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EDITED BY
Rany Sam,
National University of Battambang, Cambodia

REVIEWED BY
Nadia Rehman,
Zhejiang Normal University, China

*CORRESPONDENCE
Marina Galioto
✉ marina.galioto@unipa.it

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Toward bridging disciplinary divides: a peer-education perspective on enhancing university belonging

Marina Galioto^{1,2*}

¹Department of Psychology, Educational Sciences and Human Movement, University of Palermo, Palermo, Italy, ²Social Factory, University of Palermo, Palermo, Italy

Since a sense of belonging at university is conducive to the feeling of being recognized as a member of a specific group sharing common thoughts and values within that environment, it is foundational for educational practitioners to explore how this sentiment can be enhanced for community improvement. In academia, peer interactions and collaborative settings can also produce positive effects, contributing to increased interdisciplinary collaboration and intellectual outcomes. In this framework, the higher education landscape provides great research potential to explore the importance of a sense of belonging due to its cooperative system and likelihood of people cohabiting (classrooms, cafeteria, for example). The scenario is also enriched by the possibility of discovering trends for future challenges. This research design aims to find patterns in university students' sense of belonging among different fields of study, exploring similar or dissimilar attitudes across social networks. Researchers are promoting an alternative approach for educational environments to enhance the sense of belonging among students at university.

KEYWORDS

higher education, peer education, social network, sense of belonging, disciplines

Introduction

Building on the idea that strong interpersonal relations are foundational to human progress, a holistic approach for building healthy academic environments is highly relevant (Baumeister and Leary, 1995; Wentzel and Wigfield, 1998; Cacioppo and Hawkey, 2009). Indeed, the pivotal role of social dynamics is well-established for cooperative learning, intellectual collaboration, and scientific advancement, since these are not isolated phenomena but synergistic outcomes of community effort (Bandura, 1977; Vygotsky and Cole, 1979). From this perspective, it is strategic for researchers to explore group dynamics in everyday practices to identify effective strategies for fostering positive university environments and mitigating potential challenges. In fact, helpful interactions between students and teachers and especially among peers can contribute to goal achievement and psychological well-being by increasing self-efficacy and promoting a sense of belonging (Allen et al., 2018; Gopalan and Brady, 2020).

Considering recent interdisciplinary investigations and emerging conceptual frameworks that underline the neural reward circuits involved in collaborative social exchanges, influencing student motivation and academic performance, it is imperative for educators to analyze student behaviors and devise novel strategies to foster academic progress through cultural shifts (Gallese, 2009; Hasson et al., 2012). Additionally, as humans relying on cooperation as a fundamental coping strategy throughout their lives and acquiring knowledge through

imitation and the interpretation of meaningful social interactions, empathy is a decisive factor in understanding the surrounding social environment (Singer and Lamm, 2009; Clark and Dumas, 2015). In fact, the ability to connect our mind to others and understand people's internal thoughts and emotions can define intergroup relationships and shape leader's success (Mondal et al., 2023; Manke et al., 2025). Under this perspective, it follows that peer education programs that increase academic participation could provide a stimulating scenario to establish innovative educational paths to test this methodology (Zhang et al., 2025).

Perspective argument

The higher education landscape represents a specific context profoundly influenced by cross-cultural elements, reflecting the central role of young people as protagonists in current social transformations and trends. In this light, it is critical for faculty members to monitor student conduct and investigate new pedagogical strategies to advance university objectives. This involves the integration of alternative methods to facilitate interpersonal connections of students across diverse groups and backgrounds. Moreover, a well-designed interplay between students and social media usage can build an effective institutional context, contributing to improved academic performance through collaborative learning and creative learning stimulation (Dumawal, 2024; Mohanty et al., 2024). Indeed, as people naturally desire to feel involved in communities, students' participation in institutional activities can enhance their sense of inclusion and belonging (Galioto et al., 2025b). Previous studies have shown different levels of sense of belonging (SoB) among groups, highlighting the varying aspects of related to this feeling of attachment (Ahn and Davis, 2020; Bil-Jaruzelska and Monzer, 2022; Cai et al., 2023; Dost and Smith, 2023). For this reason, it is necessary to investigate this feeling under the light of different people's networks, with the aim to discover compatible patterns for a more comprehensive SoB understanding. Social networks, then, are not only useful to assess students' networking abilities but are also suitable instruments to investigate behaviors and opinions: indeed, communication mediated by computers is important not only to explore dissemination effects but also to detect engagement among users and track emotional reactions (Kent and Taylor, 2021; Bil-Jaruzelska and Monzer, 2022).

In line with our view, it is relevant for researchers to mention the final report from the 'What Works? Student Retention & Success programme', authored by Thomas (2012), which provides a definitive framework for understanding and enhancing student engagement and belonging within UK Higher Education (HE): indeed, contemporary research emphatically posits that a student's sense of belonging is the single most significant non-academic predictor of their persistence, retention, and overall success (Crawford et al., 2024). This report moves beyond merely addressing academic preparedness, arguing instead that successful universities actively engineer the quality of students' academic and social integration. Thomas outlines seven critical propositions for effective institutional practice, frequently emphasizing the need for pedagogy that fosters active engagement and collaborative learning. Specifically, the findings implicitly support methodologies like interdisciplinarity and peer education by advocating for learning environments that demand meaningful

student interaction with both peers and staff. Such environments are essential for developing the deep, socio-academic connections that underpin a robust sense of belonging. Furthermore, the provision of targeted academic and pastoral support, often delivered most effectively through non-hierarchical models such as peer mentoring or peer-assisted learning, is shown to be crucial for enhancing students' self-efficacy and reinforcing their feeling of being a valued member of the institutional community (Thomas, 2012; Brouwer et al., 2022; Turarova et al., 2025).

In essence, as Thomas's work and further studies have provided compelling empirical justification for the strategic adoption of pedagogical approaches — including those that involve interdisciplinary projects and peer-to-peer mechanisms — as key levers for cultivating the inclusive sense of belonging necessary for broad student success and retention in a contemporary HE context, in the same perspective our aim is to stress the crucial role of nourishing interpersonal relations for the promotion of a healthy environment and alleviating differences among students (Murphy et al., 2020; Chaffee et al., 2025).

The foundational literature review highlighting the importance of interdisciplinarity and peer education in cultivating a sense of belonging (SoB) within higher education is crucial. However, the rigor of research in this area has historically been constrained. Past literature has highlighted the sporadic investigation of Sense of Belonging (SoB) within academic contexts—in contrast to more extensive research in school contexts—and has also lamented the lack of specific analytical instruments.

This methodological gap necessitated the development of dedicated, context-specific evaluation tools. Fortunately, researchers now agree upon a recent questionnaire that appears effective for this purpose: the Slaten scale, validated in 2018 (Slaten et al., 2018). Specifically, the work of Slaten in validating the University Belonging Questionnaire (UBQ; Slaten et al., 2018) addressed a major deficiency in the field. The UBQ was developed to accurately measure the multifaceted nature of belonging, including factors such as peer support, institutional fit, and academic connection, within the unique psychosocial environment of university. The validation of this specific, reliable instrument is critical because generic school-based scales often fail to capture the complexities of adult development and institutional structures characteristic of HE (Slaten et al., 2018). This scale includes four main focuses: Valued Group Involvement (such as the feeling of a member to be involved in an organization and groups activities in campus); Intrapersonal Factors (such as the motivation to build relationships and the ability to balance academic and social life); Meaningful Personal Relationships (such as having similar experiences with others, fostering friendships with peers and having family feelings with faculty, members, and alumni); and Environmental Factors (such as being proud of the university culture, healthy classroom environments, and diversity inclusion). Items considered were implemented to measure feelings referring to a sense of belonging as well as a general sense of connection to internal students' emotions. Slaten did highlight this as a limit of his research, asking for further investigation into the topic to provide a more globally reliable scale (Slaten et al., 2018).

In addition, a recent European study utilizing the University Belonging Questionnaire (UBQ) demonstrated significant differences in students' self-reported sense of belonging (SoB). This research highlighted how Social Sciences students rated their SoB distinctly

from Sport Sciences students, despite attending programs within the same university (Galioto et al., 2025b). Contemporary literature broadly underscores the importance of comparative SoB research across groups, programs, and disciplines, yielding key insights into the individual and contextual factors that shape this feeling (Rehman et al., 2023; Dias-Broens et al., 2024; Ovink et al., 2024; Luo and Zhou, 2024).

Implications

This framework grounds our research question, which investigates whether the conventional academic division between Soft Sciences and Hard Sciences (often referred to as STEM versus non-STEM disciplines) affects students' Sense of Belonging (SoB). For this study, we used the terminology of Soft Sciences versus Hard Sciences as it grants equal conceptual validity to both fields. Conversely, the "STEM versus non-STEM" dichotomy establishes a differentiation rooted in conceptual negation, which we find to be an unbalanced starting point for academic inquiry.

Following precedent studies that analyze the Sense of Belonging (SoB) across academic differences (Knehta, 2018; Cwik and Singh, 2022; Zahner and Harper, 2025), we will consider students from distinct fields of study within the same university for this perspective article. Our aim is to measure their SoB using the USBS questionnaire. Since student-peer interaction and the effectiveness of specific pedagogical approaches are often dictated by mandatory degree requirements, it is particularly insightful to evaluate students' responses to the same instrument. This allows us to compare SoB levels among students who, despite sharing the same institutional environment, are naturally segmented into separate groups by their study programs. Contextually, it is challenging yet crucial to explore whether one group's SoB profile influences another and to identify specific outcomes attributable to either similar attitudes or distinctive feelings between Soft Sciences and Hard Sciences students.

A robust sense of belonging (SoB) is widely recognized as a pivotal psychological determinant influencing student success, academic engagement, and institutional retention within higher education (HE), even for disadvantaged students (Murphy et al., 2020). Given that conventional, hierarchical pedagogical structures often struggle to meet the diverse psychosocial and developmental needs of modern student cohorts, peer education models present a highly effective, non-hierarchical intervention for cultivating this essential SoB. Peer educators, functioning as accessible and relatable role models, significantly reduce the inherent power distance often felt in faculty-student exchanges, which promotes more authentic communication and lowers the barrier for students to seek critical academic and emotional support—processes that are essential for deep social and academic integration. Empirical evidence suggests that highly effective peer-assisted learning (PAL) initiatives are successful precisely because they deliberately create a communal learning atmosphere where participants feel unequivocally accepted, respected, and valued—the foundational psychological components of SoB (Ajjawi et al., 2025). Moreover, these programs naturally cultivate interdisciplinary skills when peers from different academic pathways collaborate (e.g., peer-tutoring across faculties). This cross-disciplinary peer interaction not only validates a student's identity beyond the confines of their specific major but also

successfully integrates them into the wider university ecosystem, thereby critically strengthening their overall institutional affiliation. For underrepresented groups facing unique systemic barriers, the use of interdisciplinary peer mentorship programs has been empirically linked to measurable increases in self-efficacy, particularly in tackling complex, real-world problems, and demonstrably improves rates of persistence in challenging academic fields (Chaffee et al., 2025). The overall effectiveness of these programs is powerfully mediated by the positive social norms and trust intentionally established within the peer group. Consequently, strategically and purposefully implemented peer education should be viewed not merely as an ancillary study support service but as a primary, targeted pedagogical intervention designed to build the foundational sense of belonging required for contemporary student success and institutional thriving (Brouwer et al., 2022; Turarova et al., 2025).

Ultimately, promoting a sense of belonging should be a foundational element in institutions' future strategic planning. By adopting a holistic strategy that leverages collaborative approaches and inclusive methodologies to foster healthy environments (Allen et al., 2021; Mahoney et al., 2022), higher education communities are encouraged to become harmonious and productive. Moreover, universities should consider the use of digital tools as a sustainable alternative method of institutional communication and to promote students' engagement within the academic context.

Conclusion

Since the notion of being "inside" a discipline extends beyond mere cognitive mastery of the subject matter and fundamentally encompasses a sense of connection and community with the individuals (peers, mentors, and teachers) encountered within the learning environment, this deep connection is crucial for fostering well-being and success in higher education.

A vital component of this disciplinary affiliation is acceptance, which refers to the student's perception of feeling respected, valued, and appreciated within their field. While this feeling is rooted in the personal conviction that their peers, mentors, and teachers are genuinely accepting and inclusive of their identity and contributions, the *peer-to-peer* relationship plays a particularly salient role in cultivating this environment of acceptance and sense of belonging (Mahar et al., 2013). Moreover, this grade of acceptance can be applied throughout disciplines within the same learning environment. In fact, research consistently shows that meaningful connections with fellow students are integral to well-being and institutional adjustment. When peer interactions are characterized by mutual support and non-judgmental communication—a hallmark of effective peer education and mentoring models—students are more likely to internalize a sense of belonging and academic integration (Ajjawi et al., 2025). Furthermore, the sense of disciplinary belonging often requires students to feel integrated and valued in their specific academic group. If students perceive that their discipline, through its immediate social structure (the peer group), is not accepting or inclusive, this directly hinders their psychological and emotional connection to the subject, potentially leading to reduced engagement and higher attrition rates. Therefore, actively structuring learning environments to promote inclusive peer collaboration is a strategic

institutional strategy to bolster students' sense of acceptance and overall disciplinary belonging (Zhang et al., 2025).

As the strategic application of mobile devices and social media revolutionizes education (Black et al., 2025) and provides students with boundless e-learning potential, we, as academicians, are responsible for developing new educational paths that incorporate digital platforms. Indeed, these platforms are inherently inclusive, dissolving geographical barriers, ensuring effortless access to course materials and tutors, and providing visibility to underrepresented groups (Montgomery, 2018). Critically, they foster a culture of active peer and expert collaboration, preparing students with learning opportunities that extend well beyond the traditional classroom (Ansari and Khan, 2020). Moreover, following this view, peer education methods based on collaborative intergroup relations that use social networks for Gen Z users has already provided promising results (Alhabash and Ma, 2017; Basitere and Mapatagane, 2018; Brouwer et al., 2022; Galioto et al., 2025a), widely inviting researchers to investigate further. Finally, the role of peer education applied to the academic context as a potential tool for improving performance and general well-being is still under researched and deserves additional attention from practitioners for its powerful chance to leverage differences among students and promote learning (Brouwer et al., 2022; Zhang et al., 2025).

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

MG: Methodology, Software, Investigation, Data curation, Conceptualization, Project administration, Visualization, Validation,

Funding acquisition, Writing – original draft, Writing – review & editing, Resources, Supervision, Formal analysis.

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