

Inclusive Culture in Higher Education: University Teacher and Student Perceptions

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Abstract

The objective of this study was to analyse the inclusive culture in the Faculty of Engineering of a private university in Lima. The research focused on teaching staff and student perceptions regarding the value of student diversity and the barriers that hinder academic performance. The approach was qualitative with a phenomenological design and included a sample of 10 university teachers and six students. The instruments used were a semi-structured interview guide for university teachers and a focus group guide for students. The data analysis procedure was conducted using ATLAS.ti (version 23). The results demonstrate a gap between the valuation of diversity and inclusive practice, whereby Universal Design for Learning (UDL) is not incorporated into session planning. Likewise, a lack of learning supports is recognised as a result of institutional deficiencies.

Keywords: Inclusive culture; student diversity; learning barriers; university teacher training; Universal Design for Learning.

Introduction

The twenty-first century university faces an undeniable ethical and legal imperative: to transform its structures to accommodate a heterogeneous student population. At the international level, this ethical mandate is enshrined in frameworks such as the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2020) guidelines on inclusion and equity, which establish access to quality education as a fundamental human right for all. Legally, within the Peruvian educational context where this study is situated, these principles are strictly enforced through frameworks such as the General Education Law 28044 (2003) and Supreme Decree 007-2021-MINEDU (2021), which mandate the implementation of inclusive practices and accommodations for diverse learning needs. Inclusive culture, understood as the shared values and beliefs that celebrate diversity and assume it as a resource for learning, is the foundation upon which inclusive practices must be built (Aisha, 2025). University classrooms are spaces where students with visible and invisible disabilities, neurodivergent individuals, migrants, and those with diverse gender identities as well as linguistic and cultural differences converge as a diverse group of learners. Despite this demographic shift and the accompanying legal frameworks, institutional culture and pedagogical practices often persist with traditional and rigid models (Riley, 2017).

The purpose of this study was to examine the state of inclusive culture from the teacher and student perspectives within the specific context of an engineering faculty. To align with the qualitative phenomenological design and the specific scope of the study, it sought to answer: 1) How do university teachers and students within a faculty of engineering perceive and value student diversity in their everyday academic interactions? and 2) What pedagogical and institutional barriers are identified by university teachers and students as hindering the learning process and academic performance of students with diverse learning needs within this highly technical environment?



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The central thesis of this work argues that the "non-adaptation" of teaching is not a neutral position but an action of exclusion that limits the development of students' academic potential. Within this framework, the original contribution of this research lies in the analysis of perceptions that evidence the tensions shaping inclusive culture within university education. By specifically analysing the engineering education context, this study seeks to highlight how university teacher resistance to developing flexible teaching methods is systematically justified by the defence of "objectivity" and the rigour of hard sciences, ultimately consolidating pedagogical barriers for the diverse student body.

Theoretical Approach and Conceptual Framework

To address inclusive culture, it is necessary to move away from the medical or deficit model, in which the student is framed as the problem, and instead adopt the social and human rights model (Davis et al., 2024). This model is grounded in a sociocultural approach that rejects framing unequal academic participation as an issue of individual student deficit, insufficiency of motivation, or low confidence. Rather than attempting to modify individuals' behaviour through psychological interventions while ignoring the structural reasons for exclusion, this perspective recognises that higher education institutions often reproduce systems of oppression through their everyday policies, norms, and practices. Consequently, the model demands the restructuring of learning environments to dismantle these institutional barriers, positioning students' diverse identities, perspectives, and lived experiences not as obstacles to be overcome but as fundamental assets that enrich equitable collaborative work and promote social justice. Under this approach, the present study assumed that hindrances in learning arise from the interaction between the student's characteristics and an inflexible environment. While diversity in higher education encompasses a broad spectrum of linguistic, cultural, gender, and socioeconomic backgrounds (Chrysochoou et al., 2021), the specific scope of this paper focuses directly on neurodiversity and cognitive learning barriers. In particular, this study examines the pedagogical experiences and challenges faced by students with Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorder (ASD), and specific learning disabilities such as dyslexia. Embracing this neurodivergent spectrum requires higher education to move beyond mere accommodations or the remediation of perceived weaknesses, which remain characteristic of the deficit model. By adopting a strengths-based approach, institutions can empower these students to leverage their unique cognitive variations and diverse thinking styles as valuable assets. Ultimately, this shift directly fulfils the goal of a truly inclusive culture, enhancing the overall educational experience for all learners.

The concept of "Special Educational Needs" (SEN) is being replaced by that of "Barriers to Learning and Participation" (BLP) (Dyanti & Mkabile-Masebe, 2025). The easily identifiable barriers are physical (architectural and furniture design), but in education, the most harmful barriers are pedagogical and cultural: inflexible curricula, standardised assessment methods, and university teachers' attitudes that view supports and adjustments as a reduction in academic demands. This conceptual framework guided the present study towards identifying university teacher and student perceptions regarding the valuation of diversity and the existing learning barriers within the university context.

The Valuation of Diversity

International literature suggests a dichotomy in university teachers' perceptions (Gámez-Calvo et al., 2025; Leif et al., 2025; Semião et al., 2023). On the one hand, there is a discursive acceptance of inclusion: the majority of academics consider that the university should be a space open to all (Gámez-Calvo et al., 2025). However, this valuation is often abstract. When diversity presents itself in the classroom, demanding changes in methodology (for example, allowing the use of assistive technology, modifying submission times, and offering alternative reading formats), positive valuation decreases. Many university teachers are experts in their disciplines but often lack formal pedagogical training and perceive diversity as an extra burden or an interruption to the normal academic flow. There is a deeply rooted belief that treating all students the same is synonymous with justice. However, in contexts of diversity, formal equality (giving everyone the same) deepens substantive inequality (Aisha, 2025). Valuing diversity implies equity: giving each person what they need to achieve the same learning objectives.

The University Teacher Facing Heterogeneity

The literature consistently highlights that university teachers' attitudes play a fundamental role in the successful implementation of inclusive education (Gámez-Calvo et al., 2025). Rather than stemming from a deliberate intention to exclude, hesitation or reluctance to adopt inclusive practices is often tied to a lack of specialised pedagogical training, unfamiliarity with neurodivergent needs, or the pressure of navigating rigid academic structures (Gray et al., 2026; Leif et al., 2025; Sanderson et al., 2022). If a positive attitude towards diversity is not present, it is difficult to transition to appropriate

pedagogical action. University teachers often report not feeling prepared to teach students with ADHD, ASD, dyslexia, or language barriers (Gray et al., 2026; Sanderson et al., 2022). This lack of preparation fosters a culture of "referral": the university teacher assumes that the student "with problems" must be attended to by a specific disability or student support office, disengaging from their pedagogical responsibility. This lack of preparation often leads university teachers to avoid addressing diverse learning needs (Moriña et al., 2025). Consequently, rather than assuming pedagogical responsibility to fix the learning environment, there is a tendency to rely on "remedial inclusion," perpetuating a deficit discourse that seeks to "fix the learner" (Mthethwa & Moleko, 2026). This fragmented vision prevents the construction of a true inclusive culture, where diversity is the responsibility of the entire university community.

The Absence of Supports as a Structural Barrier

The core of the problem lies in the teacher–student interaction. When a university teacher does not provide supports or diversify their methods, they are building a barrier (Mkhize & Ngema, 2025). Some examples of barriers are as follows:

- **Methodological barriers:** the exclusive use of the masterclass (lecturing) excludes students with auditory processing difficulties or linguistic barriers.
- **Material barriers:** the use of non-accessible PDF texts (scanned images) excludes users of screen readers (students with low vision or blindness).
- **Assessment barriers:** the exclusive use of timed, written, and rote-learning exams to accredit knowledge excludes students with processing speed differences or high test anxiety.

Failing to adapt teaching implies assuming there is a single "correct" way to learn and demonstrate knowledge (Harrison & Mosen, 2025). This ignores human variability and excludes those who fall outside the statistical norm.

From Reasonable Adjustment to Universal Design for Learning (UDL)

Traditionally, universities have operated under the "reasonable adjustments" model (adaptations for a specific student who requests them). While necessary, adjustments stigmatise the student and rely on them disclosing their condition. The ideal is to achieve an inclusive culture that adopts Universal Design for Learning (UDL; Fujii, 2026). UDL proposes creating educational environments that are accessible to the greatest number of people possible from the outset, through the design of:

- **Multiple means of engagement:** connecting learning with cultural relevance, interests, and student identity.
- **Multiple means of representation:** offering information in various formats (text, audio, video, images, and graphics).
- **Multiple means of action and expression:** allowing students to manipulate information and demonstrate what they know through different formats, for example, essays, oral presentations, and multimedia projects (Rose & Meyer, 2002).

This pedagogical structure is not random but is based on the neuroscience of learning. UDL recognises three primary neural networks involved in the learning process: affective networks (the "why" of learning), recognition networks (the "what" of learning), and strategic networks (the "how" of learning). In an engineering context, where complex problem-solving is central, ignoring the variability of how students activate these networks is counterproductive. For example, a student with ADHD may have a highly creative strategic network for solving calculus problems, but a recognition network that fails when faced with dense texts lacking visual scaffolding. By using UDL, the university teacher is not simplifying the content but eliminating the unnecessary cognitive friction that prevents those neural networks from operating at their maximum potential. Thus, cognitive resources can be allocated to deep learning rather than decoding formats that are difficult for the student. When university teachers apply UDL, the need for special adjustments drastically decreases because the barrier has been eliminated from the session's design (Fovet, 2024).

The Implementation Gap

There is consensus in the literature regarding the implementation gap (Venkareddy, 2025). While university policies declare inclusion as a core value (mission and vision), classroom practices are not always aligned with regulations (Gray et al., 2026; Mthethwa & Moleko, 2026). University teachers value diversity as a sociopolitical concept (democracy and rights) but fail to

value it as a pedagogical asset (Davis et al., 2024). Diversity is often perceived as a factor that lowers academic standards due to the need to modify pacing and content (Leif et al., 2025; Riley, 2017).

Inflexibility as the Main Barrier

Studies confirm that the main barrier to learning is not the student's condition (for example, their blindness or dyslexia), but curricular inflexibility (Morales & León, 2025; Podzo & Chipika, 2019). Students report that stress and academic failure stem more from university teachers' refusal to make rigid rules more flexible (attendance and submission formats) than from the cognitive complexity of the subjects. A perceived lack of empathetic engagement from teaching staff, often compounded by difficulties in consistently providing accessible materials within highly demanding academic schedules, is frequently cited as a contributing factor to student dropout (Moriña et al., 2025; Mthethwa & Moleko, 2026).

Insufficient University Teacher Training

The literature indicates that university teacher training is scarce and, when it does exist, rarely addresses practical inclusion strategies such as UDL, which improves the retention of university students (Garra & Nolan, 2023). University teachers learn to teach by replicating how they were taught, perpetuating exclusionary models (Gray et al., 2026; Leif et al., 2025). However, when teaching staff are trained in UDL, not only does the performance of students with disabilities improve, but also that of the entire class group (Whinnery et al., 2020), validating the premise that what is essential for some is beneficial for all. In the case of engineering education (Sanderson et al., 2022), this lack of pedagogical training is strongly intertwined with a traditional culture that usually equates standardisation and inflexibility with academic rigour (Riley, 2017). As a result, the urgent need to adapt teaching for diverse learners is overlooked.

Method

The present research was based on a qualitative approach, adopting a phenomenological design (Husserl, 1983). This methodological choice responded to the need to explore not only external characteristics but the deep structure of lived experiences and the meanings that both university teachers and students attach to inclusive culture within their academic environment (Fuster Guillen, 2019). In the specific context of a faculty of engineering, where technical and objective structures predominate, the phenomenological design allowed for unveiling the perceptions, barriers, and facilitators of inclusion from the direct voice of the actors, capturing the common essence of their experiences.

To ensure the scientific rigour typical of qualitative research, the criterion of suspending judgement and prior assumptions was applied. For this, it was necessary to conduct a constant reflective exercise to set aside one's own assumptions about inclusion and allow the phenomenon to manifest as it was perceived by the participants. This distancing was crucial to avoid confirmatory biases and to ensure that emerging categories, such as institutional silence or methodological resistance, genuinely stemmed from empirical data and not from the research team's theoretical preconceptions (Fuster Guillen, 2019; Husserl, 1983).

While the sample size was intentionally limited to preserve the phenomenological depth of the analysis, its significance lies in addressing a critical gap in engineering education research. Historically, studies in technical disciplines have privileged quantitative metrics or evaluated physical infrastructure, often overlooking the lived, everyday experiences of pedagogical exclusion. By capturing the direct voices of key informants within a highly standardised engineering context, these data provide impactful insights into the cultural and attitudinal barriers that broad quantitative surveys routinely fail to reveal. The sample consisted of 10 university teachers selected through purposive sampling. Inclusion criteria were: teaching in the Faculty of Engineering; and having requested support from the Diversity Support Office. This purposive selection was a deliberate design choice aimed at recruiting information-rich cases—individuals with direct, lived experience navigating institutional diversity mechanisms. While this criterion introduced an inherent institutional sampling bias by excluding teaching staff without support office engagement, it was essential for capturing deep phenomenological insights. Furthermore, capturing a mix of full-time (n=4) and part-time (n=6) faculty was a vital methodological consideration as contractual regimes directly impact a teacher's institutional availability and assigned hours for working directly with students. The university teachers worked within the Environmental Engineering, Mechanical Engineering, Electronic Engineering, and Industrial Engineering degree programmes. Likewise, a focus group was conducted with six students from different academic levels of engineering who had sought assistance from the Student Support Office. This office is staffed by a multidisciplinary team of psychologists and educational coaches who provide tailored, short-term guidance upon request. Its primary function is to assist students with

academic orientation, time management, emotional regulation, and conflict resolution with peers or university teachers, addressing any barrier or specific support need affecting their learning process.

Semi-structured interviews were used for university teachers, with questions aimed at exploring their perceptions of student diversity, the pedagogical strategies employed, and the barriers identified in the teaching-learning process. For students, a focus group was implemented with a discussion guide that addressed their experiences in the classroom, the perception of the inclusive climate, and the barriers encountered regarding their participation and learning. Both instruments—the semi-structured interview guide for university teachers and the focus group guide for students—were validated using an evaluation rubric with criteria of pertinence, relevance, and clarity. The instruments were adapted from Booth and Ainscow's (2011) Index for Inclusion (the Index). While the Index was deliberately chosen to capture broad institutional perceptions regarding inclusive culture, policies, and systemic barriers, UDL was employed as the core pedagogical framework. This methodological alignment allowed the researchers to evaluate the barriers identified through the Index against UDL principles, demonstrating how providing multiple options and flexible strategies is necessary to address diverse learning needs and dismantle these barriers. The validation was carried out by three researchers from the Faculty of Education, two of them being experts in research and one in inclusive education.

To illustrate how the instruments were aligned under a single conceptual framework while adapting to the distinct academic roles of the participants, Table 1 details the core interview and focus group questions administered during data collection.

Table 1

Alignment of Data Collection Instruments With the Conceptual Framework

Conceptual Dimension	University Teacher Interview Questions	Student Focus Group Questions
1. Valuation of Diversity and Concept of Inclusion (Inclusive Culture)	• What is your understanding of inclusive education within the university context? • What is your perspective on explicitly discussing human diversity and different ways of learning with university students?	• What does inclusive education mean to you in your daily university experience? • How do you feel human diversity and different ways of learning are recognised, discussed, or valued by your teachers and peers in academic spaces?
2. Pedagogical Interaction and Communication (Inclusive Practice and UDL)	• How would you describe the language and relational communication style you use with your students? • What academic expectations do you hold for your students, and how are these communicated to them? • What strengths and limitations do you identify in collaborative group work among diverse engineering students?	• How do you perceive the language and communication style used by your teachers when addressing doubts or diverse learning needs? • Are your teachers' academic expectations communicated clearly, and how do you experience teamwork and collaborative learning in your engineering classes?
3. Socioemotional Scaffolding and Psychological Safety (Climate and Accompaniment)	• What importance do you attach to fostering a classroom environment of psychological safety, trust, and support for your students? • Do you feel your engineering classes provide a safe environment of trust and support where you can ask questions or seek accompaniment without fear of judgment?	• Do you feel your engineering classes provide a safe environment of trust and support where you can ask questions or seek accompaniment without fear of judgment?

The interviews with university teachers were conducted individually, lasting an average of 45 minutes each, in an online modality to encourage openness in their responses. The focus group with students lasted 90 minutes and took place in an environment of trust that promoted open and respectful dialogue. Prior to data collection, the research protocol received formal approval from the Institutional Ethics Committee. All sessions were recorded with the participants' informed consent and subsequently transcribed, ensuring their anonymity. Participants were informed of their right to withdraw from the study at any time without consequences.

The transcriptions were analysed using Atlas.ti software (version 23) through inductive thematic analysis, following the interactive model of data reduction, data display, and conclusion drawing (Miles et al., 2014). The analytical procedure followed three recursive phases. First, open coding was performed line by line, systematically tagging meaning units to explicitly distinguish between “learning barriers” (for example, methodological resistance and inaccessible materials) and “potential enablers” (for example, empathetic communication and flexible assessment proposals). ATLAS.ti supported this process in practice by allowing the research team to manage the large qualitative dataset, create code groups to separate these barriers from enablers, and trace them back to the raw quotations. Subsequently, these codes were organised into preliminary concepts to proceed to axial coding, the objective of which was to establish logical connections between them. This process allowed for identifying transversal patterns in the testimonies of university teachers and students, categorising dispersed data into four main axial axes. As detailed in Table 2, these axial axes demonstrate how the grouped open codes were structured to capture the dynamics between the identified enablers and barriers, ultimately explaining the central tensions of inclusive culture in the faculty.

Table 2*Axial Coding*

Axial Categories	Grouped Open Codes	Grouping Criterion
1. Intentionality vs. Praxis	• Human Rights discourse • "Good intentions" • Resistance to methodological change • "Equal treatment"	Codes that contrast the declared ethical valuation with the technical execution observed in the classroom.
2. Physical vs. Pedagogical Accessibility	• Ramps and lifts • Absence of adapted materials • Dyslexia/neurodivergence • "Constant struggle" to understand	Codes referring to tangible infrastructure versus the lack of resources for learning.
3. Communication: Visibility vs. Silence	• Need for identity • Fear of judgment/error • "It is never talked about" • Psychological safety	Codes that associate the student body's need for identity recognition with the lack of safe institutional spaces to dialogue about diversity.
4. Management: Structure vs. Accompaniment	• Teaching vs. non-teaching hours • Full-time/part-time professors • Tutoring as an administrative burden • Segmentation of support	Codes about how administrative regulations and working conditions (times and contracts) shape the viability of personalised support.

Finally, selective coding was executed to integrate the axial categories into a coherent conceptual network that explained the structure of the phenomenon. This phase allowed the identified tensions to be articulated around a central narrative core, generating the visual model presented in the results (see Figure 1). To guarantee the validity and reliability of the study, data triangulation and peer review were used.

Findings

The findings are organised around the central narrative core of inclusive culture from the perspectives of university teachers and students. Directly addressing the study's aims, this section unpacks how neurodiversity is valued (or overlooked) and how the insufficiency of pedagogical adjustments manifests as tangible barriers. The data reveal significant convergences and divergences in how both groups experience the university context, moving beyond surface-level accessibility to expose the deep pedagogical tensions at play. Following a comparative analytical framework, the analysis is structured into two separate sections—first examining the teacher perspective and subsequently the student perspective—before culminating in a synthesis that critically analyses the convergences, similarities, and gaps between both groups.

University Teacher Perspective on Inclusive Culture

University teacher perceptions of inclusive culture, although starting from a basis of good intentions, evidence a partial understanding of the principles underlying inclusive pedagogy. University teacher no. 6 states, "I understand the human side

of inclusion, the desire to integrate people with disabilities". The view that inclusive education is limited to the integration of students with disabilities is a misconception. Under the current paradigm, endorsed by organisations such as UNESCO, inclusion is defined as a process aimed at guaranteeing the right to quality education for all people, regardless of cultural, linguistic, economic, or other differences, such as having a disability (UNESCO, 2020).

In contrast, other university teachers agree with the fundamental pillar of inclusion of recognising and valuing human diversity in its multiple dimensions (including culture, race, gender, sexual orientation, etc.) and with promoting respect. However, there is a critical disconnection in not considering it necessary to explicitly talk about different ways of learning. This omission is significant because inclusion not only respects the student's identity but also adapts the teaching-learning process to their needs. Ignoring the diverse ways of processing information, constructing knowledge, and demonstrating what has been learned is, in practice, a barrier to learning. This is evidenced in the testimony of university teacher no. 7: "I think it is important to respect everyone, but I don't see the need to change my way of teaching; the content is presented in the same way to everyone". This mindset illustrates how an ethical acceptance of diversity without a corresponding methodological shift ultimately maintains exclusionary learning environments.

Another theme analysed was the role of teacher communication in fostering an environment of psychological safety that promotes learning. While language based on empathy, active listening, and recognition of the other is a powerful pedagogical tool that strengthens trust, improves the willingness to learn, and reduces anxiety about making mistakes, the participants' testimonies often lacked this empathetic approach. In contrast to a supportive environment, the idea that "there is no need to worry about that" (university teacher no. 3) denotes a traditional, rigid view of teaching, where the focus is solely on the transmission of content rather than the student's cognitive and emotional needs.

Regarding collaborative work, there is a clear consensus among university teachers on its benefits as it allows students to understand different perspectives and develop soft skills. However, the difficulties they point out—the student who does not do their part and the formation of groups by friendship—should not be seen as failures of the method, but as manageable learning opportunities. Beyond classroom strategies, university teachers also highlight the vital role of individual tutoring. Tutoring serves as the primary mechanism for providing "personalised accompaniment," acting as a scaffold that allows closing the gap between academic expectations and student performance. However, implementing this support reveals a critical administrative gap. The testimony of university teacher no. 2 must be highlighted: "only full-time professors have assigned hours for student accompaniment". This lack of formally assigned time for part-time professors stands as a structural barrier, making it impossible for them to provide effective and personalised accompaniment to their diverse student body.

Student Perspective on Inclusive Culture

The students' agreement that inclusion implies "that everyone has the opportunity to learn" (student no. 2) and "creating an environment where no one feels judged for being different" (student no. 3) is directly related to the concept of psychological safety. A university classroom should be a space for intellectual risk, doubt, and constructive error. When a student fears asking if they do not understand something or inhibits themselves from giving an opinion out of fear of making a mistake and being judged, critical thinking is blocked.

Similarly, the distinction students make between physical accessibility (ramps and lifts) and true inclusion is an important point of analysis. Students recognise that, while infrastructure is necessary, the real barrier for many is pedagogical. The testimony of student no. 4, who has dyslexia, is eloquent: "I wish it wasn't a constant struggle to be able to read or understand what is asked". Her testimony brings to mind a teaching model where sessions are designed for a standard student and not an inclusive model that recognises diversity as the norm. Her request for accessible materials is not for preferential treatment, but for the elimination of barriers that prevent access to the same knowledge as her peers.

Beyond materials, the assertion that inclusion "is a change of mindset" (student no. 2) is profound. This change of mindset implies transitioning from a medical model, which asks "what is wrong with this student who does not learn like the rest?" to a social and rights-based model that recognises diversity. In this model, the university teacher asks "what barriers exist in my teaching method and in this environment that hinder diverse learning needs?" Finally, the perception that "not all university teachers or their peers recognise human diversity and different ways of learning" (student no. 4) and the testimony, "it is never talked about" (student no. 2) point to the impact of silence. This invisibility is a strong form of exclusion. When different ways of learning are not named, discussed, and openly validated in the classroom, a hidden curriculum is created that sends a clear

message: there is a single "normal" or "correct" way to be a good student. Those who do not fit into that pattern feel their experience is not legitimate, which "limits the feeling of belonging to the group" (student no. 6).

Ultimately, the student narratives reveal a profound paradox: while the university champions inclusion rhetorically, the lived reality is one of structural exclusion. The lack of proactive UDL strategies forces students to constantly self-advocate for basic learning needs, shifting the burden of inclusion entirely onto the neurodivergent learner. This dynamic not only exhausts the students but directly contradicts the social model of disability, highlighting a critical gap between the institution's ethical intentions and its practical, everyday execution in the engineering classroom.

Synthesis of Findings

The findings regarding inclusive culture reveal a series of structural tensions where the perceptions of university teachers and students converge in theory but diverge drastically in the daily experience of the classroom. To further understand these dynamics, the qualitative data were organised to contrast institutional regulations with everyday classroom realities. As detailed in Table 3, each central axis of tension is analysed by comparing its normative and physical accessibility dimension against its practice and culture dimension, ultimately highlighting the specific identified barrier that hinders true inclusion.

Table 3

Axes of Tension in Inclusive Culture

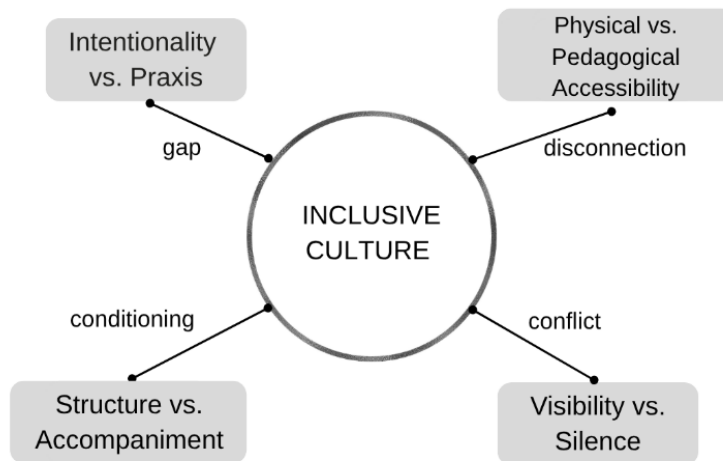
Axis of Tension	Normative and Physical Accessibility Dimension	Practice and Culture Dimension	Identified Barrier
1. Intentionality vs. Praxis	Inclusive discourse: University teachers express positive values and an ethical recognition of diversity as a human right.	Methodological resistance: Persistence of traditional methods under the premise that "the content is the same for everyone" (university teacher no. 7).	Barrier: Predominance of the medical model over the social one; diversity is perceived as an "extra burden" and not as the pedagogical norm.
2. Physical vs. Pedagogical Accessibility	Tangible infrastructure: Availability of ramps, lifts, and adapted furniture on the university campus.	Cognitive invisibility: Absence of accessible materials for neurodiversity, such as adapted resources for students with dyslexia, ADHD, or ASD.	Barrier: Disconnection between architectural access and real access to the curriculum, generating inequality in learning.
3. Communication: Visibility vs. Silence	Need for identity: Students request naming neurodiversity and recognising different ways of learning.	Culture of silence: Institutional invisibility under the testimony that "it is never talked about" (student no. 2) in academic spaces.	Barrier: "Pedagogical silence" acts as a hidden curriculum that invalidates divergent experiences and weakens the sense of belonging.
4. Management: Structure vs. Accompaniment	Administrative regulations: Accompaniment hours formally assigned according to the contracting regime (university teacher no. 2).	Segmentation of support: Accompaniment is restricted to formal teaching hours, preventing it from being exercised effectively as a universal teaching task.	Barrier: Lack of assigned time as a structural barrier, limiting personalised support and leaving inclusion contingent upon the availability of teaching staff hours.

For a holistic understanding of the phenomena described, Figure 1 presents the conceptual network that emerges from the analysis conducted in ATLAS.ti, illustrating the interconnections between the four main axes of tension of inclusive culture in the Faculty of Engineering. In this diagram, these tensions are visualised by explicitly connecting the central core to its four surrounding axes: the gap between discourse and practice (Intentionality vs. Praxis); the disconnection between tangible infrastructure and learning resources (Physical vs. Pedagogical Accessibility); the conditioning effect of administrative rigidity on student support (Structure vs. Accompaniment); and the conflict generated by institutionalised exclusion (Visibility vs. Silence). This exclusion materialises directly within the faculty's classrooms and academic spaces, where the institutional

silence establishes a hidden curriculum that marginalises diverse learning needs and invalidates students' divergent academic experiences.

Figure 1

Axes of Tension in Inclusive Culture



Discussion

The Gap Between Ethical Intention and Pedagogical Praxis

The findings reveal a marked dissonance between the intentionality and the praxis of inclusion in the training of engineers. This tension is very similar to the “methodological resistance” identified by O’Leary et al. (2020). The authors argue that this is demonstrated when university teachers express a favourable attitude towards diversity yet are limited in their understanding by a pervasive perception of what is a “standard student”. O’Leary et al. identify this as a consequence of the medical model of disability, in which those with disability are framed as the problem.

As a complement to this finding, Mashwama and Omodan (2024) confirm in their systematic review that to achieve true inclusion in engineering, institutions must address not only physical obstacles but also the “attitudinal, and structural barriers” (pp. 243–244) that persist in the academic environment. In clear opposition to the teaching belief that the content is the same for everyone, the UDL framework establishes that it is the inflexibility of the curriculum that generates the disability, and not the student's condition (CAST, 2018). Therefore, uniformity in teaching engineering translates into a form of exclusion for those who process information differently. This finding acquires a particular nuance in the context of a faculty of engineering as, historically, the identity of engineering has been built on values of “rigour,” “hardness” and “objectivity,” which is often misinterpreted as a need for inflexible standardisation (Riley, 2017, pp. 251–252).

Against this background, the results align strongly with Harris et al. (2025), who argue that the implementation of inclusive teaching tools, such as low-stakes assessments and groupwork practices, do not compromise technical rigour, but rather dismantle structures of exclusion. However, the observed university teacher resistance suggests an unfounded fear that by introducing flexibility the means of representation or expression (UDL principles), quality is being compromised. This resistance conflicts with the current professional reality, described by Vigoa Escobedo et al. (2025), who show that soft skills—communication, negotiation, and leadership—are now key competencies for the twenty-first century and are only developed in flexible and diverse pedagogical environments. By maintaining rigid practices, the faculty not only excludes neurodiversity, but paradoxically is training professionals who are less prepared for the variable complexity of the real world.

Invisibilised Neurodiversity and Learning Barriers

The testimony of the student with dyslexia exemplifies the broader learning barriers faced by neurodivergent individuals—including those with ADHD or ASD—highlighting the urgency of transitioning towards a pedagogical accessibility that transcends physical infrastructure. The request for accessible materials does not represent a privilege, but a right to the elimination of barriers. In this sense, the emerging category of cognitive invisibility demonstrates that failing to accommodate different ways of learning negatively impacts self-efficacy. By not naming or validating neurodiversity in the classroom, a hidden curriculum that stigmatises self-doubt is reinforced. This aligns with Zastudil et al.'s (2025) findings that research in computing and engineering has historically marginalised neurodivergent perspectives by not listening to the voices of these students, perpetuating environments that do not adjust to cognitive variability.

Classroom Climate and Sense of Belonging

Finally, the results highlight the determining role of relational language and empathy as socioemotional scaffolding. Concurring with Jumaa et al. (2025), classroom climate is identified as a determining factor in students' academic and socioemotional success, reducing anxiety about making mistakes and fostering intellectual risk. Hansen et al. (2026) found that, in engineering teams, psychological safety is a direct predictor of the ability to manage task conflicts and maintain creativity; without it, students withdraw and adopt defensive behaviours that block innovation.

This human connection is what ultimately consolidates the sense of belonging. According to Sathiyaraj et al. (2025), a safe climate is paramount for students to have the confidence to participate actively, which is essential for retention in STEM degrees. When the student feels that their experience is legitimate and that the environment recognises their identity, their commitment to the degree is strengthened, reducing the probabilities of dropout due to perceived exclusion (Tinto, 2017). James (2025) reinforces this idea by postulating that a sense of belonging is not just an affective outcome, but a key predictor of success in higher education.

As identified in the findings, mitigating exclusion requires addressing a critical institutional barrier: the structural lack of assigned time for personalised accompaniment. Dedicated, individualised support acts as a validation mechanism that fosters self-efficacy and a sense of belonging (Linden et al., 2025), which is vital to counteract the perception of "abandonment" reported by some students. Leaving this support contingent upon the contractual availability of teaching staff hours perpetuates systemic exclusion within the faculty. To close this gap, Lim et al. (2025) suggest that pedagogy should also focus on developing self-regulated learning, allowing students to navigate learning barriers with greater autonomy.

Altogether, to transform inclusive culture, the faculty must move from theoretical inclusion to tangible teaching practices. As proposed by Garrad and Nolan (2023), this crucial transition involves actively recognising the inherent diversity of the student body. Consequently, the application of the UDL framework becomes essential to dismantle "one-size-fits-all" pedagogical models and proactively design accessible sessions for everyone.

Overall, the findings presented through the conceptual network and the synthesis of tensions (see Table 3) depict an environment where inclusive culture is in a critical transition phase. While the nodes of "recognition of diversity" and "positive emotional climate" appear strongly linked in the teaching discourse as an ethical aspiration, these vanish when colliding with the "pedagogical barriers" and "institutional silence" reported by students. This disconnection between ethical discourse and academic accessibility suggests that inclusion has not yet permeated the core of instructional design, maintaining a standardised teaching structure that makes diverse learning needs invisible. The network of relationships analysed demonstrates that, to close the gap between intention and praxis, a "change of mindset" is imperative to transform teaching beliefs into concrete pedagogical actions. This will guarantee the comprehensive development and sense of belonging of the entire student body.

Limitations of the Study

A notable methodological limitation of this study pertains to the asymmetry in the volume and collection methods of the qualitative data across the two participant cohorts. While the academic staff dataset comprises 450 minutes of individual interviews—allowing for an in-depth, nuanced exploration of pedagogical beliefs, teaching practices, and institutional culture—the student dataset relies on 90 minutes of focus group interviews. This discrepancy was primarily due to logistical constraints regarding student availability within the intensive academic scheduling of the engineering faculty. Consequently,

the depth and individual richness of the students' lived experiences may be less pronounced in the analysis compared to the faculty narratives. Nevertheless, the focus group format successfully facilitated a collective dialogue, enabling the identification of broad consensus regarding the most salient environmental and pedagogical barriers affecting diverse learning needs. Future research should aim to balance this dataset asymmetry by incorporating in-depth individual interviews with engineering students to further unpack the granular impact of these barriers on their academic trajectories.

Additionally, the purposive sampling strategy—which selected participants based on their prior interaction with the Diversity and Student Support Offices—introduces a selection bias. While this ensured that participants possessed lived experiences regarding learning barriers, the findings primarily reflect the perspectives of sensitised faculty and help-seeking students. Consequently, these insights may not fully represent the attitudes of disengaged teaching staff or adjunct faculty whose part-time contracts limit their involvement in institutional support structures.

Conclusion

Inclusive culture in universities is not a final state but a continuous process of reconstruction and questioning of normalising practices. Rather than seeking statistical generalisability, this study provides transferable qualitative insights into a highly technical academic setting, concluding that within this engineering faculty, the valuation of student diversity by university teachers is a necessary but not sufficient condition for inclusion. Goodwill without technical competence (knowing how to adapt) is insufficient. The findings reveal that, although there is an ethical valuation of diversity, a significant gap persists in the implementation of inclusive pedagogical practices. Failing to provide supports and adapt teaching constitutes a critical institutional barrier. By maintaining rigid pedagogies, the university fails in its mission to guarantee the right to education. The original contribution of this research lies in highlighting, based on the participants' voices, the everyday contradictions that shape inclusive culture in university technical education. By specifically analysing the context of engineering education, this study reveals how methodological resistance manifests in standardised practices that end up excluding those who learn differently. It is demonstrated that the real barrier to learning is not the inherent complexity of engineering but the sustainment of an inflexible pedagogical matrix that renders neurodiversity invisible under the guise of equal treatment.

Students clearly identify that true inclusion goes beyond physical accessibility and requires a profound change in teachers' mindsets and practices. To move forward, it is imperative to transition from an approach focused on student deficit to one focused on the elimination of contextual barriers. This demands a transformation in the professional identity of the university teacher: from being a mere transmitter of disciplinary content to becoming a designer of accessible learning environments in order to enrich human diversity.

Likewise, it is concluded that the invisibility of neurodiversity and pedagogical silence negatively impact students' psychological safety and sense of belonging. University teacher training must include specific instruction in UDL and inclusive teaching strategies, recognising that these practices benefit all students, not just those with specific needs. Only through a comprehensive institutional commitment involving clear policies, formally assigned time for accompaniment, and a culture of genuine valuation of diversity, will it be possible to advance towards a truly inclusive and equitable higher education culture.

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