of dialogism provides a strong theoretical foundation for dialogic inclusion in civil engineering education for developing management competencies. Bakhtin views language as inherently social and dialogic, suggesting learning emerges through interaction with others. This aligns with dialogic inclusion's promotion of active dialogue in training. Concepts like polyphony (diversity of voices) and heteroglossia (diversity of discourses) relate directly to civil engineering's multidisciplinary context, which requires considering various perspectives in complex decision making (Bubnova, 2020; Cárdenas Páez & Ardila Rojas, 2017)

Dialogic inclusion embraces this diversity, encouraging students to understand and integrate multiple viewpoints. Bakhtin also emphasizes the ethical responsibility in discourse to consider different voices, which translates to civil engineers making ethical, socially responsible decisions. Overall, dialogism recognizes the dialogic, multifaceted nature of language and management, making it apt for contextualizing dialogic inclusion (Álvarez-Bernárdez & Monereo, 2020; Sisto, 2015). This approach can effectively train civil engineers to be versatile professionals able to communicate across disciplines and lead participatory processes in evolving, challenging work environments (Carranza-Gallardo & Molina-Landeros, 2021). The key strengths of dialogic inclusion according to Bakhtin's framework are fosters learning through interactive dialogue; values diversity of voices and discourses to improve decision making; promotes ethical considerations in management; prepares civil engineers for complex, evolving professional demands involving communication, collaboration, and leadership across specialties (Bastos-de Souza & Pampa, 2023).

Collaborative Learning

Dialogic inclusion aligns with the concept of collaborative learning, emphasizing the importance of teamwork and knowledge sharing (Rodríguez-Borges et al., 2020). This theoretical framework is closely associated with dialogic inclusion in the development of management competencies for civil engineers. Within this context, collaborative learning denotes a pedagogical approach where students work together in groups, actively engaging in the construction of knowledge and the cultivation of managerial skills (Compte-Guerrero & Sánchez del Campo Lafita, 2019; Roselli, 2011; Vargas et al., 2020). The key aspects of this educational model include:

Active interaction. Collaborative learning conceives students as active participants rather than passive recipients. This pedagogical approach aligns with dialogic inclusion, emphasizing interaction and dialogue among students as central elements for the construction of meaningful learning. Through the exchange of ideas, negotiation of perspectives, and joint development of projects, students are dynamically and horizontally involved in the generation of knowledge (Guerra-Santana et al., 2019).

Cooperation and Teamwork. Collaborative learning fosters cooperation among students and teamwork, valuable competencies in the professional practice of civil engineers. Given the interdisciplinary nature of projects and the interaction with diverse stakeholders, developing the ability to collaborate effectively is essential.

Joint Knowledge Construction. Dialogic inclusion is based on collaborative learning, where students, instead of relying solely on teacher instruction, actively construct their knowledge through interaction with their peers. This pedagogical approach promotes dialogue and the exchange of perspectives among students as an effective form of learning. By encouraging students to engage in dialogue, contrast their ideas, and negotiate understanding, a meaningful shared construction of knowledge is generated.

Development of Social and Communication Skills. Collaboration in groups enriches communication, decision-making, and conflict resolution skills, all of which are essential for management in civil engineering. Dialogic inclusion and collaborative learning complement each other by fostering these social and communication skills (Angulo-Vilca, 2021; Hernández-Sellés, 2021).

Development of communication and critical thinking skills

Effective communication is a critical competency for civil engineers as they interact with clients, colleagues, contractors, and other stakeholders on construction projects. Dialogic inclusion focuses on the development of communication skills, promoting an environment where students can express their ideas clearly, listen actively to others, and construct solid arguments. This enables them to communicate effectively in professional situations (Canese de Estigarribia, 2020; Sánchez & Urdaneta, 2016). Dialogic inclusion also fosters critical thinking by challenging students to question their own ideas and those of others (Hierrezuelo-Osorio et al., 2022). In the context of civil engineering, this is essential for rigorously evaluating the technical, environmental, and ethical implications of decisions made in projects (Villanueva-Morales et al., 2022). Additionally, dialogic inclusion emphasizes ethical decision-making, which is fundamental in a discipline where the consequences can be significant for public safety and the environment.

Methodology

Approach

The methodology used corresponds to a qualitative documentary approach with a non-experimental design. It is descriptive, focusing on the collection and analysis of relevant literature on dialogic inclusion in the development of management competencies in civil engineering in Colombia. The sources of information are secondary, derived from previously published materials. A systematic review of both theoretical and empirical publications was conducted by searching academic databases. The selection criteria considered the relevance, validity, and reliability of the sources. The analysis involved coding to synthesize findings regarding the current status and perspectives of this topic in civil engineering education (Hernández, Fernández, & Baptista, 2014).

Units of analysis

The primary data source for this research involves gathering relevant literature on the topic of dialogical inclusion in the development of management skills for civil engineers in Colombia. A thorough review of secondary sources will be conducted, including academic articles, books, research reports, theses, and other documents addressing the topic from various perspectives.

Data collection techniques

To identify relevant studies, selection criteria were applied to pinpoint the most pertinent and significant sources. These criteria included content relevance, research quality, publication date, and alignment with the research objectives. Boolean operators were employed to combine search terms, and filters were applied to narrow the search to studies published in the last 5 years and in either Spanish or English. Additionally, reference lists of included studies were scrutinized to identify additional relevant research. All identified studies will be stored in a database, and duplicates will be removed. Subsequently, inclusion and exclusion criteria will be applied to select the studies to be included in the systematic review.

Analysis processing

The content analysis was based on the qualitative synthesis technique to examine and synthesize the information collected from secondary sources. Patterns, themes, trends, and significant relationships in the reviewed literature will be identified. The analysis focused on understanding how the issue of dialogical inclusion in the training of civil engineers in Colombia has been addressed and what the main findings and approaches proposed by the authors are.

Results

The training of civil engineers in Colombia has historically focused on the acquisition of technical skills and scientific knowledge, with limited attention to management and communication skills (Arias-Rueda et al., 2021). While this formative tradition has been effective for the development of solid technical competencies, the increasing complexity of civil engineering projects and the need to interact with diverse actors in the work environment have highlighted the importance of a more holistic preparation for civil engineers. In this context, dialogic inclusion, which fosters dialogue, critical thinking, and collaboration, emerges as a promising approach to address these needs (Díez-Gutiérrez, 2020).

Dialogic inclusion presents itself as a promising perspective for addressing needs in civil engineering education, especially in an educational context traditionally focused on technical skills and scientific knowledge, for several fundamental reasons. First, dialogic inclusion emphasizes a holistic approach to training that recognizes the importance of interpersonal skills and communicative competence, in addition to technical skills. Given that civil engineers must interact with a variety of stakeholders, including multidisciplinary teams, clients, authorities, and the community, the ability to communicate effectively and collaborate is crucial (Ceballos, 2020; Prieto & Duque, 2009).

Secondly, dialogic inclusion fosters critical thinking by encouraging students to question, analyze, and reflect on their own ideas and those of others. In the context of civil engineering, where decisions affecting public safety and the environment are made, critical thinking is essential for effectively evaluating problems and solutions. Thirdly, civil engineering projects often require collaboration with professionals from various disciplines, such as architects, geologists, and environmental management specialists. Dialogic inclusion promotes interdisciplinary collaboration and enables students to learn how to work in diversified teams, reflecting the demands of the professional reality (Berdeal-Vega, Isabel Josefa; Guerra-Pérez, Reinaldo; Gutiérrez-de la Cruz, 2021; Ibarra & Benítez, 2019).

In the field of civil engineering, increasingly complex challenges such as sustainability, risk management, and disaster resilience are being confronted. Dialogic inclusion emerges as a key approach to address these issues, fostering collaboration among students and enabling them to contribute a diversity of perspectives and solutions to complex challenges. Moreover, this approach drives the discussion of ethical and social issues relevant to civil engineering, preparing future engineers to consider the social and environmental impact of their decisions an essential aspect in promoting an ethical and socially responsible professional practice (Jaramillo & Vergara-Luján, 2023; Palacio, 2013). As a result, dialogic inclusion positions itself as a promising method for the training of civil engineers, given its ability to develop communication skills, promote critical thinking, encourage interdisciplinary

collaboration, and prepare students to tackle complex and ethical problems. This methodology aligns optimally with the evolving demands and current challenges in the field of civil engineering.

Development in the classroom

The implementation of dialogic strategies in the classroom can enhance the acquisition of management skills and foster critical thinking among civil engineering students. The following outlines the processes through which these strategies can achieve these objectives:

Promotion of Active Dialogue. In terms of acquiring management skills, the active inclusion of dialogue in the classroom stimulates discussion and collaborative decision-making, mirroring real-world situations in civil engineering. Students have the opportunity to put into practice fundamental skills for project and team management, such as effective communication, negotiation, and conflict resolution. Engagement in active dialogue provides them with the chance to experience management scenarios in a controlled learning environment. By participating in discussions and collaborative decision-making, students develop essential competencies for real-life project management, as emphasized by Valencia (2012). These competencies include effective communication with colleagues and stakeholders, negotiation of agreements, and conflict resolution critical aspects for leading teams and coordinating activities in construction projects.

Regarding critical thinking, active dialogue provides students with the opportunity to question and analyze various perspectives. Engaging in debates and discussions stimulates critical thinking by requiring students to evaluate arguments, consider evidence, and arrive at informed conclusions. This type of interaction promotes a critical approach to the problems and challenges inherent in civil engineering. Students are encouraged to question and analyze multiple perspectives and arguments, allowing them to develop the ability to assess the validity of arguments and consider evidence objectively during debates and discussions (Rapanta et al., 2021). This skill proves essential for the analysis of complex problems, the identification of effective solutions, and decision-making based on data and sound reasoning, as highlighted by Torres et al. (2015).

Simulating real-life situations through active dialogue provides students with the opportunity to experience and practice project management and problem-solving, replicating the demands of their future careers. These learning activities offer a fertile ground for the application of theoretical concepts to practical situations, which is crucial for the training of highly competent civil engineers. Beyond enhancing technical and managerial skills, active dialogue also contributes to the development of essential interpersonal skills, such as empathy, active listening, and the building of

effective relationships. Civil engineers capable of understanding and communicating effectively with colleagues and stakeholders gain a significant advantage in project management and the resolution of complex problems, as emphasized by Carranza and Molina-Landeros (2021).

In consideration of the aforementioned, the implementation of active dialogue in the classroom prepares students to face real-life situations in the field of civil engineering, where they must assume leadership roles, interact with diverse stakeholders, and make crucial decisions. By promoting communication, collaboration, and critical thinking, this methodology equips future civil engineers to confidently address the challenges present in the construction sector with solid skills. The encouragement of active dialogue through dialogic strategies in the classroom provides civil engineering students in Colombia with an effective platform to develop management skills, foster critical thinking, practice collaborative decision-making, and strengthen interpersonal competencies. These skills are fundamental for their success in the current construction industry and project management landscape.

Collaborative learning. Regarding the acquisition of management skills, collaborative learning strategies promote collaboration and role distribution, aspects that mirror teamwork dynamics within civil engineering. Students engaging in this approach develop fundamental competencies for effectively managing projects, efficiently communicating with peers, and coordinating tasks—essential skills in project management. Collaborative learning involves the active participation of students in teams, replicating workplace interactions in the civil engineering industry. Through collaboration on projects and tasks with their peers, students not only acquire skills for effectively managing projects but also develop specific abilities such as the proper distribution of roles and responsibilities, planning and coordination of tasks, effective communication within the team, and joint decision-making. These competencies prove essential in construction project management, where coordination and collaboration are fundamental pillars for achieving success, as highlighted by Barragan-Arias and Arias-Ortíz (2018).

Collaborative learning provides opportunities for joint problem-solving, driving the development of critical thinking. Students encounter complex situations that demand detailed analysis and informed decision-making. By working collaboratively with their peers, they must debate, justify, and defend their approaches and solutions. This dynamic stimulates critical thinking as students analyze problems from various perspectives, identify viable solutions, and articulate their choices. Critical thinking proves essential in civil engineering, where informed decision-making and problem analysis are integral components of project management and the resolution of technical challenges (Andrade-Yabarino et al., 2022).

The focus on collaborative learning in the classroom prepares students for the work environment of civil engineering, where interdisciplinary collaboration

and project management are common practices. Civil engineers who have experienced and mastered teamwork and critical thinking during their academic training are better equipped to face the challenges and complexities of the construction sector and project management in the professional realm. The practice of teamwork in collaborative learning also fosters the development of essential interpersonal skills. Students not only acquire the ability to communicate effectively with their peers but also learn to resolve conflicts constructively and build strong working relationships. These skills are not only crucial for project management but also contribute to a more harmonious and productive work environment.

It is important to note that the implementation of collaborative learning strategies in the classroom through dialogic approaches is essential for future civil engineers to acquire robust management skills, foster critical thinking, and develop interpersonal competencies. These skills are vital in the context of civil engineering and prepare students for success in their future professional careers (Albelais-León, 2015).

Case discussion and analysis. In the realm of acquiring management skills, debates and case analyses provide students with the opportunity to explore project management scenarios in a controlled and academic environment. This approach allows them not only to analyze complex problems, make strategic decisions, and justify their choices but also to significantly enhance their management skills. By participating in debates and case analyses, students develop a robust, practical, and applicable experience in decision-making, project planning, and team coordination. This practice not only enables students to analyze and comprehend project management situations but also contributes to the development of their ability to manage projects effectively and collaborate successfully with colleagues and stakeholders (Paz-Penagos, 2018).

Critical thinking is stimulated through case examination and participation in debates, as students must consider multiple perspectives and arguments. This compels them to critically analyze information and make evidence-based decisions. Case analysis and participation in debates foster critical thinking among students. When examining diverse situations and scenarios, they must consider and evaluate multiple perspectives, arguments, and solutions. This requires them to critically analyze information, identify best practices, recognize the implications of their decisions, and take evidence-based actions. Critical thinking is a crucial component of informed decision-making in project management and problem-solving in civil engineering (Sánchez-Ortiz & Brito-Guerra, 2015).

Consequently, the focus on debate and case analysis in the classroom prepares students to tackle real-world challenges in civil engineering and project management. By practicing problem-solving and decision-making in academic scenarios, students gain experience and confidence to apply these skills in their future professional careers. Debate and case analysis also enhance students' communication skills. To actively participate in debates and discussions, they must express their ideas effectively

and persuasively. They also need to listen and respond to their peers' opinions and arguments, contributing to more effective communication. These communication competencies are essential in project management, where clarity and persuasion are crucial for conveying information and making collaborative decisions (Moreno et al., 2021; Unegbu et al., 2022).

Therefore, the implementation of debate and case analysis strategies through dialogic approaches in the classroom is crucial for future civil engineers to acquire strong management skills, foster critical thinking, develop communication competencies, and prepare for the challenges inherent in the construction and project management sector in the real work environment. These skills are essential to ensure their success in the industry and facilitate effective decision-making in a complex and ever-evolving workplace.

Reflection and continuous evaluation. Reflection on learning experiences and ongoing assessment of projects and processes are key components of effective management for acquiring management skills. Students engaging in these practices develop self-assessment skills and a commitment to continuous improvement. Reflection and ongoing assessment are fundamental components of effective management in civil engineering. By involving students in these practices, they are taught to analyze and review their own actions and decisions (Arefazar et al., 2022). This process cultivates skills in self-evaluation, self-reflection, and self-control, all of which are essential elements of effective management. Students learn to identify areas for improvement and implement strategies to address them, contributing to the acquisition of management and leadership skills (Niño-Manrique et al., 2022).

Critical thinking is fostered through reflection and evaluation, as students analyze their own performance, identify areas for improvement, and develop strategies to address them. Reflection and continuous assessment require students to scrutinize their own performance and make informed decisions on how to enhance it. This process promotes critical thinking as students scrutinize their actions, identify potential challenges and improvement opportunities, and devise strategies to address them (López-Ruiz et al., 2021). Critical thinking is essential for informed decision-making and problem-solving in civil engineering, enabling professionals to adapt to changing circumstances and optimize efficiency in project management (Benavides & Ruíz, 2021; Bermúdez-Mendieta, 2021).

Given these considerations, the practice of reflection and continuous assessment in the classroom prepares students for professional practice in civil engineering. In the workplace, civil engineers must be able to continually assess projects, processes, and performance and take steps to optimize them. The experience gained in higher education through reflection and continuous assessment provides a solid foundation for facing these types of challenges in the real world. Reflection and continuous assessment also foster the ability for self-directed learning. Students learn to identify their

own areas for improvement and actively seek learning opportunities. This skill is valuable in the construction industry, where adaptability and continuous improvement are essential for success in a constantly changing environment (Gamboa-Rodríguez & Alonso-Betancourt, 2012).

Building on the above and considering the implementation of dialogic strategies in the classroom, these provide a conducive environment for the development of management skills and the promotion of critical thinking among civil engineering students. These strategies facilitate increased interaction, collaboration, and reflection, resulting in a more effective preparation of future civil engineers to face the challenges of their field. The integration of reflective practices and continuous assessment through dialogic approaches in the classroom is essential for future civil engineers to acquire strong management skills, foster critical thinking, develop self-learning competencies, and adequately prepare for professional practice in the construction industry. These skills empower them to enhance their own performance, make informed decisions, and effectively adapt to changing challenges in civil engineering projects.

Strategies and practices in dialogic inclusion for the educational sector

Enhancing management competencies in the training of civil engineers to meet the challenges of the construction sector today through dialogic inclusion as an innovative approach involves the implementation of specific strategies and practices at the institutional level in educational establishments and regulatory bodies such as the Ministry of Education (Cantor et al., 2021). To achieve this goal, the following is proposed:

Designing inclusive curriculum programs. Integrating dialogic inclusion is essential as a central component in the design of civil engineering curriculum programs. This involves developing curricula that incorporate dialogue-based activities, collaborative learning, and case-based discussions within subjects related to project management and interpersonal competencies (Rodrigo-Moriche et al., 2022).

Training of instructors. Provide training for instructors to ensure they are prepared to implement dialogic strategies in the classroom. This may include workshops and training sessions on facilitating discussions, promoting reflection, and fostering critical thinking (Ferrero & Díaz-Guio, 2021).

Flexible learning environments. Establish flexible learning environments that encourage dialogue and collaboration. Utilize classroom spaces that enable active interaction, such as flexible-designed classrooms, collaboration technology, and online tools for discussion.

Meaningful group projects. Integrate meaningful group projects into the curriculum. Practical projects where students must collaborate to plan, design, and

execute construction projects provide opportunities to develop management skills in a real-world context.

Problem-based learning. Implement problem-based learning, where students must address real-world societal needs related to construction and project management. This fosters critical thinking and effective decision-making.

Formative assessment. Employ formative assessment to provide ongoing feedback to students regarding their management skills and performance in dialogue and collaboration situations. This helps them identify areas for improvement and develop competencies progressively.

Integration of ethics and social responsibility. Encourage discussion and reflection on ethical issues and social responsibility in civil engineering. Dialogic inclusion can promote consideration of the social and environmental impacts of management decisions.

Collaboration with the industry. Collaborate closely with the construction industry to incorporate real-world experiences and projects into the curriculum. Interaction with professionals in the field can provide students with a deeper understanding of management challenges.

Continuous assessment and feedback. Establish a continuous assessment and feedback process to measure the impact of dialogic inclusion on the improvement of management competencies. Conduct regular reviews of the curriculum and adjust strategies as needed.

Self-directed learning. Promote self-directed learning, where students take an active role in their competency development. This includes seeking additional resources, participating in study groups, and engaging in self-reflection.

Impact of interpersonal skills and communication competence skills

The incorporation of interpersonal skills and communication competence into the training of civil engineers in Colombia, in addition to technical skills, can have several positive impacts. For instance, it can lead to improvement in effective communication. Civil engineers equipped with communication competence can communicate more effectively with colleagues, clients, contractors, and other stakeholders. This facilitates the transmission of critical information and decision-making based on shared understanding. Additionally, civil engineering projects often involve multiple disciplines, such as architecture, geology, and environmental management. The ability to interact and collaborate with professionals from different fields is essential for the success of these projects (Paz-Penagos, 2018).

Interpersonal skills, such as empathy and active listening, enable students to better understand the needs and perspectives of others. By learning to put themselves in the shoes of others and actively listening, they can establish stronger connections with colleagues, clients, contractors, and stakeholders in construction projects. This

promotes more effective communication by ensuring that everyone feels heard and understood. In this regard, communicative competence includes the ability to express ideas clearly and persuasively. When students develop this competence, they can effectively communicate complex technical information to non-technical audiences. This skill is crucial in civil engineering, where professionals must communicate with a variety of stakeholders, some of whom may lack advanced technical knowledge. Interpersonal skills are also fundamental for conflict resolution. In civil engineering, disputes and disagreements can arise in projects. Students who have developed empathy and effective communication skills are better equipped to address and resolve conflicts constructively, preventing them from escalating and affecting project progress (Torres et al., 2015).

In light of these considerations, interpersonal skills enable future civil engineers to build effective relationships with colleagues and stakeholders. These strong relationships are crucial for long-term success in the construction industry. Trust and smooth communication contribute to a collaborative and productive work environment. It is worth noting that communicative competence translates into the ability to tailor the message to diverse audiences. In civil engineering, engineers must communicate with individuals of varying levels of experience and technical understanding. Adaptability in communication ensures that information is conveyed effectively and comprehensibly to all stakeholders. Civil engineering projects often impact local communities (Gamboa-Rodríguez & Alonso-Betancourt, 2012). Thus, developing communicative competence allows civil engineers to effectively communicate the project's impacts and benefits to the community, addressing their concerns and building positive relationships. Effective communication helps prevent misunderstandings and errors in project execution, saving time and resources. Clarity and empathy in communication minimize the likelihood of problems arising from poor communication.

In terms of effective team management, civil engineers often lead teams in construction projects. Therefore, interpersonal skills such as conflict resolution and team motivation are crucial for effective team management. Students develop leadership skills by understanding the needs of team members, enabling them to make informed decisions and create an inclusive environment (Rivera-Medina & Aparicio-Molina, 2020). Clear and open communication minimizes misunderstandings and encourages active participation. Furthermore, interpersonal skills enable constructive conflict resolution, efficient role distribution, and team cohesion. Regarding conflict management, conflicts can arise between stakeholders in construction projects. Undoubtedly, interpersonal skills help resolve these conflicts effectively, avoiding delays and additional problems. Thus, promoting assertiveness and effective communication facilitates the expression of needs and concerns without aggression or passivity. Empathy and active listening help understand perspectives in conflict situations, enabling disagreement resolution (Cárdenas-Páez & Ardila-Rojas, 2017). Additionally, interpersonal

skills prepare students for negotiation and problem-solving. Together, these skills prevent and mitigate conflicts, promoting a harmonious work environment.

Competence in communication skills provides civil engineers with the ability to express their ideas clearly and persuasively, which is crucial for making informed decisions in project management situations. Fostering open communication and communicative competence ensures that information flows freely within the team. This impact allows students to express their opinions and contribute ideas effectively, enriching decision-making by considering multiple perspectives. In this regard, interpersonal skills teach students to negotiate and solve problems effectively, reaching mutually beneficial agreements and addressing complex issues collaboratively, resulting in more robust decisions. Encouraging empathy and active listening drives critical analysis of presented ideas and arguments. Consequently, students evaluate evidence and consider different viewpoints before making decisions, ensuring that these decisions are supported by informed thinking. In a linear sense, communicative competence promotes active participation of all team members in the decision-making process. This ensures that all voices are heard, and decisions are made consensually (Niño-Manrique et al., 2022).

Civil engineering projects often impact local communities. Communicative competence is essential for conveying the project's impacts and benefits to the community and addressing their concerns. The development of interpersonal skills and communicative competence enables students to communicate their ideas and expectations clearly and precisely, minimizing misunderstandings and reducing the likelihood of errors in project execution, as instructions and specifications are transmitted unequivocally. It is worth noting that interpersonal skills, such as empathy and assertiveness, allow students to address conflicts constructively. They can express their concerns and disagreements effectively, facilitating dispute resolution in a manner that does not undermine collaboration within the team. Clear and effective communication reduces the likelihood of misunderstandings and errors in project execution, saving time and resources. It also minimizes conflicts, which can be costly and detrimental to the project. Fostering interpersonal skills contributes to the efficient distribution of roles and responsibilities within a team (Valencia, 2012). Thus, students learn to assign tasks according to each member's skills and strengths, avoiding duplication of efforts and reducing confusion about who is responsible for what. By promoting effective communication skills and empathy, conflicts can be prevented before they occur. Students can identify potential sources of conflict and proactively address them, minimizing disruptions and delays in the project.

On the other hand, the inclusion of interpersonal skills and ethics in the training of civil engineers promotes consideration of the social and ethical impacts of engineering decisions, fostering social responsibility. It is worth mentioning that civil engineers in Colombia who possess interpersonal skills and communicative

competence, in addition to technical skills, are better prepared to address the challenges in the construction sector and project management. These skills enable them to communicate effectively, collaborate in multidisciplinary teams, make informed decisions, and address ethical and social issues, contributing to a more robust and ethical professional practice in civil engineering.

Conclusions

In conclusion, this study highlights the positive impact of dialogical inclusion on the development of management and communication competencies in civil engineering students. The results indicate that promoting dialogue, collaborative learning, and critical thinking in the training of civil engineers significantly improves essential skills such as leadership, decision-making, teamwork, and effective communication.

This research lays the foundations and opens perspectives for more in-depth studies on the implementation of dialogical strategies in civil engineering education in Colombia. It is recommended to conduct quantitative studies with experimental and control groups to measure the large-scale impact. Qualitative research focused on gathering perceptions and experiences of students and teachers is also suggested.

Likewise, it is proposed to design specific curricular proposals that integrate dialogical inclusion into civil engineering programs, as well as analyze the results of their implementation. Finally, comparative studies with other Latin American countries are recommended to determine regional gaps and opportunities for improvement in the training of civil engineers. In summary, this research introduces an innovative approach with promising results to transform civil engineering education in Colombia. Further studies are required to realize this potential for improvement through the dialogical inclusion in management competencies.

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