Advancing equity: exploring EDI in Higher Education Institutes

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Advancing equity: exploring EDI in Higher Education Institutes

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Editorial: Advancing equity: exploring EDI in Higher Education Institutes

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Editorial on the Research Topic
Advancing equity: exploring EDI in Higher Education Institutes

Higher Education Institutions (HEIs) are undergoing a profound shift as student populations become increasingly diverse, influenced by globalization, neoliberal reforms, and expanding access initiatives. Amid this transformation, it is not only timely but imperative to confront and dismantle the enduring legacies of colonialism and to challenge persistent deficit-based narratives. This necessitates a deep and sustained commitment to cultural proficiency, inclusive teaching practices, and transformative pedagogy that reflects and respects the complexities of today's student body.

Equity, Diversity, and Inclusion (EDI) are no longer optional aspirations—they are foundational pillars for any institution striving to create a just, responsive, and effective educational environment. This Research Topic seeks to spotlight the urgent need for transformative dialogue and action within higher education, foregrounding critical explorations of how equity can be advanced and how EDI can be meaningfully embedded in institutional structures, pedagogical approaches, and academic cultures. EDI is not just a moral imperative, but a strategic necessity for the future of higher education.

Given the scarcity of research examining the global impact of innovative and collaborative pedagogies in higher education, this Research Topic has emerged as a vital and timely contribution. Drawing from studies and insights around the world, this Research Topic serves not only to fill a critical gap in the literature but also envisions this Research Topic as a platform to engage institutions across international contexts—fostering dialogue, enhancing communication, and promoting coordinated efforts that support a collective journey of transformation in education.

This Research Topic features 14 manuscripts, including original scholarship, systematic reviews, brief research reports, opinion pieces, and policy reports highlighting transformative pedagogy and emphasizing the need for systemic changes to create a fairer, more inclusive environment. This theme is purposefully broad, and our editorial provides a brief overview of the essential findings from the articles published in this research area.

Arevalo et al., outlined efforts to promote equitable hiring of teaching-focused faculty (TFF) within the University of California system by developing inclusive evaluation rubrics. These were co-created through faculty learning communities to assess teaching, research, and DEI statements more fairly. A key result showed that implementing these

rubrics led to more diverse applicant pools and improved alignment with departmental equity goals, highlighting their potential to foster inclusive academic environments and enhance student success in STEM.

The work of Klots and Ogwude, discusses efforts to promote equitable hiring of teaching- focused faculty (TFF) within the University of California system by developing inclusive evaluation rubrics. These were co-created through faculty learning communities to assess teaching, research, and DEI statements more fairly. A key result showed that implementing these rubrics led to more diverse applicant pools and improved alignment with departmental equity goals, highlighting their potential to foster inclusive academic environments and enhance student success in STEM.

Berlanga and Corti analyzed how scholarships impact academic success at Universitat Abat Oliba CEU. Scholarship recipients showed higher grades, passed more credits, and had greater continuity compared to non-recipients. For example, students with continuous scholarships had a 100% graduation rate. These findings highlight scholarships as vital tools for promoting educational equity, suggesting further support for non-recipients could bridge existing academic performance gaps.

Moores et al. examined how fragmented Access and Participation Plans (APPs) often fail to address systemic inequalities in higher education. Despite progress in widening participation, disadvantaged students remained underrepresented in high-tariff institutions. The authors call for sustainable whole-institution approaches, greater sector collaboration, improved resourcing, and alignment of APPs with frameworks like the Teaching Excellence Framework (TEF) to achieve more equitable student outcomes.

Al-Aqeel and Alhumaid explored undergraduate mentoring programs, finding that mentoring benefits both mentors and mentees. Mentees reported increased academic confidence, personal development, and career guidance, while mentors developed leadership, communication, and reflective skills. The study highlights mentoring as a dual-benefit approach that strengthens student support networks and fosters inclusive educational environments, helping to advance institutional equity and student success.

Correa et al. investigated women's access to leadership roles in higher education using a multi-method approach. Despite women making up the majority of students, structural and cultural barriers limit progression to senior roles. Their findings highlighted biased recruitment practices, perceptions of leadership norms, and the need for targeted institutional reforms to promote gender equity at the highest levels.

Nwosu examined the effects of mentoring on the impact on minority ethnic students' academic career engagement. The study revealed no significant differences between Asian and Black students, but notable variances between Black students and those identifying as Mixed or Other ethnicities. Interestingly, while mentoring session quantity negatively correlated with engagement, bimodal delivery produced positive outcomes. Findings suggested Black students may require more tailored mentoring approaches with better-matched role models.

Investigating expatriate health sciences students' experiences in the UAE, Ahmed et al. conducted a qualitative analysis of 23 students' reflections. Their research identified key challenges in dormitory-study life balance, socialization, support networks, and financial navigation. Their work recommended enhancing student experiences, particularly for educational institutions seeking to improve the support available to diverse student populations.

Yao and Yang examined the motivation and challenges experienced by academic expatriates on international branch campuses by conducting a systematic literature review. The review identified that the motivations were classified into five categories. Key challenges identified highlighted the complex reality faced by academic expatriates. Their findings demonstrated the necessity for targeted management strategies, exposing a gap in the literature concerning the long-term impacts of expatriation.

Brozina et al. produced a systematic literature review, examining how researchers define "nontraditional students" (NTS) in U.S.-based studies and identified definitional issues. Of the 65 articles reviewed, only 33 included a specific definition. Thus, it is recommended that a more consistent use of the National Center for Education Statistics (NCES) criteria be adopted as a baseline definition. The field would also benefit from establishing a national framework for tracking and supporting NTS.

Bartolo et al. investigated the challenges through the perceptions of students with disabilities. By conducting a survey and semi-structured interviews, the authors analyzed the reflections of 51 students. The findings highlighted the need to develop a welcoming community, socio-emotional and personal development scheme, which would allow students with disabilities to feel more involved in the curriculum.

Carter-Veale et al. assessed the readiness of five biomedical departments to recruit and retain racially and ethnically minoritized faculty, using an adapted Community Readiness Tool. The authors argued that evaluating readiness for diversification at departmental level yields more actionable insights than an institution-wide assessment, allowing more tailored interventions and a more effective use of resources.

Naim undertook a comprehensive analysis of the factors driving educational inequity across both general and higher education in the USA, focusing on dimensions such as race, gender, socioeconomic status, and geographic location. Drawing on a wide array of national and institutional data sources, Naim identified key determinants of student outcomes and offers recommendations to enhance access to a more inclusive and equitable education system.

Zeedan reported on the pedagogical impact of redesigning two courses focused on Israel and Palestine, aimed at fostering a more inclusive classroom environment. The use of strategies such as experiential learning, digital tools, and scaffolded assignments led to significant improvements in student outcomes. This highlights the potential for inclusive teaching strategies to be successfully adopted across a broad spectrum of subject areas.

Collectively, the contributions in this Research Topic reflect a growing commitment within higher education to not only recognize systemic inequalities but to act decisively in addressing them. They illustrate that while challenges persist—rooted in history, policy, and practice— there is also significant momentum toward transformation. Through evidence-based interventions, collaborative pedagogy, and inclusive leadership, these studies illuminate a path forward: one where equity, diversity, and inclusion are not simply principles but

practices that shape the culture, structure, and future of higher education worldwide.

Author contributions

KR: Conceptualization, Formal analysis, Investigation, Project administration, Supervision, Validation, Writing – original draft, Writing – review & editing. EA: Writing – original draft, Writing – review & editing. CF: Writing – original draft, Writing – review & editing. JG: Writing – original draft, Writing – review & editing. AM: Writing – original draft, Writing – review & editing.

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Why a "whack-a-mole" approach to widening participation won't work - and what to do about it: a policy brief

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Despite increasing access to higher education (HE) over the past two decades, students from disadvantaged backgrounds remain less likely to enter the most selective institutions, and less likely to achieve good outcomes. In England, providers that charge more than £6,000 a year tuition fees must have an Access and Participation Plan (APP) approved by the Office for Students (OfS). Plans aim to improve equality in student access, success, and progression. APPs typically focus on snapshots of equality gaps, inputs over outcomes, and individual institutions over collaborative efforts. These limitations encourage a "whack-a-mole" approach, reducing effectiveness of interventions. A more nuanced approach to evaluation is needed, together with increased and organized sector-wide collaboration, and acknowledgment of the dynamic operating context.

KEYWORDS

policy, what works, widening access and participation, access and participation plan, evaluation, whole institution approach

Introduction

Social mobility differentiation and outcomes in higher education (HE)

In England, the entry rate into HE has been increasing (of 15-year-olds in 2001/2, 33.6% entered HE by age 20 years vs. 47.1% in 2016/17: ONS, 2023). HE is no longer the preserve of the elite; the proportion of people attending from some of the most disadvantaged groups (lowest quintile of the Index of Multiple Deprivation) is now higher than those from the least disadvantaged (OfS, 2024a). Around 18% of students had been eligible for free school meals (FSM), compared to a baseline of 22% in the general population (OfS, 2024a). However, bigger disparities remain; in 2023 the access gap to high tariff providers (the most academically selective) between FSM eligible pupils and others reached its highest recorded level of 9.3 percentage points (Department for Education, 2023).

Policy context: access and participation plans (APPs)

Higher Education Institutions (HEIs) in England that charge more than the basic tuition fee cap (£6,000) must have an APP approved by the Office for Students (OfS, 2020). These plans represent commitments to actively improve equality of opportunity for students in terms of access, success, and progression to employment or further study. Plan durations vary, but most recently are expected to cover a 3–4-year period (OfS, 2023). Providers are encouraged to look at their own context, using supporting data (including that helpfully provided by the OfS), and evaluate their own performance on a range of equality of opportunity measures. Measures cover access, success and progression split by characteristics including disability, sex and measures of financial disadvantage. Where risks to equality of opportunity (typically equating to gaps between different groups) are identified, providers must explain how they will prioritize and address them. In a separate document, they indicate estimated spend on each set of activities proposed.

Policy challenges and considerations

Despite the changed context of access and the scope of APPs (or their predecessor access agreements) changing over time to place a greater emphasis on student success, and on the use of data, their requirements have changed relatively little. The APP development and approval process arguably suffers from several shortcomings in terms of its potential to meet its long term aims.

Failure to address a changing and complex landscape

Access and participation plan monitoring returns collect limited evidence of evaluation of impact and APP approval encourages evidence that suggests an intervention is likely to be effective. However, each new APP is not required to set out the time and resources that have gone into achieving the *status quo,* nor to consider potential future contexts such as rapidly increasing inflation. Indeed, the OfS may require providers to justify targets that focus on maintenance of progress, rather than addressing current gaps. For some providers this means they have no targets for some aspects of the APP, potentially resulting in the risk of cessation of the activity that has achieved their positive position. Like the fairground game of "whack-a-mole" (where the artificial "mole" pops up from one of several holes and needs to be hit back down with a rubber hammer - just to "reappear" in a different hole), this is ultimately inefficient, unproductive, and unlikely to lead to systemic change. It is also counter to the welcome new focus at the OfS of establishing "what works." Alternatively, providers may continue doing what they are currently doing and then either overstretch themselves to do more or allocate too few resources to each intervention to make a meaningful impact. This is a particular risk whilst the real term value of tuition fee income is decreasing

and a considerable number of providers are in financial crisis (OfS, 2024b).

As evidenced above, at a macro level access to HE for some disadvantaged groups now appears to be less of an issue than it has been previously. However, Crawford and van den Erve (2015) argued that it was not enough to simply encourage more people to go to university, but that what happens to them while they study and afterward needed more consideration. Indeed, those from disadvantaged backgrounds are less likely to continue, complete, attain a "good" degree, and progress to a graduate level destination (OfS, 2024a). Whilst this is recognized, the current approval process does not account for the interplay between access and success. A contributing factor is that disparities remain in access to the most selective providers, and to the most selective courses, including medicine (Department for Education, 2023; Medical Schools Council, 2023). However, intervention strategies can attend to more than one risk, and some providers do approach the issue holistically.

OfS expectations imply continuous and gradual closing of equality gaps (e.g., OfS, 2018a), but ever-increasing resources are required just to prevent them from increasing. For example, whilst financial support has been shown to be effective at improving continuation rates for students from low-income backgrounds (Moores and Burgess, 2022), awarding it requires repeated and significant annual investment from a tuition fee which is losing value in real terms. Moreover, institutions with large numbers of students from low-income backgrounds will have to spread available resources more thinly, resulting in smaller amounts of support per student (Murphy and Wyness, 2016; Wyness, 2016). Simultaneously, the real-terms value of any support awarded has been rapidly decreasing for students. In institutions where such financial support has been shown to be effective, gaps between students from disadvantaged backgrounds and their peers may now be reduced and therefore not appear a priority in analyses of gaps (see e.g., Moores and Burgess, 2022). This does not mean support is no longer needed and, in fact, the opposite is more likely to be true. Many of our "moles" need repeated and increasingly forceful "whacking."

Although some gaps in student success are undeniably increased during HE, lack of progress in addressing gaps during compulsory education (pre-HE) may also have an impact on what HEIs are able to achieve. Some students experience structural disadvantages impacted by factors such as poverty and discrimination that APPs alone cannot reasonably be expected to address. The Sutton Trust (2024, *p2*) notes that *"The attainment gap first opens up before children even start at school, leaving lower income pupils behind…"* and that since the pandemic, "*the gap has widened considerably, with 10 years of progress now wiped out*" (2024, *p1).* It therefore seems likely that HEIs will find it challenging to close gaps in the upcoming years unless this context is explicitly accounted for.

Short-term approaches and unsustainable practices

Notwithstanding the OfS (2022a) request to providers to submit a variation to APPs mid-cycle to respond to new priorities,

the shift from an annual to a longer cycle for approval has been welcome. This has reduced burden on providers and encouraged longer-term thinking. However, the 3–4-year timescale is still relatively short and may discourage providers from addressing underlying issues, instead risking tokenistic practices. An example could include providing additional tutor support to close attainment gaps rather focusing on overall teaching and assessment across the institution. Moreover, for many interventions it may take a longer timescale to reveal their full impact. The most recent APP guidance (OfS, 2023) does suggest that strategies can include existing activities but refreshing interventions for new submissions does not align well with the "whole provider approach" that is ostensibly encouraged (OfS, 2021), instead further encouraging siloed and short-term approaches. In addition, from 2019/20 access and participation plans emphasized outcomes and impact over input (OfS, 2018b). This afforded opportunities to providers to deliver impact with less investment (and should have eliminated any need for performative spend), but also risked allocation of resources with little impact. Whilst evaluation has become an increasingly key requirement, the intention to measure providers on impact has not yet been fully realized and the OfS still requires cost estimates per intervention.

Insufficient sector-wide collaboration

The structure of the regulatory approach is focused on individual HEIs, whilst impact of access-based interventions may often be wider than this. Individual providers are accountable for their own performance, with some, albeit limited, reference to their geographical or disciplinary context. The regulatory guidance stresses the importance of collaboration, noting that providers should, "*where appropriate*" consider agreeing an intervention strategy "*with other providers and third sector organizations*" (OfS, 2023, *p13*). It seems likely that this guidance was intended principally for access, rather than student outcomes. The current system of non-collaborative approaches toward access, particularly when coupled with the increasing competition for students between providers, encourages conflation of outreach and marketing activities and risks the underestimation of the importance of good information, advice, and guidance (Summers et al., 2024b). This is particularly problematic in areas that are well served with HE provision. Collaborative approaches tend to be relatively limited and risk maintaining institutional silos and in 2024, the OfS further and significantly reduced funding for its collaborative access programme, Uniconnect (Times Higher Education, 2024).

From an evaluation perspective too, there are corollaries of this siloed approach. The underpinning logic of evaluation as described in the regulatory advice is to contribute to the "development of sector-wide knowledge of what works, for whom, and in what contexts" assumes that the current evaluation guidance produces generalizable knowledge. While evaluation is carried out in specific contexts, this is unlikely to be the case (see also Moores et al., 2023). The process of translating individual outcomes between institutional contexts is more complex than the guidance currently acknowledges, primarily because of the contextual heterogeneity of the sector. It also assumes that sufficient opportunities for sharing this knowledge exist. Currently, the two "official" conduits for evidence about what works are the OfS and TASO, the sector "what

works" center. In the case of TASO, there has been historical bias toward counterfactual experimental designs (Type 3 causal) and continued conclusions of "no causal impact" in published reports. As Cartwright (2013) argues, these designs are more effective at identifying "it works somewhere" but do not provide "it-will-work-for-us" claims. Progress is therefore likely to be more rapid and allow for more meaningful and generalizable outcomes through collaboration.

Resourcing challenges

Since 2011, schools and colleges delivering compulsory education have received "pupil premium" funding for pupils with particular characteristics of disadvantage (largely based on numbers of pupils eligible for FSM). The aim of the funding is to improve attainment of disadvantaged students, and providers decide how to spend it. Gorard et al. (2021) suggested that overall, it has been a system that has worked and should be retained. In HE, the nearest equivalent is student premium funding, which is awarded based on risk categories (based on age, aimed for qualification, and non-retention associated with entry qualifications: OfS, 2022b). A supplementary element also considers the extent to which the risk categories intersect with the students coming from underrepresented areas, and there is a premium for disabled students. Moss (2023) calculated that in 2023/4, whilst around 5% of compulsory education budget was pupil premium and therefore ear-marked to reduce inequality, student premium funding in HEIs represented only 1.5% of teaching related income. Moreover, any additional uplift in income received directly from tuition fees from having an APP is provided by *all* students and is not associated with the number needing additional support. This means that providers with high numbers of disadvantaged students have more to do with the same proportion of income as those with less diverse cohorts. It may also mean that interventions are accessible universally, rather than targeted to areas of need - ensuring funding stretches across more than one priority group, or to all students.

Actionable recommendations

Introduce nuanced evaluations of current position

A nuanced approach to evaluation of provider access, success and progression is needed, that acknowledges the interplay between them. The Higher Education Policy Institute annually publishes a social mobility index for England (e.g., HEPI, 2023) which could be helpful and is available at both provider and course level (see also Britton et al., 2021). The index provides a weighted combination of measures of access, continuation, and graduate outcomes. However, it should be noted that this measure has been criticized for the inclusion of salary, because it fails to consider geographical context (providers in London feature heavily amongst the top ranked).

A snapshot analysis of a provider's current position in terms of access, success and progression needs to be accepted as a progress point, with historical, current, and prospective contexts, rather than a starting point. For access and progression, it would be helpful

to benchmark performance by region, using similar regions for comparison rather than only using gaps. For student success, it would be helpful to benchmark performance with providers whose intake is similar. Overall performance should be considered as well as gaps in performance to avoid incentives to decrease positive outcomes for some groups in order to reduce gaps, as opposed to improving performance for the targeted group. Providers may be performing well above benchmarks for disadvantaged groups, yet still have gaps, or not have gaps but show poor performance overall. Particularly if a whole institution approach is employed, institutions may be successful in raising the performance of all groups (which should not be discouraged). Additionally, some HEIs are almost entirely populated by students with at least one characteristic of disadvantage, making a gap approach problematic.

Foster whole-institution approaches

Rather than requiring detailed cost estimates for individual interventions, whole-institution strategies [as first recommended by Thomas (2017)] that are embedded and sustainable should be encouraged and recognized. Currently many of such strategies will not be explicitly included in the APP, nor necessarily evaluated and disseminated as good practice if successful (often because of the complex nature of evaluating them). These strategies should align with broader university objectives and be evaluated over longer cycles to measure true impact. One potential challenge of this approach is measuring progress and maintaining accountability, although arguably this is also a challenge under the current system (see OfS, 2022c for monitoring and outcome data). An advantage of a whole provider approach is that it potentially avoids the implication of a deficit associated with students targeted by an "intervention," which can risk stigmatization and implies the existence of a problem that needs to be fixed. Instead, a structural model (where the institution assumes responsibility for gaps in outcomes e.g., the "attainment gap" change in language to the "awarding gap") and inclusive approaches (embedded practice for all) is implemented. We have argued elsewhere that the "everyday" (such as embedding inclusive approaches to teaching and assessment) - difficult to label as an "intervention" in APPs - is likely to have the most significant impact on equality gaps (Moores and Summers, 2023). This could include things such as mode of delivery (e.g., Summers et al., 2024a; Summers et al., 2023) or attendance policies (see e.g., Moores et al., 2019).

Promote sector-wide collaboration

Access and participation work should be done collaboratively across the sector with institutions not measured purely on their own performance intake, but rather the performance uptake of a geographical area near to - or assigned to - them. At least in areas with good choice of provision, providers should be able to concentrate on what they are best at, e.g., some institutions might specialize in supporting mature students, so that they may contribute optimally to the issues at hand nationally. This kind of collaborative approach requires a top-down point of organization to coordinate, a

suitable shared database, and staff to evaluate impact of each institution (or indeed the cumulative effects of impact from different institutions). In September 2024, the OfS announced a collaborative funding competition to improve equality of opportunity to encourage different providers as well as charities and third sector organizations to collaborate (OfS, 2024c). HEIs should also collaborate on evaluation of interventions. To produce useful recommendations sector-wide, we need to test the same interventions in multiple similar contexts to ensure that they are generalizable across contexts, or to understand the circumstances in which they will and will not work.

Address resourcing challenges

For sector-wide progress to be made on reducing gaps, the way in which these activities are funded needs consideration. More specifically, to be allocated according to actual disadvantage (e.g., based on previous FSM eligibility or household income), rather than entry qualifications. The fact that providers with large proportions of students from disadvantaged backgrounds have their resources stretched more thinly is particularly problematic, because they are in the best position to make the biggest impact on gaps nationally. At the same time, there is a need for the regulator to accept that provider plans may reflect less a lack of ambition and more a lack of resources. Targets set should first and foremost be realistic and justifiable based on impact of previous evaluations of interventions. This will help to avoid targets that can sometimes be a "triumph of hope over experience," guided by the requirement to "show sufficient ambition."

Conclusion

The recommendations outlined above suggest a significant shift in approach, requiring more nuanced evaluations, including recognition of context, embedded strategies, revisiting student premium funding and greater collaboration across the sector. While these changes arguably require substantial effort, many of the processes already exist, particularly in relation to the Teaching Excellence Framework (TEF). Merging APP and TEF requirements (perhaps also in conjunction with regulation of some conditions), could create a more streamlined and effective approach, ensuring that providers continue to make meaningful progress in promoting equality of opportunity for all students. Many of the data requirements are similar. Scotland has a similar system of "Outcome Agreements" (becoming Outcomes Framework and Assurance Model in 2425), which sits alongside their quality assurance and enhancement processes, although there is perhaps less regulatory emphasis on evaluation. However, meaningful differences between the APP and the TEF include that the TEF does not require estimates of investment, and that it is mainly retrospective. Nevertheless, institutions increasingly take a forward-looking approach to the TEF preparations, particularly in

terms of evaluation of impact, so similarities are present. Whilst we have discussed above that estimating spend in a whole institution approach is difficult, it does ensure commitment of investment in this important area.

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Outcomes of a mentoring scheme to improve career engagement in academia among students from minority ethnic groups

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Introduction: Student mentorship in higher education institutions is often advocated as a way to improve opportunities for students from minority ethnic groups.

Methods: This study examines this further by applying a linear regression model to explore the relationship between a 6-month pilot mentoring scheme at King's College London and career engagement in academia for students from minority ethnic groups, by investigating whether there were differential impacts by ethnic group, and by degree of exposure to mentoring, measured by the number and mode of mentoring sessions i.e., online, in-person or bimodal (a combination of online and in-person).

Results: The results reveal that while there were no significant differences in career engagement between Asian and Black students, there were significant differences in career engagement between Black students and students who identified as Mixed or Other. Surprisingly, the number of sessions was negatively related to career engagement. However, the positive, significant interaction effect between the number and mode of sessions suggests that this relationship varies based on the mode of the sessions, with bimodal sessions leading to an increase in career engagement, in contrast to solely in-person sessions which led to a decrease in career engagement in academia.

Conclusion: The results from this study point to some differential effects of mentoring by ethnic group, with Black students experiencing less gains in terms of career engagement in academia, relative to students who identified as Mixed or Other ethnic groups. This suggests that Black students may need more tailored support, in-depth mentoring or better-matched role models for improved outcomes.

KEYWORDS

higher education, mentoring, race equality, equality diversity and inclusion, BAME ethnicity

1 Introduction

Mentoring is broadly defined as the process of providing guidance, support, feedback, information and advocacy from a senior colleague (mentor) to a junior, likely less experienced colleague (mentee) (Kram, 1988; Thomas et al., 2007). Mentees may benefit from mentoring by receiving individualized information directly from their mentors which may be otherwise unavailable to them, building their confidence due to the counsel and direction offered by their mentor about relevant processes and shortcuts (Kirk and Olinger, 2003). There are two general types of mentorship common in higher education institutions;

informal relationships, and more formal relationships organized by a third party (Haywood and Darko, 2021). Curtin et al. (2016) further distinguished mentorship into three types; career or instrumental mentoring which focuses on the dissemination of skills and practical knowledge, sponsorship mentoring which has elements of advocacy (e.g., in terms of providing recommendations, and access to professional networks), and expressive and psychosocial mentoring which is characterized by providing encouragement and support to positively influence the mind and behavior of the mentee.

Research on the effectiveness of mentoring schemes on student outcomes has produced varying results due to issues arising from a lack of external validity given that mentoring relationships tend to be context-specific. Additionally, differences in the purpose of mentoring or outcome being measured, as well as the variation in the depth and kind of mentoring i.e., formal vs. informal and in-person vs. online, have also contributed to the lack of consensus on the impact of mentoring on student outcomes (Lyden, 2021). For instance, while some studies (Ensher et al., 2003; Owen, 2015; Junn et al., 2023) have shown that online mentoring can be just as effective and beneficial as in-person mentoring, with the former offering additional advantages such as flexibility regarding hours and venues, the ability to record interactions, as well as providing a more comfortable environment for mentees and mentors, there are also some drawbacks. For example, given that a large proportion of communication is non-verbal, the absence of personal contact during online mentoring may result in some degree of miscommunication. Additionally, there is a risk of breaching confidentiality due to the ability to record interactions which may discourage some participants (Kirk and Olinger, 2003). Effective online mentoring may require technical competency, and mentor/mentee relationships may also be slower to form when sessions are held online (Ensher et al., 2003). Mentoring programmes that offer the choice between in-person and online sessions are beneficial to mentees by allowing for in-person sessions where possible and adjusting for convenience in instances where in-person sessions might be difficult due to geographical distance (Rockinson-Szapkiw et al., 2021). A combination of in-person and online mentoring sessions may also encourage more rapidly developing relationships between mentors and mentees, relative to solely online sessions (Ensher et al., 2003).

Mentorship schemes may be beneficial in addressing existing racial disparities in higher education outcomes between White students and students from minority ethnic groups. However, complexities may arise when attempting to match students with mentors from similar backgrounds and cultures. A study by Cropper (2000) reports that demographic characteristics such as race and gender are influential in the forming of close relationships between mentors and mentees which is crucial for effective mentorship. For instance, for Black students, having good connections with their lecturers is influential in their sense of belonging to an institution (Mimirinis et al., 2024). They also tend to view Black lecturers as role models given that they are likely to share similar experiences and can offer culturally relevant guidance and support. However, while students from minority ethnic groups are now well represented in UK higher education institutions, the representation of academic staff from minority ethnic groups has unfortunately not followed the same trajectory

with staff from minority ethnic groups still under-represented in many universities, particularly at the senior academic levels and other higher level contracts (Baltaru, 2024). The Race Equality Charter (REC) was launched in 2015 by the Equality Challenge Unit (ECU) in an attempt to address these issues. REC member institutions are required to adhere to its five guiding principles which emphasize the importance of working toward institutional and culture change. Beginning with a pilot of 21 institutions, there are now currently 100 Race Equality Charter members. However, despite the Higher Education sector's uptake of REC membership, a study by Nwosu (2024) finds no significant difference in the outcomes for staff from minority ethnic groups at Race Equality Charter (REC) and non-REC member institutions.

Data from the Higher Education Statistics Agency (HESA) in the 2021/22 academic year shows that, among staff with known ethnicities, the share of academic staff from Black, Asian, and minority ethnic backgrounds was roughly 20% which was almost four times less than the share of White staff (79.6%). While several reforms have been adopted to tackle issues of race equality among academic staff in UK universities such as the REC, the funding competition by UK Research and Innovation (UKRI) to improve ethnic minority participation in postgraduate research funded by UKRI,[1] and the "100 Black Women Professors NOW,"[2] such efforts are yet to produce sustainable outcomes (Lynam et al., 2024). This has far-reaching consequences for students from minority ethnic groups, signaling a major barrier to entry into academia for a significant share of the student population (Arday, 2021). This notion is supported by findings from Rana et al. (2022) who reported that students from minority ethnic groups studying at institutions with low minority ethnic staff representation experienced difficulties envisioning a career in academia. In addition, they often felt that their issues may not be properly understood by White academic faculty due to a cultural mismatch.

Postgraduate research may be described as the earliest stage of an academic career which marks the point where students make the decision to pursue an academic or non-academic career (Curtin et al., 2016). However, there are several barriers to postgraduate research for students from minority ethnic backgrounds highlighted by Badrie et al. (2023) with the most common being the ethnicity awarding gap, difficulties in the application and recruitment process including finding an appropriate supervisor or relevant research topic, lack of representation of academic staff from minority ethnic groups, and the financial burden of postgraduate research. Their study further identified that a significant proportion of students from minority ethnic groups indicated that mentorship and having role models from minority ethnic groups would be a significant factor in potentially pursuing postgraduate research leading to an academic career.

This study aims to further build on this by exploring whether a mentoring scheme targeting undergraduate students from minority ethnic groups will lead to an improvement in career engagement

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1 https://www.ukri.org/news/new-fund-to-improve-postgraduate-research-participation-and-access/

2 https://www.whenequality.org/100

in academia. Hirschi et al. (2014) define career engagement as "a measure of the degree to which somebody is proactively developing his or her career as expressed by diverse career behaviors." This study uses King's College London (KCL) as a case study and investigates whether any differential effects exist by ethnic group and by differences in the degree of exposure i.e., the number and mode of sessions. It also investigates whether there were differential outcomes by the duration of sessions, as well as by mentor ethnicity. Therefore, the two main hypotheses of this study are:

- Are there differential effects of mentoring on career engagement by ethnic group?
- Are there differential effects of mentoring on career engagement by degree of exposure?

2 The study

The Into Academia mentoring scheme is a pilot mentoring scheme which launched at KCL in January 2024. The scheme was delivered over 6 months and targeted undergraduate (UG) students from Black, Asian, and minority ethnic groups who were considering a career in academia, offering them an opportunity to forge a one-to-one connection with an academic or researcher within the university in order to gain support and experience and benefit from their expertise.

The three main objectives of the scheme were:

- To instill confidence in students from minoritised ethnic groups that academia is a place for them
- To help mitigate against the disadvantage that those without sector connections can face
- To serve as a positive action at the beginning of the pipeline to ultimately increase the number of academics from minoritised ethnic backgrounds

Prior to the launch of the scheme, the Equality, Diversity and Inclusion team at KCL conducted an online focus group with UG, postgraduate-taught (PGT), and postgraduate research (PGR) students, as well as a general survey also including academic staff to register interest and gain feedback used in the development of the scheme. Each mentee (i.e., a student from a minority ethnic background) was matched with a mentor (a member of academic staff at KCL from any ethnic group). Each mentor was assigned to a singular mentee, and all mentors were required to attend a mandatory training session before the scheme was launched. Furthermore, all mentors and mentees committed to meeting for an hour each month for up to 6 months.

At the start of the evaluation and prior to the launch of the scheme, a logic model workshop was conducted with the delivery team to determine the causal pathway between each activity and its intended outcomes in order to accurately map all activities to specific outputs and outcomes, both shorter and longer term.[3]

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3 A copy of logic model is shown in Appendix Figure A1.

3 Data

A total of 87 students registered for the mentoring scheme. However, only 34 (39%) mentees consented to be part of this study and completed the baseline questionnaire. This response rate, while low, is not unusual for studies involving students who tend to have multiple competing commitments (TASO et al., 2022). Those students who chose not to opt into the study were still able to participate in the mentoring scheme but were not included at the baseline or endline data collection or at any time while this research was conducted. Following consent to take part in the study, questionnaires were administered directly to the mentees prior to the launch of the scheme, and then again 6 months later, one week after the close of the scheme. A total of 23 students (68%) completed the endline survey at the close of the scheme.

The baseline questionnaire included information on student demographic characteristics such as age, gender, and ethnic group, as well as questions asking them to identify their faculty, year of study (first, second or third) and mode of study i.e., full-time or part-time. The questionnaire also included questions on the primary outcome; career engagement which was measured using eight questions on a 5-point Likert scale, adapted from the Career Engagement scale developed by Hirschi et al. (2014). This measure defines career engagement as the extent to which a person is actively developing their career as expressed by a variety of behaviors. Given that UG students were the focus of this scheme, this measure was chosen as a short-term outcome that gauges whether students feel more confident in aiming for a possible career in academia and have started taking active steps toward this goal.

For each question shown in Table 1, students could choose from options 1 to 5 coded as 1 for "almost never," 2 for "occasionally," 3 for "moderately," 4 for "quite often," and 5 for "very often." The mean score for each mentee was then computed at baseline and endline.

The endline questionnaire repeated the questions from the academic engagement scale, and also included questions on students' experience with the mentoring scheme such as the number of sessions attended, the mode of sessions i.e., online, in-person or bimodal, the duration of sessions, and the broad ethnic group of the mentor. The internal reliability of the scale measured by Cronbach's alpha was 0.89 at baseline and 0.92 at endline, which suggests that the questions in the scale had a high level of internal consistency among response values for survey respondents.

Table 2 presents the summary statistics for variables included in the analysis. The mean score at baseline (prior to the launch of the scheme) was 2.83 which is notedly lower than the mean endline (after the scheme had concluded) score of 3.66. Mentees were split almost evenly across years of study with 30% in their third year, and 35% in both year 1 and year 2. In terms of demographic characteristics, there were more than two times more Asians, relative to Black students, while only 13% of student participants identified as Mixed or Other. Roughly 36% of mentees were male, and the mean age among mentees was ~20. On average, mentees attended three sessions with their mentors in the 6-month period over which the scheme took place. The mode of these sessions varied with close to half of the mentees reporting

TABLE 1 Career engagement scale adapted from Hirschi et al. (2014).

	Question
	Thinking about a career in academia, to what extent have you in the past 6 months...
1	Actively sought to design your professional future in academia
2	Undertook things to achieve your academic career goals
3	Cared for the development of a career in academia
4	Developed plans and goals for a future career in academia
5	Collected information about employers, professional development opportunities or the job market in your desired area of academia
6	Established or maintained contacts with people who can help you professionally in an academic career
7	Voluntarily participated in further education, training or other events to support a career in academia
8	Assumed duties or positions that will help you progress professionally in an academic career

TABLE 2 Summary statistics.

Variable	Mean
Career engagement scores	
Baseline score	2.83
Endline score	3.66
Demographic characteristics	
Male	0.36
Black	0.26
Asian	0.61
Mixed/Other	0.13
Age	20.2
Year of study	
Year 1	0.35
Year 2	0.35
Year 3	0.30
Number of mentoring sessions	3.04
Mode of mentoring sessions	
In-person sessions	0.48
bimodal sessions (online & in-person)	0.26
Online sessions	0.26
Ethnicity of mentor	
Black, Asian, and Minority Ethnic (BAME) mentor	0.43
Duration of mentoring sessions	
Less than 30 min	0.17
30 min–1 h	0.57
Over 1 h	0.26

that their sessions held in person, and just over 25% attending their mentoring sessions online, and an equivalent share reportedly attending bimodal sessions. A majority (57%) of these sessions lasted between 30 min to 1 h on average, with 26% lasting over an hour, and 17% falling below the 30-min mark. Just over 40% of mentees identified their mentor as belonging to a minoritised ethnic group.

4 Ethics

After recruitment was complete, all participants were provided with a Participant Information Sheet that explained the reason for collecting and processing their data. The Information Sheet also detailed how long this information would be stored and if/how it would be shared with other parties. It also provided them with the mechanism to ask that their data be removed or to raise a complaint should they need to.

The project was classified as minimal risk and was granted ethical clearance by the KCL College Research Ethics Committee (CREC). This project was also subject to the College's random audit procedure for minimal-risk registrations and was confirmed to have satisfied the conditions for a minimal-risk project.

5 Method

The outcome of interest in this study is career engagement in academia which is measured as the mean score on the career engagement scale at the end of the mentoring scheme. Since the outcome/dependent variable is continuous, the ordinary least square (OLS) model is used for this analysis. In order to evaluate the effectiveness of the intervention, the degree of exposure

(i.e., number and mode of sessions attended), serve as the key explanatory variables as these may influence the impact of the intervention on identified outcomes. The ethnic group of mentees is also included as a key explanatory variable to observe any differential effects on the outcome by ethnic group. Therefore, the following fixed effects regression model is specified:

$$Y_i t = \beta_0 + Y_{it-1} + \beta_1 D_i + \beta_2 Z_i + \beta_3 (D_i * Z_i) + \alpha_i + \epsilon_i \quad (1)$$

Where:

- Y_{it} is the mean score of career engagement for student i at time t (endline);
- β_0 is the constant;
- Y_{it-1} is the mean score of career engagement for student i at time $t-1$ (baseline);
- β_1 is the effectiveness of an additional mentoring session on the outcome of interest;
- D_i is the number of mentoring sessions which is a dosage level indicator;

- β_2 is the difference in the effectiveness of different modes of mentoring sessions on the outcome of interest;
- Z_i is the mode of mentoring sessions which is also a dosage level indicator;
- β_3 is the interaction effect between the number and mode of mentoring sessions;
- α_i is the individual fixed effects;
- ϵ_i is a robust error term

This analysis is approached via a series of linear regression model specifications in order to explore how the relationship between mode and number of mentoring sessions varies by the model specification. The models are categorized into groups based on the types of control variables included. The first model specification only includes the baseline score as an explanatory variable as a way to control for student ability and motivation prior to mentoring, while models 2–5 introduce demographic characteristics such as ethnic group, year of study, and age to control for variation in outcomes due to personal attributes. The mode of the mentoring sessions is introduced as an explanatory variable in model 6, while the number of mentoring sessions is included in model 7. In the final model (8), an interaction term of mode and number of sessions is included as a control variable, as well as the duration of the mentoring sessions and the ethnic group of the mentor.

6 Results and discussion

The results from the linear regression model specifications are given in Table 3. The dependent variable, career engagement is defined as the endline score i.e., the mean of the eight career engagement in academia questions, while the ethnic group of the mentee and number and mode of mentoring sessions are the key explanatory variables. The first model includes the baseline score as the sole explanatory variable. The coefficient is positive and significant, showing that an increase in the baseline score by 1 unit will increase career engagement by 0.53 points. This implies that those students who were more active in developing their career in academia prior to the launch of the scheme saw a larger improvement in their career engagement in academia by the end of the scheme, relative to those who were less proactive.

The ethnic group of the mentees is included in model 2, with Black students as the reference category. The results indicate a significant difference of 1.58 points in the career engagement score between students who identified as Mixed/Other and Black students. Therefore, Black students were less proactive in developing their careers in academia, relative to those students who identified as Mixed/Other by the end of the scheme. The difference of 0.71 points in career engagement between Black and Asian students implies that Black students were also less active in developing their careers in academia, when compared to Asian students. This reinforces the non-monolithic experiences of students from minority ethnic groups in higher education and points to the importance of culturally inclusive advice and support for these students (Haywood and Darko, 2021).

When Year of study, gender and age were jointly included as control variables in model 5, the difference in career engagement scores between Asian and Black students increased to 0.83, and up to 1.98 between students whose ethnic group was Mixed/Other and Black students. These differences were significant at 10% and 5% level of significance respectively. Older students were also more likely to score higher on career engagement. There were no significant effects of the mode or number of sessions (see models 6 and 7). However, including these variables further increased the difference in career engagement scores between Asian and Black students to 1.10, and between students from the Mixed/Other ethnic group and Black students to 2.57. These differences were both significant.

In model 8, when the interaction term between mode and number of sessions, ethnicity of the mentor and duration of sessions were included as control variables, the difference in career engagement scores between Asian and Black students was no longer significant. However, the difference in career engagement scores between students who identified as Mixed/Other and Black students increased in magnitude to 3.33. The coefficient on number of sessions was negative but significant at 10%, suggesting that an additional increase in the number of sessions by 1 will reduce the career engagement score by 0.86 points. However, given that the interaction effect between number of sessions and mode of sessions (bimodal) was positive and significant, this suggests that while an additional increase in the number of sessions may be negatively related to career engagement, this effect was positive when the sessions were bimodal, in contrast to solely in-person sessions. This may be attributed to the lack of flexibility with solely in-person sessions. Whereas, a mix of online and in-person sessions allows mentees and mentors to connect at their convenience due to its asynchronous nature, which may increase the frequency and duration of sessions (Dahalan et al., 2012). There was no significant difference in the effect of number of sessions between in-person and solely online sessions, by the duration of the sessions, or by the ethnic group of the mentor. These results support those of Campbell and Campbell (1997) who do not find significant differences in student outcomes by mentor ethnicity.

To provide more clarity, Figure 1 plots the predicted values of career engagement based on the interaction effect between the number and mode of sessions. The intersection of the lines shows a valid interaction between the number of sessions, mode of sessions, and career engagement which means that the relationship between the number of sessions and career engagement changes depending on the mode of the sessions. The downward slope demonstrates the negative relationship between the number of sessions and career engagement for in-person sessions, relative to the relationship between the number of sessions and career engagement for online and bimodal sessions which was positive, as demonstrated by the upward slopes of both lines.

This is particularly relevant as students from minority ethnic groups may also be socio-economically disadvantaged and may have term-time work commitments or family responsibilities that prevent them from attending in-person sessions at certain times (Owen, 2015). Over time, students experiencing financial constraints may find it difficult to make continuous journeys to in-person sessions. Moreover, students for whom English is a second

Interaction between number and mode of mentoring sessions
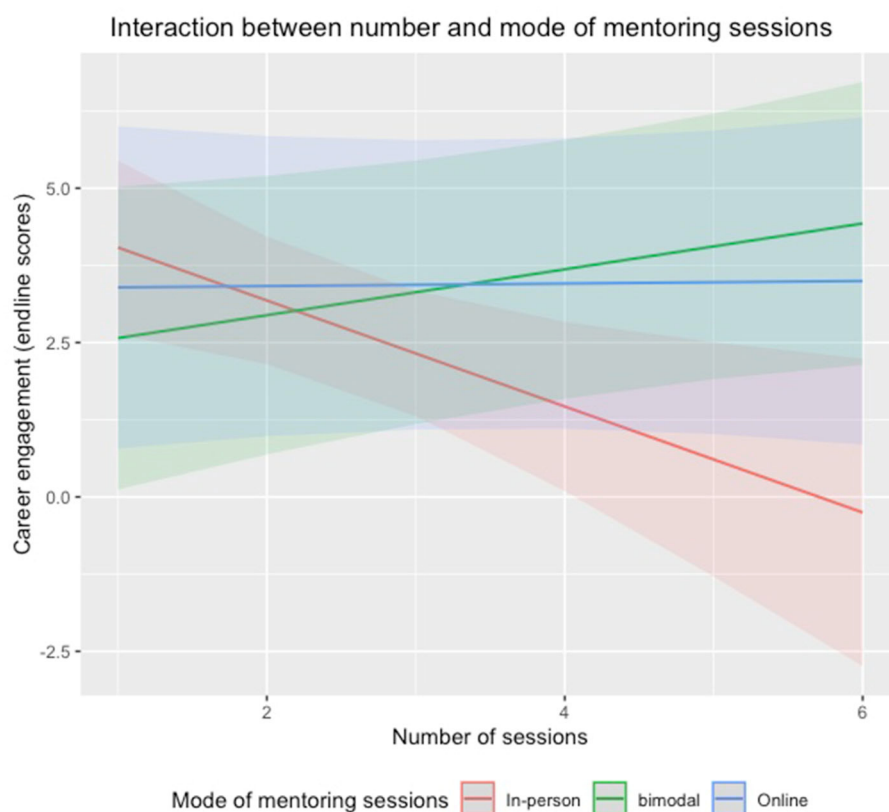
FIGURE 1
Interaction between number and mode of mentoring sessions.

language may benefit from a combination of online and in-person sessions as online sessions provide a record of interactions that could be revisited in cases where clarity is needed (Ensher et al., 2003). Therefore, these findings suggest that flexible mentoring schemes that allow for a combination of online and in-person sessions would be more inclusive.

7 Conclusion

The aim of this study was to investigate whether the 6-month mentorship scheme led to an improvement in career engagement among students from minority ethnic groups, observing whether there were differential effects by ethnic group, as well as by the degree of exposure to mentorship (measured by number and mode of sessions). The results revealed higher levels of career engagement for students belonging to Mixed or Other ethnic groups relative to Black students. However, there were no significant differences in career engagement between Black and Asian students at the end of the scheme. There were also no significant differences in career engagement by mentor ethnicity.

In terms of degree exposure, results were not as expected. The relationship between the number of sessions and career engagement was negative, implying that an increase in the number of sessions would reduce career engagement in academia. However,

the interaction between the number of sessions and the mode of sessions painted a mixed picture, with an increase in the number of sessions leading to a positive effect on career engagement when these sessions were bimodal i.e., a combination of in-person and online sessions, relative to solely in-person sessions.

This study is not without limitations. Most importantly, without a control group, it was not possible to identify a causal relationship between mentorship and career engagement. Given that students self-select into the mentorship programme, it is highly likely that more motivated students signed up for the mentorship scheme, and while results at baseline serve as a way to control for this, the absence of a control group limits the internal validity of the results. Another key limitation was the small size of the sample. Given that only a small share of mentees consented to be part of this study, these results are not generalisable to the wider population of participants in the scheme. It was also not possible to disaggregate results by faculty which may mask important differences between programmes of study.

Notwithstanding, these results are indicative and point to some differential effects of mentoring by ethnic group, with students who belonged to Mixed or Other ethnic groups experiencing more gains in terms of career engagement in academia, relative to Black students. This suggests that Black students may need more tailored support, in-depth mentoring or better-matched role models for improved outcomes.

TABLE 3 OLS results with career engagement (endline scores) as the dependent variable.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Baseline score	0.53* (0.21)	0.46* (0.19)	0.49** (0.19)	0.55* (0.23)	0.51* (0.20)	0.53* (0.22)	0.51* (0.22)	0.75+ (0.28)
Asian		0.71+ (0.36)	0.69+ (0.37)	0.61 (0.44)	0.83+ (0.39)	0.88+ (0.41)	1.10* (0.47)	1.15 (0.64)
Mixed/Other		1.58** (0.53)	1.57** (0.53)	1.54* (0.58)	1.98** (0.54)	2.18** (0.59)	2.57** (0.71)	3.33* (0.96)
Year of study			−0.15 (0.20)	−0.19 (0.21)	−0.47* (0.22)	−0.60* (0.26)	−0.53+ (0.27)	0.99 (0.66)
Male				0.35 (0.38)	−0.10 (0.37)	-0.21 (0.42)	-0.34+ (0.45)	−1.47 (0.75)
Age					0.29* (0.12)	0.37* (0.14)	0.35* (0.14)	0.34 (0.17)
Bimodal sessions (online & in-person)						−0.30 (0.43)	-0.16 (0.45)	−2.70 (1.21)
Online sessions						0.23 (0.49)	0.21 (0.49)	1.53 (1.41)
Number of sessions							−0.12 (0.13)	−0.86+ (0.34)
Bimodal sessions*Number of sessions								1.23* (0.38)
Online sessions*Number of sessions								0.88 (0.42)
Non-BAME (Black, Asian, and minority ethnic) mentor								−0.18 (0.51)
30-min–1 h sessions								0.21 (0.51)
Less than 30-min sessions								−1.80 (1.97)
R-squared	0.23	0.48	0.5	0.53	0.66	0.69	0.71	0.94
No. of observations	23	23	23	22	22	22	22	18

Standard errors in parentheses.
$^+ p < 0.1$. $^* p < 0.05$. $^{**} p < 0.01$. $^{***} p < 0.001$.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving humans were approved by King's College London College Research Ethics Committee. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

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Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Appendix

Problem statement: The number of Black and minoritised ethnic groups in academia decreases with seniority and we have a particularly low number of Black professors (1%). Given there is a particular career pathway in academia, action is needed at the beginning of the pipeline

Contextual Factors	Interventions	Mechanisms	Outcomes

Availability of mentors and mentees who can be suitably matched

Participant engagement in the scheme

Students regularly meet with a mentor who wishes to encourage them into academia

Training for mentors on supporting students, understanding the existence of racism in HE and effective signposting

Students feel encouraged and supported by someone who is already in the field. They therefore feel that there is a place for them in the field of academia

Mentors understand the type of information that mentees would find most helpful

Information on what an academic career entails, what the unspoken rules are, how best to approach it, shared with mentees

Increase in how far mentees see academia as a possible career option for them

Mentees feel more equipped to apply for roles in academia (e.g. a PhD)

An increase in the number of Black and Minoritised Ethnic students who embark on a career in academia

Figure A1

Logic model for the Into Academia mentorship scheme.

Check for updates

Undergraduate university students mentoring program: experiences of mentors and mentees

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Introduction: Research on the impact of mentoring on students and mentors is limited. Therefore, this study explored the experiences of mentors and mentees involved in a mentoring program for undergraduate students at a governmental academic institution in Saudi Arabia. The program connected undergraduate students with peer students, academic staff, or alumni based on their needs.

Methods: Using an online survey ($n = 80$) and a focus group ($n = 24$), we examined mentees and mentors' perceptions of their mentoring experiences. Descriptive statistics were used to summarize participants' responses to the survey. The focus group data were analyzed using six phases of thematic analysis.

Results and discussion: The findings showed that the participants' mentoring experience was positive, with some challenges, such as limited time, unmet expectations of mentees, and a lack of student engagement. The motivation to volunteer as a mentor focused mainly on wanting to help others and appreciating the value of mentoring based on the mentors' previous experiences.

KEYWORDS

mentoring, higher education, undergraduate students, alumni, evaluation

Introduction

Higher education institutions have increasingly focused on undergraduate mentoring programs as an approach to support students' success and development, increase student retention and persistence, and minimize attrition (Akinla et al., 2018; Andersen and West, 2020; Campbell and Campbell, 1997; Crisp and Cruz, 2009; Gehreke et al., 2024; Hamilton et al., 2019; Jacobi, 1991). Crisp and Cruz (2009) reviewed mentoring in education, business, and psychological literature (1990 and 2007) and identified over 50 definitions of mentoring with varying scope and breadth. Other reviews documented the absence of a consistent definition of mentoring in the context of higher education (Jacobi, 1991; Nuis et al., 2023). Nuis et al. (2023) proposed the following definition of mentoring in higher education based on a summative content analysis of 54 definitions:

> Mentoring is a formalized process based on a developmental relationship between two persons in which one person is more experienced (mentor) than the other (mentee). The mentor provides support, more specifically career, emotional, psychosocial, psychological, and academic support, to promote and facilitate student success, competence development, and career development. (Nuis et al., 2023)

Jacobi (1991) identified five components that characterize mentoring: (1) mentors typically possess greater experience, influence, and achievement compared to their mentee; (2) mentoring involves one or all of three broad components: emotional and psychological support, direct assistance with career and professional development, and role modeling; (3) mentoring relationships are primarily focused on helping the mentee achieve long-term goals like promotion or graduation; (4) mentorship requires direct interaction between the mentor and the mentee and involve exchanging information beyond what is available in public records; and (5) mentoring relationship is reciprocal as the mentor and the mentee gain emotional or tangible benefits from the mentoring relationships.

A review of the undergraduate mentoring literature between 1999 and 2020 identified four distinct mentoring purposes (Nuis et al., 2023). The first and most common purpose was student success, which included academic achievement, transition to university, enhancing student retention and persistence, and reducing attrition. The second was students' competence development to enhance their knowledge, skills, and abilities. The third was career development, which included students' professional growth. The fourth purpose encompassed diverse objectives such as enhancing the overall student experience and reducing anxiety levels.

The mentor can be a more experienced peer, faculty mentor, or a business professional. Mentors provide mentees with different types of support, such as career, academic, psychosocial, and psychological support (Nuis et al., 2023). To perform this function, mentors exhibit specific behaviors toward their mentees, such as role modeling, providing information and resources, assisting with setting goals, and providing feedback. A good mentor should offer a combination of support types and adapt their behavior depending on their mentees' specific needs (Nuis et al., 2023).

Dominguez and Hager's (2013) literature review on the theoretical underpinnings of adult mentoring in educational and workplace settings revealed that mentoring research is organized around three primary theoretical frameworks: mentoring as a means of support during academic, occupational, and developmental transitions (developmental); mentoring as a learning partnership (learning); and mentors as role models who introduce mentees to social networks to facilitate learning and adjustment to their environment (social). The review concluded that each theory exhibits challenges in the educational setting, that no single mentoring model applies to all individuals and institutions, and that they may be implemented in conjunction with one another (Dominguez and Hager, 2013). Other reviews also confirmed that a single guiding theory or conceptual framework would be inappropriate, given the range of outcome measures in undergraduate mentoring programs. Jacobi's (1991) review of the undergraduate mentoring literature identified four mentoring frameworks: involvement in learning, academic and social integration, social support, and developmental support. Based on an extensive review of the literature on undergraduate mentoring programs, Crisp and Cruz (2009) proposed a conceptual framework encompassing the following domains: (a) psychological and emotional support, (b) support for goal setting and career planning, (c) academic subject knowledge support, and (d) role

modeling. Nora and Crisp (2007) validated this framework through research involving two college populations and concluded that these four fundamental dimensions formed the multidimensional foundation of effective mentoring. Gershenfeld's (2014) review of studies published in undergraduate mentoring programs between 2008 and 2012 identified 20 studies. The findings indicated that 70% of the studies were guided by a theory or conceptual framework, and the most frequently applied theory was Tinto's social integration theory, which postulates that students who are fully integrated into the campus community, both academically and socially, are more likely to persist and graduate from university.

Evaluation is important for improving mentoring programs, helping mentors and mentees feel appreciated, and identifying areas that require improvement (Andersen and West, 2020). Collecting data on mentors' and mentees' perceptions of the goals, processes, and effects of mentoring interventions beyond satisfaction is an important area of research (Gershenfeld, 2014). Gershenfeld (2014) argued that measuring participants' perceptions is a subjective outcome that is considered a methodological flaw by many, but it is an element of social validity and, when combined with more objective valid measures, will lead to improved evidence-based mentoring practice. Two areas that have been examined in the literature are mentors' and mentees' motivations to join mentoring programs and the challenges faced.

Anderson and West's literature review (2008–2018) of mentoring in higher education identified several mentoring challenges (Andersen and West, 2020), which we grouped into three levels: administrative, mentees, and mentors. At the administrative level, these include providing mentoring for all students in need; identifying, selecting, and training effective mentors; and using valid and reliable program evaluation procedures. At the mentee level, the challenges include a lack of awareness about available mentoring opportunities, difficulty in forming a meaningful connection with mentors, disliking the mentoring style offered, and dissatisfaction owing to mentor unavailability. At the mentor level, these challenges include a lack of long-term commitment to students or the organization, time constraints, and limited flexibility in meeting mentees' needs. Obstacles to undergraduate research mentoring include personal faculty problems such as deficits in emotional intelligence, and a lack of time, energy, motivation required for engaged mentorships with students, and institutional reward for time engaged in mentorship (Johnson et al., 2015). The decision to volunteer as a mentor can be derived from different motivations, including a positive institutional culture, prior undergraduate experiences, opportunities to conduct research and work with a bright student, personal fulfillment, and enjoyment (Baker et al., 2015, 2022; Copenheaver and Shumaker, 2022; Hall et al., 2018; Seery et al., 2021).

Although the literature on undergraduate mentoring has examined many critical issues, we argue for further research on the relationship between mentors and mentees. First, most of the published literature focuses on the mentee's perspective, and few studies have examined mentors' perspectives (Baker et al., 2022; Crisp and Cruz, 2009; Davis et al., 2020). Second, a large number of published studies have focused on mentoring certain populations, such as minority students, while mentoring

mainstream undergraduate students remains under-researched. Third, for any mentoring program administrator, the collection of data on the impact of mentoring on objective outcomes, such as students' average grades, is crucial. However, understanding the expectations of mentees from the mentoring activity as compared to their lived experience of mentorship is an important subjective measure of program success. Fourth, most studies have examined either mentors' or mentees' experiences, and very limited research has examined both perspectives for the same mentoring program to provide a holistic picture of the experience. Fifth, although the literature has examined peer and faculty mentoring, the perspective of alumni as mentors for undergraduate students has not been widely studied. Thus, research that explores mentoring experiences from the perspective of both mentees and mentors participating in the same mentoring program is needed. Finally, given that mentoring programs have largely been evaluated in Western countries (Crisp and Cruz, 2009; Gershenfeld, 2014; Nuis et al., 2024), there is a gap in the literature on the implementation, process, and impact of mentoring programs in other settings.

Purpose of the study

Recognizing the benefits of mentorship, the Comprehensive Personal Support Program (CPSP), a mentoring program for undergraduate students, was established at an academic government institution in Riyadh, Saudi Arabia. This study explored the experiences of mentors and mentees involved in the CPSP. Specifically, we aimed to identify mentees' and mentors' motivations for joining the program and the challenges faced during the mentoring relationship that hindered mentees from achieving their goals and expectations by participating in the program.

As mentoring programs vary, research needs to specify the key operational features of the program, such as the characteristics of mentors and mentees, the types and extent of training, and whether the program is mandatory or voluntary, to facilitate comparisons across programs and encourage adaptation (Gershenfeld, 2014; Leavitt et al., 2022). Therefore, we describe the CPSP in the following sub-section before presenting our methods and results.

Program description

We designed the program based on the theoretical and conceptual frameworks for undergraduate mentoring proposed by Crisp and Cruz (2009) (Table 1). The CPSP is an initiative managed through the Rectorate for Academic Support and Student Services and the Student Support Services Center. The establishment of the CPSP was guided by evidence from best practices (Crisp et al., 1997; Crisp and Cruz, 2009; Law et al., 2020; Nuis et al., 2023; Ramani et al., 2006; Sucuoglu, 2018; Treasure et al., 2022).

To design the program, two committees were formed with members of the Rectorate for Academic Support and Student Services, academic staff from different colleges, and two student representatives. These committees focused on defining the program's vision and scope, developing program forms, and

specifying mentor selection criteria. Once the two committees agreed on the main features of the programs, a team from the Deanship of Students' Affairs was assigned to oversee program implementation and provide logistic support for mentees and mentors.

The program connected undergraduate students with peer students, academic staff, or alumni based on their needs. All mentees and mentors were female as the institution was a women-only institution. The CPSP was geared toward all undergraduate students regardless of discipline and without any selection criteria, except students' interest in participation. The criteria for selecting mentors were as follows: student, faculty, or alumni of the institution; having an interest in fostering the development of undergraduate students; and attending an online mentoring training workshop. Additional criterion for peer mentors was a grade point average of ≥ 3.75 out of 5.

To maximize their effectiveness, mentors require training in several key areas: developing effective interactions with students, articulating goals and expected outcomes within the mentoring program, delivering effective feedback, personalizing the mentoring experience to meet individual student needs within the program objectives, explaining the value of program activities for student learning, and providing optimal support for career planning (Andersen and West, 2020; Astrove and Kraimer, 2022; Beltman et al., 2019; Nuis et al., 2023). Therefore, we designed a compulsory workshop for mentors that discussed topics such as the definition of relationships, stages of mentoring, mentors' competencies, and guidance on the resources available for student support. In total, 135 academic staff members, alumni, and students attended the workshops. A 5 min introductory video explaining the aim of the program, the different tracks of the programs, and the potential benefits of joining the program, as well as a booklet on the program, was shared with all mentors and mentees via Microsoft Teams and emailed to all mentors and mentees after matching. The program was offered as a volunteering opportunity for mentors at the Saudi Volunteer Work Platform, and was also used to document mentors' volunteer hours and issue volunteer certificates. The components of mentor training and compensation reflected the formalization process in our mentoring program (Nuis et al., 2023).

The program team was responsible for the matching procedure based on similar academic backgrounds and the common interests of mentors and mentees. After matching, the mentors and mentees were required to meet and set mentoring relationship goals and develop plans to achieve them. The goals and plans were documented in an agreement form signed by both parties. The expected timeframe for the mentoring cycle was one semester ($\sim$15 weeks), and mentors and mentees were expected to commit to the program for its duration. Mentors were provided with a goal-setting and action plan form to monitor the progress of goal attainment.

There are three platforms for mentoring: in-person mentoring, which allows mentors and students to connect in person; online mentoring, which refers to online interaction between mentors and mentees through email, texting, free video meeting services such as Zoom, and document sharing such as Google Docs; and a blended platform that combines both in-person and online mentoring components (Andersen and West, 2020). In our program, the

TABLE 1 Overview of the comprehensive personal support program tracks.

Track	Mentor	Construct
Track 1	Senior student	• Academic subject knowledge support: aimed at advancing a student's knowledge relevant to their chosen field. For example, share with them their effective study skills or experiences of student clubs in college. It was explicitly clarified that no teaching is expected from the mentors and mentees are advised to use study groups available in many colleges • Emotional support: examples advise on strategies for managing exams and assignment stress or tips to navigate through challenges during their first year. It was explicitly clarified that mentor should not advise for social or psychological issues, but instead tell the mentee about social and psychological services available in every college • Specification of a role model
Track 2	Faculty	• Academic subject knowledge support: aimed at advancing a student's knowledge relevant to their chosen field. For example, share with them their effective study skills or experiences of student clubs in college. It was explicitly clarified that no teaching is expected from the mentor and mentees are advised to use study groups available in many colleges • Emotional support: for example, advise on strategies to cope with oral presentation stress, tips to facilitate transition to university life. It was explicitly clarified that mentor should not advise for social or psychological issues, but instead refer mentee to social and psychological services available in every college • Specification of a role model
Track 3	Alumni	• Support for setting goals and choosing a career path. For example, tips on searching for a job, applying for a job and networking skills • Specification of a role model

first mentoring session was conducted in-person to set goals and sign the agreement form, whereas the modes for the rest of the mentoring sessions (in-person or online) were left for the mentor and mentee to decide. The use of other communication methods, such as email and phone calls or messages, was left to their preference but had to be documented in the agreement form.

Students interested in the program submitted an online mentee application form that collected the relevant information required for the matching process, such as the college and preferred mentoring track. The application process was not a filtering process, as we attempted to match all applicants with a mentor, with the only limiting step being the availability of a suitable mentor. Owing to limited human resources, registration for the program was open for only 2 weeks at the beginning of the semester. To ensure inclusivity, all students were sent an email about the CPSP via the Rectorate for Academic Support and Student Services in addition to advertising the program through the university's X (Twitter) accounts. An introductory video was attached to the email and tweet.

The first, second, and third batches began in January 2022, September 2022, and April 2023, respectively. Three-hundred-and-sixty-eight mentors registered in the program over three cycles (academic staff, $n = 120$; alumni, $n = 175$; students, $n = 73$). A total of 118 mentors matched the students. Some mentors worked for all three cycles, whereas others were matched with more than one student. A total of 214 students participated in the program, of whom 64% ($n = 137$) were matched with mentors.

Methods

Design

We collected data from mentees and mentors using an online questionnaire administered at the end of the mentoring cycle and focus groups. The Institutional Review Board of the university revised the proposal and exempted the study from review as it poses no more than minimal risk to the participants. Participants were informed that their participation was voluntary and that they could terminate their participation whenever they wanted to and without any justification. Written informed consent was obtained.

Procedures

All mentors and mentees who were matched and started a mentoring relationship were invited via email to participate in the survey and focus groups. A reminder email was sent after 2 weeks. Participation was voluntary. The online survey was designed using Google Forms, and a link to the survey was emailed to all the mentees and mentors. We selected the composition of the focus groups to reflect homogeneity between participants but with sufficient variation among participants to allow for contrasting opinions. The mentees' group included students from different colleges and mentoring tracks. The mentors' groups were homogenous in terms of their tracks, but participants represented different colleges and work affiliations. We decided that the focus group size should not exceed eight participants to allow each participant opportunity to share insights and observations. The evidence suggests that data reached saturation within 4–8 focus groups, especially in those involving relatively homogeneous study populations and clearly defined objectives (Hennink and Kaiser, 2022). In our study, we ensured that each question was answered by all participants and that there were no new dimensions identified before moving to the next question. For focus groups, participants could select suitable times and dates for the focus groups from a list of suggestions. Focus groups were conducted face-to-face or online, based on the participants' preferences.

Participants were assured that all data collected would be securely stored and only accessed by the authors and any identifying information would be removed to maintain confidentiality and anonymity, respectively.

Measurables

We used online surveys and focus groups to collect data from the mentors and mentees. The survey aim was to measure mentors and mentees' perceptions of their mentoring relationship. The survey questions were formulated based on previous studies (Andre et al., 2017; Goodman-Wilson, 2021; Gullan et al., 2016). To minimize bias, we avoided leading and loaded questions. The two previously mentioned committees revised the survey for

clarity and comprehensibility. The survey for mentees included 14 statements evaluating the mentor and four questions evaluating their experience in the CPSP; all questions were closed-ended. The mentors' survey included five closed questions and three open questions for additional comments.

The focus group topic guide was based on previous studies (Dollinger et al., 2019; Hamilton et al., 2019; Ramani et al., 2006; Seery et al., 2021). The topic guide consisted of open-ended questions about the participants' understanding of mentorship, their personal experience of mentoring, and their recommendations for improvement. The participants' personal experiences of mentoring consisted of questions on three areas: their motivation to join the program, the challenges they faced during the mentoring relationship, and the benefits they gained from joining the program.

Data analysis

Descriptive statistics were used to summarize the participants' responses to the end-of-cycle survey. The focus groups were recorded and transcribed verbatim. We anonymized the data by removing all identifiers and replacing them with codes to differentiate between participants; for example, S1 (Student Mentee 1), F1 (Faculty Mentor), and A1 (Alumnae Mentor 1).

We analyzed the focus group data using thematic analysis, which is a method of "identifying, analyzing, and reporting patterns (themes) within data" (Braun and Clarke, 2006). We followed Braun and Clarke's (2006) recommendations for the six phases of the thematic analysis. In phase 1, the two authors independently read the focus group transcripts repeatedly to familiarize themselves with the dataset and to search for patterns. In phase 2, each author independently generated the initial codes and organized them into potential themes by identifying interesting aspects in the transcripts that may form the basis of repeated patterns (potential themes). Coding was performed manually. Frequent meetings provide a platform for authors to overview and compare their coding. Disagreements were discussed until a consensus was reached. In phase 3, the authors met to discuss potential themes and collate all the relevant coded data extracts within the identified themes. In phases 4 and 5, the authors reviewed the themes to ensure that they worked in relation to the coded extracts and the entire dataset, refined the themes and reached a consensus on thematic analysis. In the final phase, the writing up of the analysis, quotes that best illustrate the themes were chosen and all authors agreed on the final interpretations of the data.

Results

Survey

Twenty-five mentees completed an end-of-cycle survey. The mentees were representative of the three tracks academic staff ($n = 13$), alumni ($n = 9$), and students ($n = 3$). The responses indicated an overall positive evaluation of the program (Table 2). Twenty-one (84%) mentees were very satisfied with their experiences and

TABLE 2 Student survey ($N = 25$).

Item	Agree	Undecided	Disagree
The mentor gave me enough time to learn	22	3	0
The mentor gave me tasks that challenge my abilities, which helped me research, innovate and create	14	8	3
The mentor was accepting and understanding	25	0	0
The mentor offered me support and encouragement	25	0	0
The mentor communicated with me in a clear way	25	0	0
The mentor is a good role model for me	24	1	0
The mentor was available when I need her	24	1	0
The mentor offered constructive criticism and feedback in a kind way	24	1	0
The mentor encouraged my participation in the discussion	25	0	0
The mentor gave me enough encouragement when I finished the required tasks	24	1	0
Meetings with the mentor were effective and productive	24	1	0
I think the mentor believes in my abilities	24	1	0
I feel comfortable working with the mentor	25	0	0
I apply the suggestions and advice provided by the mentor	23	2	0

four (16%) were undecided. Twenty (80%) rated their experience as excellent, and five (20%) rated their experience as acceptable. Twenty-four mentees recommended the CPSP to their peers. Twenty-two (88%) mentees rated the mentoring skills of their mentors as excellent, and three (12%) as acceptable.

Fifty-five mentors completed the end-of-cycle survey and seven mentors provided two responses as they continued as mentors in two cycles (total responses = 62). The responses indicated a positive evaluation of the mentoring experience in general (Figure 1). Forty-five (72%) mentors were very satisfied with their experiences and 10 (16%) were undecided. Three mentors did not participate in the program again, while 52 (84%) did. All mentors stated that they would recommend the CPSP to their peers.

For the open-ended questions regarding suggestions for program improvement, the answers included more advertising for the program, meetings between the mentors to share their experiences, support mechanisms expected from the mentor with examples, programs integrated into the academic calendar, mentees matched with mentors early in the semester as well as a second training workshop after matching to answer all mentors' questions and a monthly meeting between mentors and the

FIGURE 1
Mentor survey ($N = 62$).
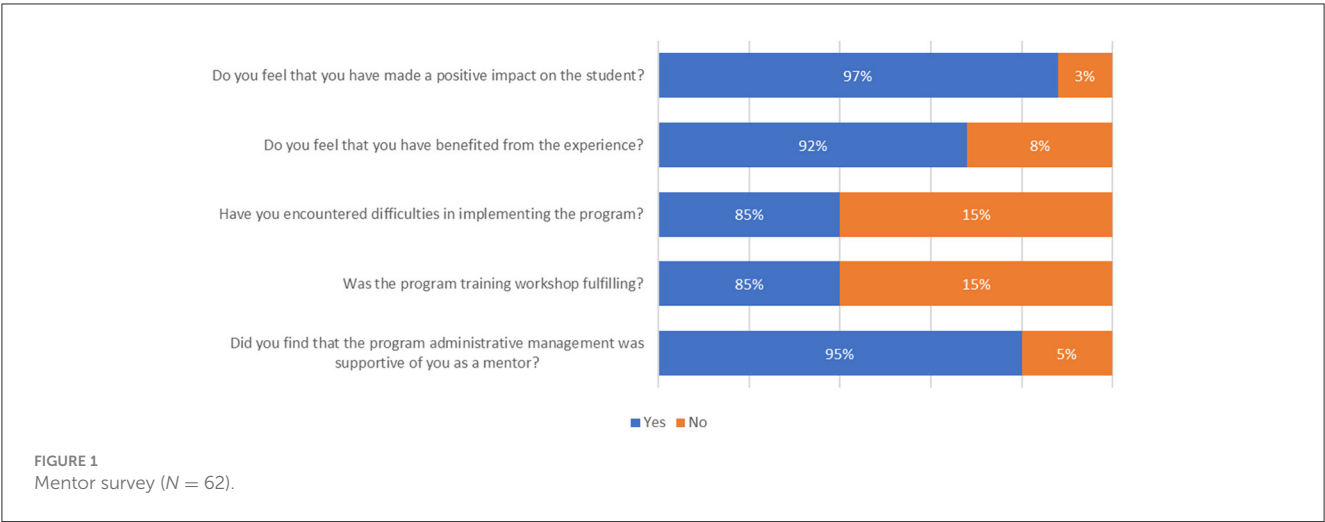
CSPC administration to discuss challenges, provide solutions, and streamline the forms that need to be completed by the mentors.

Focus group

Four focus groups were conducted: two with mentees [face-to-face ($n = 4$), online ($n = 5$)], one with alumni (online; $n = 8$) and one with academic staff (online; $n = 7$; Table 3). The participants were from different colleges and different mentoring tracks except the peer mentoring track. The results of the analysis are presented as follows.

Understanding mentoring

Participants understood that mentoring differed from other forms of student support such as academic advice or counseling. Mentees appreciated that mentoring was personal, one-to-one support, and dependent on their needs ["it was personal" (S4); "she teaches me or gives me or provides me with skills according to the things I need" (S3); "she will sit with me alone" (S2)].

Some of the mentors' explanations reflected a good understanding of the purpose of mentoring. One said, "Support the student and help them determine their career path. It is possible to develop skills and discover the student's own strengths" (A3). Another explained, "It is about transferring knowledge or guiding someone who needs experience or guidance in certain things in their postgraduation path" (A2).

Previous experience with mentoring, mainly at the postgraduate level or on the job, has been reported as a helping factor in understanding mentoring. One mentor said, "From the moment you said the word 'mentorship,' I immediately understood the concept as I was mentored while doing my PhD abroad" (F2). Another explained, "Because I was exposed to a mentorship program while I was a student through the Mawhiba Foundation and because I was also exposed to indirect mentorship, the program vision was clear to me" (A1).

TABLE 3 Characteristics of the focus group participants.

	Background	Type of mentoring
Mentee		
Students ($n = 9$)	• College of education • College of social work • College of science • College of languages • Health and rehabilitation Sciences • Nursing • College of/academic staff of art • Applied college	• Academic/research ($n = 6$) • Academic/personnel ($n = 1$) • Career ($n = 2$)
Mentors		
Academic staff ($n = 7$)	• College of medicine • College of arts • College of arts and design • College of science • College of business administration • College of computer and information sciences	• Academic/research ($n = 4$) • Academic/personnel ($n = 3$)
Alumni ($n = 8$)	• College of business administration ($n = 2$) • Academic staff of art • College of art and design • College of computer and information sciences • College of social work • College of languages	Career ($n = 8$)
Students ($n = 0$)	0	0

Mentees expectations of mentoring

The expectations of the mentees involved in the CPSP varied from research to advancing skills, setting goals, career advice, studying skills, and innovation. They articulated their expectation very clearly: "I need someone to help me set my goals" (S8); "I had research ideas as summaries, and I wanted the mentor to tell me if those ideas were suitable for research" (S6); "…I needed help in the career path; how, for example, to start. Additionally, I needed help

in my studies sometimes as I got distracted sometimes" (S5); "She inspired me with what I want, especially innovation" (S2).

Types of mentors' support

Faculty mentors' support for mentees varied in nature. Some provided skills and knowledge support, as one mentor explained: "Guidance on attending workshops: how to search in databases, choosing a research topic, choosing a research question" (F2). Others mentors helped with networking and connecting with others, as explained by one mentor: "Making friends, getting to know their peers, and building relationships with their classmates. This includes things like how to interact with others and how to resolve conflicts" (F7).

As expected, alumni support focused on career advice. One mentor mentioned the following: "How to write a CV using a specific and up-to-date format, how to create accounts on LinkedIn, and how to guide different job search methods, such as attending job fairs" (A4); another said, "How to prepare for important tests that they may need to take when applying for a job" (A6).

Experiences differed between participants with positive and negative experiences for multiple reasons. Negative experiences were primarily related to unmet expectations during the mentoring process. For instance, a student with video-making skills stated that her expectations of CPSP were not fulfilled because of communication or time barriers.

> I want someone to guide me; I have a talent. I need someone to direct me to the right place to enable me to harness my talent. Unfortunately, she was busy; I was also busy. I felt …… I mean she does not understand exactly what I want, no matter how much I try to explain to her. (S1)

Some students expected to engage in a research project and were dissatisfied with not receiving that opportunity.

> Frankly, I did not feel that I benefited the way I aspired to… She gave me her opinion briefly and rejected most of the ideas; then, she told me that I could have a training chance with an academic staff. (S6)
>
> I was expecting to be with her in the research, her specialty is different from my major, I needed information on how to start research, [and] she explained to me in general …. I mean, honestly, she gave me information that I already have. (S7)

Another student was looking for answers on where to pursue her postgraduate studies after finishing her bachelor's degree, and was satisfied with her experience and achieved her goals in one mentoring session: "Actually, she helped me with this [research], especially since she is a researcher and a specialist in her field" (S3).

The mentoring relationship benefits

The impact of the experience on the students ranged from joining certain student clubs, gaining research skills, idea generation, setting goals, building a plan to look for a job to participate in innovation competitions, and winning a prize. One student said, "She provided me with ideas… I started tutoring struggling physics students" (S4). Another student stated the following:

> She [the mentor] will ask: what is your goal of the job and you can't reach your goal without a plan even if it is a simple thing. We divided the plan into small steps. She taught me these steps and thank God I was employed, and my job is really something that suits the thing I studied, and I am currently marketing specialist in a government agency. (S5)

Regardless of their experience with CPSP, all students were willing to recommend the program to other students and participate as mentors: "I am willing to register this semester as a student mentor" (S1); "I actually advised others for it, because it is not a condition that it did not work with me; it might not work with others." (S9). Similarly, most mentors in the current study said that they would be mentors again.

The benefits to the mentors from the experience reported by the participants included keeping up with employers' policies on recruitment and being updated with university policies and services. One alumni mentor stated, "I was with her [the mentee] searching for suitable employer, and I became more informed about the employers' policies in recruiting graduates." (A1) A faculty member said the following:

> For me and for the progress of the students' before my eyes, it is not the case that I did not see the result, I felt the result, and their personalities changed in some aspects that we discussed together, and this means that one will be happy. (F4)

Mentors' motivation to join the program

When asked about the reason for volunteering as a mentor, one major theme reported by five mentors was the desire to help others, or to "serve society and others" (A2).

Five mentors reported appreciating the value of mentoring based on prior enriching experiences as a motivator. One mentor said, "I had this experience, and it had an enormous impact on my development" (A1). Another explained, "I have experience being a mentor at the University of Southern California for 2 years. At that time, I used to say, 'I wish [the name of the university] had this'" (A8). Three mentors reported feeling empathy with the students, as they remembered their own experiences and struggles as students, and how they would have benefited from having a mentor. One mentor said, "If I had this opportunity when I was student, I would have been happy" (F4). Another explained, "When I was in these girls' shoes, I wished that this program was available so that I could have a mentor to pass on her experience to me" (A7). Anticipation of benefits for mentors also emerged. One mentor said,

> Anyone who has contributed to volunteer work will surely notice that it has helped in developing her personal skills and that she has formed a network of relationships along with the feeling of accomplishment. The feelings of joy and happiness that you have given and contributed is sufficient. (A3)

Another explained that "the mentor herself can also benefit from the students, even if she is the one transferring her experience to them" (F4). Other reported motivations were "our students need it" (F1), "give back to the university" (A3), "pass knowledge to others" (A7), and "sense of responsibility."

Challenges faced by mentees and mentors

According to the students, the main reason for unsatisfactory mentoring relationships was a lack of time. One student explained, "She was busy… she may not be the reason or possibly a small percentage, but the main reason is me, as I did not follow up with her again" (S9). Another said, "Time did not help us both, and she was very busy and I was waiting for her to reply" (S4). Another challenge was the mismatch between mentees' expectations and mentoring relationships.

Mentors' challenges focused on students' understanding of the mentoring process and the lack of student engagement. One mentor said, "I noticed that the students still did not have enough information about the program" (F4), and another questioned, "Do the students themselves know what this project is about? Do they know all the details?" (A2).

Moving the program forward: suggestions for improvement

The mentees' suggestions were varied. One participant said, "The student chooses the mentor" (S7) another suggested, "You may add group mentoring" (S6). Two students suggested that the mentoring cycle should be extended beyond one semester until the agreed-upon goals are achieved.

One mentor suggested actions for mentees who are not very engaged with the mentoring process: "Ask them to reply within a week or the student will be considered withdrawn as we or you may did contact her later and end up with no response to start with us" (A7).

The suggestions from academic staff mentors focused on methods for improving their recruitment. Suggestions included email invitations to volunteer as mentors sent to all academic staff directly and not through the department head, advertising for the program through campaigns that visit colleges, and announcements in departmental meetings. The suggestions of alumni mentors focused on encouraging students to join the alumni track early in their academic years, recruiting human resource managers as mentors, and introducing group mentoring.

Discussion

This study explored the experiences of mentors and mentees involved in CPSP. Our findings suggest that participants generally found mentoring to be a positive experience with few challenges.

Ward et al. (2012) identified six emergent themes of mentee growth and development: academic skills and knowledge, career decision-making, connectedness to others, maturity, physical wellbeing, and aspiration. Our analyses of focus groups documented four of these themes: academic skills and knowledge, career decision-making, connectedness to others, and aspiration. For instance, the aspiration theme, which embraces the way in which mentees experience personal growth and motivation to succeed inspired by their mentors, was illustrated by a mentee who stated that inspired by her mentor, she participated in an innovation event and won a prize. The theme of connectedness to others was not as clear as the other themes, but it was evident in participant offering comments on mentees becoming more

comfortable and confident in front of other students, joining student clubs, and participating in events. The short period of the mentoring cycle could explain the lack of themes such as maturity.

The motivations for becoming a mentor reported by the participants were the mentors' desire to do something that benefits others, giving back to the community, the mentors' personal positive or negative experiences as first-year students, and prior undergraduate mentoring experiences, which is consistent with those reported in previous literature (Baker et al., 2015, 2022; Beltman et al., 2019; Dollinger et al., 2019; Ehrich et al., 2004; Limeri et al., 2019). However, it is important to acknowledge that a bias could have been introduced in our study, as mentors and mentees with relatively rewarding experiences were more willing to participate in the survey and focus groups. A factor reported in the literature but not in our study was faculty motivation to mentor undergraduate students who bring new perspectives and help with various research tasks (Baker et al., 2015; Limeri et al., 2019). One reason for this could be our new experience in implementing the program and, consequently, the lack of evidence on students' possible contributions to research. Although many colleges have a faculty-supervised graduation research project as part of the degree requirement, expectations for a supervised project may differ from mentoring a research project.

There is a consistency between our findings generated from the survey and focus groups. The survey and focus group results suggest that mentees and mentors would recommend the CPSP to their peers. The survey (Figure 1) and focus group results suggest that mentors felt that they had a beneficial impact on their mentees and that they benefited from the mentoring experience, but faced few challenges. Similarly, the mentees' survey (Table 2) and focus groups suggest that although their experiences were generally positive, few challenges existed. The focus group helped further to understand the challenges mentors and mentees faced. The three main challenges identified in our study were lack of time, mismatch between mentors' and mentees' expectations, and keeping students engaged. Both mentors and mentees referred to the lack of time as a challenge because they found it difficult to arrange meetings for the short period available for mentoring. Time has also been reported as a challenge in other studies (Brace et al., 2018; Hill and Reddy, 2007; Law et al., 2020; Vandermaas-Peeler et al., 2015). Short duration of mentoring relationships may result in compromised benefits from the relationship. Our program cycle lasted one semester, but an extension to the next semester was possible if the mentee and mentor wanted. We had few instances in which the mentoring process continued for more than one semester; however, a problem arose if the mentor was unwilling to continue because of other commitments in the second semester. To overcome this hurdle, we offered a choice of one or two semesters mentoring cycle.

Mentees who joined the student-academic staff track specifically reported suboptimal experiences owing to the mismatch between students' expectations of participating in a research project and academic staff providing general advice on research. This led to dissatisfaction with the outcomes of the mentoring relationship; however, it did not affect the participants willingness to recommend the program to their peers and their appreciation of the importance of mentorship. Baker et al.'s (2022) survey of mentors ($n = 36$) and mentees ($n = 16$) from a college in the US identified three main challenges for faculty mentor

engagement in undergraduate research: lack of time to train and appropriately mentor students, lack of clarity about students' knowledge and competence in research, and lack of knowledge about students' skill sets, which posed a challenge for faculty to define expectations regarding specific work tasks and the necessary follow-up actions. The top three challenges faced by students engaged in undergraduate research were seeking clarity on faculty expectations, maintaining consistency in experience among their peers, and balancing and prioritizing responsibilities while being a first- or second-year college student. Dollinger et al. (2019) surveyed 69 students and 134 alumni mentors and reported slight mismatches between mentors' general desires to help students by sharing stories or helping build young people's confidence, and their instrumental expectations, such as specific career guidance.

In their narrative review, Shanahan et al. (2015) identified 10 effective undergraduate mentoring practices. One practice was to set clear expectations, where mentors and students develop clear, structured plans and outline expectations using learning contracts. Part of our program was an agreement form signed by mentors and mentees in the first mentoring session, which included a section on setting the goals of the mentoring relationship. However, this did not prevent a mismatch between expectations. Possible reason could be that the agreement form was not completed at the first meeting, expectations were not expressed clearly in the first meeting, or expectations were unreasonable, particularly within the short timeframe of each mentoring cycle. Prior research has reported a low percentage of mentors discussing students' expectations, and many found that setting reasonable goals for undergraduate research projects was a challenge (Brace et al., 2018).

A few mentors stated that they had encountered disengaged mentees who did not respond to messages, and thus, did not attend meetings. One reason for this could be that disengaged students joined the program without fully understanding its potential and how it could be helpful. Law et al. (2019) reported that students being uninterested in or unprepared to effectively utilize mentoring relationships because of a lack of understanding of how mentoring relationships should work is a barrier to mentoring. Other studies (e.g., Brace et al., 2018) also reported that keeping mentors engaged was a challenge for them. A study on female Saudis from science and technology professions (mechanical engineering, space technology, microbiology and game development) mentoring schoolgirls to increase their interest in science and technology careers reported similar issues with regard to low levels of engagement from mentees and highlighted a lack of familiarity with the concept of mentoring as a contributing factor (Alhadlaq et al., 2019). As an approach to encourage meaningful engagement from mentees, the participants proposed prohibiting any mentee who missed three meetings from scheduling any new meetings for 1 month.

Previous research on students' frequency of contact suggests that students' characteristics, such as symptoms of depression, high attachment insecurity, and social anxiety, are negatively associated with their willingness to seek mentors' counsel, take advice, and their overall satisfaction with the mentorship they receive (Goodman-Wilson, 2021). Other studies reported mentors' concern for students' personal wellbeing and ability to provide constructive feedback, and students' satisfaction with the amount of contact between themselves and their mentors as predictors of students' frequency of contact and satisfaction with their mentors (Goodman-Wilson, 2021). A Saudi study found that medical students were more likely to attend meetings with senior, motivated mentors compared to junior, less motivated ones (Fallatah et al., 2018).

Enhancing mentees' engagement is a priority for our program because disengaged mentees waste program resources and may create a negative experience for mentors, leading them to hesitate to participate in the program in the future. It is crucial that mentors learn not to take a lack of student engagement as a reflection of their success as mentors (Marshall et al., 2021); therefore, we introduced lack of student engagement as a challenge in the future iterations workshop.

It is crucial to discuss literature within the local context to provide a relevant and nuanced understanding of mentoring in the context of Saudi higher education. A search for literature on mentoring in Saudi higher education identified four studies. A survey of first-year medical students involved in a peer-mentoring program at a Saudi university ($n = 284$, 60% male) found that the majority of mentees agreed that the program helped them adjust to college, advance academically, and improve their self-confidence, self-awareness, and problem-solving skills (Alobaid et al., 2024).

Another cross-sectional study ($n = 90$) examined medical students undertaking the clinical skills module rotation mentored by senior and junior faculty members. This study reported that participation in the mentoring program had no significant effect on student academic performance and found that mentees were more likely to attend meetings with senior, motivated mentors compared to junior, less motivated ones (Fallatah et al., 2018).

A study involved 12 doctors in training matched to supervisors provided informal mentorship. The participants were likely to be influenced positively when they saw the leader as a role model rather than a manager (McWalter et al., 2023).

Another study described a mentorship program at a Saudi private university in which students were assigned a mentor at the beginning of their first year (Ghawji et al., 2017) and academically struggling students were offered academic counseling and teaching tips to improve their performance. The study participants identified a lack of motivation as the program primary challenge and suggested that improved communication through regular meetings with mentors could enhance program effectiveness. About half of the mentors believed that students resisted criticism, which hindered their ability to reevaluate their performance (Ghawji et al., 2017).

The identified studies were cross-sectional, non-comparative analyses focused on medical students and did not explore issues such as the characteristics of a good mentor, mentees' expectations of mentoring relationships, challenges in establishing a mentoring program, or the impact of cultural factors on the mentoring relationship. The absence of prior studies on mentoring in Saudi higher education limits our ability to contextualize our findings within the existing local research.

Program improvement

The consistent themes found in these findings and those expressed by both mentees and mentors enabled us to devise

five key recommendations for program improvement. The implementation of the CPSP required human resources, including both academic and administrative staff. The academic staff was responsible for designing the program, developing the booklet and video, designing the forms, training, and matching mentors with mentees. The administrative staff were key to ensuring that mentors and mentees completed the required forms, responded to inquiries, and calculated the voluntary hours to be added to the Saudi Volunteer Work Platform. Adequate resources should be invested for the designing and building of a platform for registering and matching mentors and mentees interested in the program. This will hopefully increase mentees' autonomy in selecting a mentor and minimize the workload of the program team. The program workshop and booklet were revised to address the points raised by the participants and were supplemented with quotations from mentors and mentees to reflect how the program contributed to their experience. Effective mentors actively seek initial and ongoing training opportunities to enhance their mentoring skills and knowledge (Andersen and West, 2020). Therefore, the CPSP team plan to introduce training for mentors in addition to a compulsory initial workshop. Extra training could focus on topics such as resolving conflicts in mentoring. Students' comments on the ideal mentor characteristics were used to update our criteria for mentor selection, although many characteristics, such as being approachable and being able to connect with students, are difficult to measure. The CPSP team introduced group mentoring and e-mentoring for first-year students (Skjevik et al., 2020; Tinoco-Giraldo et al., 2020). Tinoco-Giraldo et al., identified a lack of research on e-mentoring, mentoring through virtual learning environments, and recommended further research on operational definitions and the characteristics and qualities of an effective e-mentoring. The use of e-mentoring during the COVID-19 pandemic demonstrated how mentoring relationships can change and evolve to ensure continued success (Tetzlaff et al., 2022). A study on e-mentoring for schoolgirls in Saudi Arabia recommended involving mentees in the e-mentoring program development and utilizing existing technologies and social networks to facilitate e-mentoring (Alhadlaq et al., 2019).

The different dimensions of culture, such as age, gender and social norms, should be considered to ensure effective implementation of our mentoring programs. Alkhatnai (2023) interviewed 12 mid to high level academic administrators from eight different Saudi universities (male = 8, female = 4) involved in a year-long mentoring program to identify the role of culture in a mentoring program targeting academic development. The main factor was age, as mentors were expected to be older than mentees in age; otherwise, an uncomfortable situation could arise when the young mentor advises the mentee. The second factor was seniority, as mentees with lower levels of academic status rarely questioned those at higher levels. The third was quality of communication, as the relationship is negatively affected if orders and instructions from the mentor were the norm. The second and third factors were subtly observed in our study. Many mentees described the mentor as a busy faculty member with teaching, scholarship and administrative responsibilities and the mentee passively waited for the mentor's guidance instead of engaging in a mutual and communicative relationship. This dynamic was observed among the mentees in the faculty track but not in the alumni track, where

mentors are younger, lack authority over the students and do not form a faculty-student hierarchical relationship. Another study demonstrated that the opportunities, barriers and requirements of e-mentoring for young women in Saudi Arabia are more influenced by the cultural dimensions of the mentees' age than cultural norms. For instance, independence, a trait of young female participants, was reflected in their desire for a flexible and uncommitted relationship, the ability to connect with more than one mentor, and the power to initiate mentoring relationships themselves (Alhadlaq et al., 2019). The cultural challenges that may hinder the effective implementation of mentoring programs will be included the training workshop for our mentors.

Limitations and future research

This study had several limitations that warrant consideration. One major limitation was the survey low response rate despite sending reminders to participants to complete the questionnaire. Thus, the findings may not be generalizable to all members of the CPSP. Another important limitation was the lack of feedback from the peer mentoring (student–student) track despite receiving the same invitations as the other tracks. The generally accepted number of focus groups is 4–8, with each group comprising 6–8 participants (Hennink and Kaiser, 2022). We adhered to these recommendations because larger sample sizes can lead to concerns such as overburdening participants and wasting research funds, while smaller samples can compromise the validity of the study's findings. In our study, all mentees and mentors were female, limiting the generalizability of our findings to different-gender mentorships. This might be a strength in our program as evidence suggests that female students prefer female mentors (Gallen and Wasserman, 2023). Furthermore, in Saudi Arabia female-male mentorship might be discouraged due to cultural norms.

The study design of most published research on mentoring uses only qualitative measurements, collecting data largely using self-report surveys that lack any documented evidence of validity and reliability. Very few studies have employed qualitative approaches such as focus groups or a mixed-methods approach (Andersen and West, 2020; Crisp and Cruz, 2009; Gershenfeld, 2014; Leavitt et al., 2022; Nuis et al., 2023). This is a strength of our study, which implemented a mixed-methods approach. However, long-term outcomes of the program were not assessed in this study. Additionally, we did not use an experimental design to measure program effectiveness. Leavitt et al. (2022) conducted a review aimed to assess the methodological rigor of research measuring outcomes for the effect of mentoring on mentors, specifically undergraduate student mentors, within the fields of science, technology, engineering, and mathematics. Eighty studies, published between 2013 and 2020, met the inclusion criteria. The effectiveness of 78 studies was ranked as emerging, that is, the intervention demonstrated some degree of positive change over time, and the evidence was mainly from non-experimental studies with 11 containing some form of pre- and post-intervention measurement. Other reviews have also concluded that conclusive evidence on the effectiveness of undergraduate mentoring remains limited, owing to the limited number of rigorous research designs

(Gershenfeld, 2014). We plan to compare the outcomes of students enrolled in the program with those of students not enrolled with respect to cumulative grade point average, employment status 6 months after graduation, number of job applications and interview invitations, job search self-efficacy behavior and outcomes, and satisfaction with university experience.

Future studies should measure mentoring using validated tools, such as the one developed by Nuis et al. (2024) to evaluate the quality of mentoring programs, assess what types of support students receive, and develop mentoring programs focusing on particular needs of students. The challenges identified in our study and in other publications call for future research on the design and testing of interventions to improve mentoring relationships and overcome these challenges.

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.

Ethics statement

The studies involving humans were approved by Princess Nourah bint Abdulrahman University Institutional Review Board. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

SA-A: Conceptualization, Formal analysis, Investigation, Methodology, Project administration, Supervision, Writing – original draft. HA: Conceptualization, Formal analysis, Funding acquisition, Investigation, Methodology, Resources, Writing – review & editing.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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College student engagement and success through inclusive learning environment and experiential learning in courses about Israel and Palestine

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Introduction: This study examines the impact of pedagogical redesign on two courses about Israel and Palestine, focusing on fostering an inclusive learning environment. The project aimed to address challenges such as student retention, attendance, participation, and academic performance by implementing innovative teaching strategies tailored to diverse student backgrounds.

Methods: The redesign incorporated several key interventions: an experiential learning-based final assignment, scaffolded into multiple steps with opportunities for feedback; group discussions to promote active learning and cooperation; and the integration of optional multimedia resources, such as YouTube videos and podcasts, to enhance engagement and time on task. Additionally, students were involved in the evaluation process by providing feedback and were offered the opportunity to publish their final projects on a public website, further incentivizing their work. To examine the effectiveness of these changes, the study employed a mixed-methods approach. This approach involved the collection and analysis of both quantitative data (such as surveys and performance metrics) and qualitative data (such as student feedback and one-way ANOVA analysis) across six undergraduate course offerings between 2019 and 2024.

Results: The interventions were tested with students from varied backgrounds engaging in complex discussions. The initial findings revealed significant improvements in critical metrics, including reduced drop/fail/withdraw rates, increased time on task, and higher grades. Students demonstrated enhanced engagement and a more positive overall learning experience, indicating the potential for further positive outcomes.

Discussion: The preliminary results suggest that the implemented pedagogical changes effectively created a more inclusive and engaging learning environment. By integrating experiential learning, providing timely feedback, and utilizing diverse resources, the project demonstrated the potential for scalable improvements in student outcomes.

KEYWORDS

equity-focused teaching, inclusion and diversity, Israel studies, Palestine studies, group discussions, student engagement, experiential learning

Introduction

This study, focusing on two undergraduate courses at the University of Kansas (KU), aimed to create a more inclusive learning environment for students in courses about Israel and Palestine. The purpose was to address the unique challenges and opportunities of teaching about Israel and Palestine, particularly the need for innovative and inclusive teaching strategies.

These strategies convey the historical and political intricacies of the conflict and foster a classroom environment conducive to open dialogue, critical thinking, and mutual respect, which is crucial for a comprehensive understanding of the subject.

Creating an inclusive learning environment is crucial for the success of such courses. An inclusive classroom ensures all students feel valued and supported and can contribute meaningfully to discussions. This can be achieved through equity-focused teaching practices, including active learning, collaborative group work, and digital tools to enhance engagement and retention. By fostering an inclusive climate, educators can help students from diverse backgrounds to feel comfortable expressing their opinions and engaging with complex and sensitive topics.

This article explores the implementation of inclusive and experiential learning strategies in courses about Israel and Palestine, focusing on their impact on student engagement and success. It examines the motivations behind students' enrollment in these courses, the challenges of teaching such a contentious subject, and the effectiveness of various pedagogical approaches in creating a supportive and dynamic learning environment. Through a detailed analysis of course redesigns and student feedback, the article provides insights and recommendations for educators seeking to enhance their teaching practices and better support their students' learning experiences. In doing so, the article details the impact of pedagogical changes on student retention, participation, and performance.

One of the courses of focus was "Israel/Palestine: The War of 1948." This History course explores the background, key events, and aftermath of the 1948 war, focusing on topics such as the involved parties, international community efforts, the establishment of Israel, the partition of Palestine, the significance of the Nakba (catastrophe), and the unresolved status of Palestinian refugees. The course objectives aim to understand the 1948 War and its broader context comprehensively. Students explore theories of nationalism and colonialism, trace the modern historical background of Israel/Palestine, and examine the causes, events, and outcomes of the 1948 War. Students analyze the factors behind Israeli success and Palestinian failure, distinguish the interests of regional and international actors, and engage with various primary sources, including maps, to investigate the war's consequences. Additionally, students develop digital mapping skills and critically assess competing narratives in the ongoing Israel-Palestinian conflict.

The second course was "Israel: From Idea to State." This interdisciplinary course focuses on History and Political Science, exploring Israel as the nation-state of the Jewish people and its challenge of balancing Jewish and democratic values. The first part of the course covers 19th-century Jewish history, the rise of Zionism, Palestinian history, and the path to statehood during the British Mandate while clashing with Palestinian ambitions for statehood. The second part explores the six major divides in contemporary Israeli politics and their historical roots, including the political, national, ethnic, religious, socioeconomic, and gender divides. Students analyze primary sources in historical, political, and social contexts and engage in public speaking on complex topics. Additionally, students produce a podcast episode addressing one of the key divides in modern Israel.

This article includes four sections. The first section is the literature review. The second section explains the methodology. The third section is for the findings. Fourth is the discussion section.

Literature review

Teaching Israel and Palestine

Teaching Israel and Palestine can take many forms, such as those suggesting seeing it as one field (Penslar, 2021). One leading approach is the dual narrative, which provides a forum for the two competing narratives. The opposing narrative triggers readers and students to support or criticize a narrative (Lazarus, 2008). For example, in a class based on this approach, students can compare two national cinemas in dialogue (Dittmar, 2013). Another approach is the critical-disciplinary approach derived from the practices of historians, such as the evaluation of multiple sources (Goldberg and Ron, 2014) or the critical analysis of conflicting sources (Goldberg, 2014). Another more traditional approach is focused on an authoritative single-narrative approach; however, it is educationally harmful since it could become "an attempt to reassert the 'truth' of one's own narrative against the 'falsehood' of the other" (Bar-On, 2006). In this sense, an authoritative single narrative creates distrust, contrary to the need to bring students to work together.

Teaching the 1948 war to Israeli and Palestinian students at institutions in the Middle East while using the dual narrative approach encompasses the potential of education to serve as a means for de-escalating conflicts (Eid, 2010). While other challenges exist in teaching about the Palestinian-Israeli conflict outside of the region, particularly in the Global North, one major challenge persists. It is an extreme case in teaching where some of the students enrolled in such courses, particularly those with a connection to the region, enter the classroom with an already established idea about the conflict while siding with the Zionist or Palestinian narrative (Segal, 2019). It exemplifies how prior knowledge does not always provide an equally solid foundation for new learning (Ambrose et al., 2010, p. 12). Despite the Middle East's importance in USA foreign relations policy, many US citizens know very little about its history, culture, and politics (Muhtaseb et al., 2014, p. 16). Another challenge in teaching classes about the Middle East is competing with, or challenging media coverage of this region (Kirschner, 2012). This is especially relevant to online discourse, social media, and reaction to ongoing military action in the region.

Depending on the direction of the discussion, the value of education may be explained in various ways. At the core of the higher education mission is providing students with knowledge and skills. In this context, developing students' critical thinking helps them express their opinions on this social issue and informs their activism and political decisions. Furthermore, studying Palestine can help spread the Palestinian narrative and increase activism (Pappé et al., 2024). Others went further to claim that such education of Palestinian narrative is intended to counter the dominance of pro-Israel curriculum in the West (Borhani, 2016) and suggests that a 'paradigm shift' is already in the making (Borhani, 2015). This highlights the problem with the dominance of Israel Studies and Jewish Studies scholars in offering courses on the conflict, let alone funding such courses, which all represent a power imbalance. On the other hand, teaching about Israel at Western institutions has expanded in the last two decades while deepening and expanding knowledge about Israel to generate sympathy and enhance understanding of Israel (Mousavi and Kadkhodaee, 2016) or, more significantly, appreciation of its complexity (Aronson et al., 2013). In addition to the importance of learning about Israel's specifics, some have claimed that Israel is an interesting case study for scholars to gain insights into understanding diverse and complex societies and their challenges (Nikolenyi and Kabalo, 2019).

Some scholars have linked learning about the conflict to conflict resolution itself (Bar-Siman-Tov, 1994). Acknowledging and respecting each other's narratives contributes to achieving peace by building bridges and collaboration (Dessel et al., 2017). Others highlight the linkages between learning and a higher level of sympathy with the other side, even if learning did not change the participants' opinions (Schneider, 2020).

Inclusive learning environment and experiential learning

Equity-focused teaching is effective teaching since it creates an environment for success. Students have equal access to learning, feel valued and supported in their learning, experience parity in achieving positive course outcomes, and share responsibility for the equitable engagement and treatment of all in the learning community (University of Michigan Center for Research on Learning and Teaching, 2024).

The literature establishes the relationship between classroom climate and student learning. Classroom climate should not be seen as binary (inclusive vs. marginalizing). It may be more accurate to think of climate as a continuum, from explicitly marginalizing to implicitly marginalizing to implicitly centralizing and explicitly centralizing (Ambrose et al., 2010, p. 171). A different approach showed that faculty conceptualize equity in three ways—"equality," "inclusion," or "justice," which influence their approaches to teaching practices between instructor-centered versus student-centered (Russo-Tait, 2023). Professors reported using either lecturing ("equality conceptions"), active learning, and/or inclusive teaching practices ("inclusion conceptions") or going beyond active learning and inclusive practices also to include an emerging critical pedagogy ("justice conception"). One example is a study focusing on equity in teaching math that used heterogeneous groups of students who were given responsibility and agency and worked collaboratively. The study reported that the vast majority responded with increased engagement, achievement, and enjoyment (Boaler and Sengupta-Irving, 2016).

Some inclusive teaching principles include having an inclusive mindset for all pedagogical decisions and providing structure (Sathy and Hogan, 2019). Courses with moderate or high-level structures have been positively correlated with students' achievements across different student bodies (Eddy and Hogan, 2014).

Student engagement has been positively correlated with students' success, retention, and graduation (Kinzie et al., 2008). Engaging educational practices include fostering student-faculty interaction and close relationships (Longwell-Grice and Longwell-Grice, 2008), encouraging student collaboration, promoting active learning, providing timely feedback, emphasizing time on task, setting high expectations, and respecting diverse learning styles (Chickering and Gamson, 1987).

Scholars have suggested early interventions in students' careers to enhance retention, especially for students with underrepresented backgrounds (Kinzie et al., 2008, p. 30). More suggestions include a sense of belonging to the institution (Longwell-Grice et al., 2016), problem-solving activities, peer teaching, diverse teaching styles, collaborative learning, explicit and clear instructions, and support networks (Kuh et al., 2004).

In my courses, I follow the findings from the above literature survey. The final assignment uses digital tools to improve engagement and retention. This was based on the established record in scholarship that experiential learning can support the development of pedagogical discomfort (Greene and Boler, 2004). Hence, it supports engagement in

learning conflict analysis and developing active and critical student-citizens (Head, 2020) and redesigning and scaffolding the final assignment into multiple steps to provide prompt feedback and validation and reduce the stakes of such a major assignment (Sathy and Hogan, 2019, p. 15).

Methodology

The research involved a mixed-methods approach, combining quantitative data with qualitative feedback to evaluate student motivations and the effectiveness of course redesigns. Data were collected from students enrolled in two specific undergraduate (BA) courses: "Israel/Palestine: The War of 1948" in Spring 2020, Fall 2022, and Spring 2024 with a total of 55 students; and "Israel: From Idea to State" in Fall 2019, Spring 2021, and Spring 2023 with a total of 67 students. Two mid-semester surveys were administered, one in Spring 2020 and another in Fall 2022, to assess student satisfaction and gather feedback on course structure and content. Surveys included closed-ended and open-ended questions to capture diverse student opinions and experiences.

Data analysis included both quantitative and qualitative approaches. Quantitative data from survey responses were analyzed to identify trends in student satisfaction, engagement, and perceived value of in-class activities. Qualitative feedback was reviewed to understand students' personal experiences and the specific elements of the course redesign that contributed to their learning. For comparison across semesters, we focused on student performance and engagement metrics from the redesigned courses in 2021/2022 and 2023/2024, compared with data from the initial offering in 2019/2020. Metrics included the drop/fail/withdraw rate, time spent on assignments, attendance, final assignment grade, and final grades.

The IBM SPSS 28.0 software package was employed to conduct a one-way ANOVA for the quantitative analysis. This analysis assessed the effect of the "step of change" as an independent variable on key outcomes, including time spent on assignments, attendance, final assignment grades, and overall final grades. Significance levels were assessed at three thresholds ($***p \leq 0.001$, $**p \leq 0.01$, and $*p \leq 0.05$), allowing for precise identification of variables that meaningfully impacted academic performance.

The study involved "self-research," whereby teachers investigate their work (Samaras and Freese, 2006). The methodological approach detailed above allowed for a comprehensive evaluation of student motivations and the effectiveness of pedagogical changes, providing a robust basis for conclusions and recommendations.

Findings

Why learn about Israel and Palestine?

Understanding the motivations behind students' course selections can provide valuable insights into their educational priorities and interests. This study examines why students at one specific university enroll in courses focusing on Israel and Palestine. By analyzing student motivations, we aim to uncover the underlying factors that drive interest in this complex and often contentious subject matter. Such an understanding can inform curriculum development, enhance student engagement, and improve educational outcomes.

In exploring why students at my university enroll in these elective courses about Israel and Palestine, we identified four primary

motivations. For detailed insights, refer to Supplementary Table A1. The first group of students expressed a general curiosity about the world. Many enrolled not with a specific intention to study Israel or Palestine but with a broader aim to understand global dynamics. They sought a "more nuanced understanding and view of what occurs in other countries" or to learn about the "political systems of different countries other than America." This interest extended to international politics and gaining insights into regions such as the Middle East, indicating a desire to broaden their global perspective and cultural awareness.

The second group of students showed a specific interest in Israel or Palestine, driving them to seek courses that directly focus on these areas. Their motivations were often personal, stemming from family connections, recent visits, or because "[…] it often makes its way into the headlines of the day." Students in this group were keen on understanding Israel's historical, political, and international significance and the intricate and often contentious dynamics of the Israeli-Palestinian conflict. They aimed to "have a better understanding of both sides of the Israeli/Palestine conflict," reflecting a desire to grasp the complex narratives and tensions that characterize the region.

The third category of students was influenced by the professor. Some students have taken multiple classes with the professor due to their teaching style, expertise, or the engaging content they presented in their courses. This group highlights the impact of academic mentorship and the role of faculty in shaping student interests.

The fourth group included students whose decision to study Israel and Palestine was influenced by more pragmatic considerations such as course scheduling, graduation requirements, or credit fulfillment. These students often mentioned that the course "fit into their schedule" or was necessary to "fill a core goal, and this seemed interesting." Additionally, for some, these courses were integral to their major or minor fields of study, such as History, Political Science, Global and International Studies, Jewish Studies, or Middle Eastern Studies.

In conclusion, the diverse reasons students choose to learn about Israel and Palestine at my institution underscore the multifaceted appeal of this subject. Whether driven by curiosity, personal connections, academic guidance, or practical necessities, students find these courses to provide valuable insights into the specific region and broader global and cultural contexts.

Changes in course 1: "Israel/Palestine: the war of 1948"

The course "Israel/Palestine: The War of 1948" is a History discipline offering.[1] The course explores the background, key events, and aftermath of the 1948 war. In the past three times the course was offered, 47% of students were pursuing a History BA, 19% in Political Science, and 9% a degree in the School of Education. The remaining 25% of students were pursuing a BGS or a BA in Jewish Studies, Global and International Studies, Sociology, Anthropology, Architecture, or American Studies, or a major in the School of Journalism or School of Business. This diversity of academic background was noteworthy, which will be discussed

further in the discussion section. During class discussions, students also shared their diverse ethnic, religious, and racial backgrounds.

When this class was first offered, the course design was based on backward design (McTighe and Thomas, 2003). I started with planning week by week. The weekly readings, lecture content, in-class components, and assignments focused on achieving specific weekly goals. The weekly goals lead to achieving unit goals, leading to achieving course learning objectives. Assessment of student learning helped decide the proper assignments or tasks in class. In addition to learning outcomes directly connected to the war, its background, causes, and consequences, the learning outcomes also include learning skills such as using maps as a primary source and searching for and analyzing various primary sources.

In the second step of changes, I wanted to redesign the course while focusing on increased student engagement and success through inclusive teaching approaches. This change aimed to broaden the understanding of diversity in the classroom beyond the traditional point of view. Also, the change aimed to incorporate new pedagogical ideas in the classroom and the syllabus while thinking about diversity and inclusiveness and using best practices for dealing with complex situations in the classroom. I wanted my students to feel more comfortable during the group discussions and presentations of the projects in class. They should be able to express their diverse opinions, listen to other opinions that vary from their own, and have constructive discussions. This is relevant due to some students' social identity, which is connected to the topics or the people discussed, the topic's high profile in the daily news, and its relation to the ongoing Israeli-Palestinian reality.[2] Considering these aspects, my goals were to improve the students' retention, attendance, participation in the classroom, performance on the final assignment, and final grade.

Instead of the traditional mid-semester and final exams, I created a final assignment to increase engagement and retention. I added in-class activities like group discussions to increase student cooperation and improve active learning. Instead of two weekly 75-min lectures, almost each class session is now divided into 20–25 min of lecture by the professor, 25 min of in-class group work by students, 15–20 min of reflection on group work, and discussion by students, and 10 min of synthesizing and concluding the lecture and the group work. I scaffolded the final assignment into ten weekly steps to improve feedback and validation and provided timely feedback using revised rubrics. Students present their project progress twice in class. I added two opportunities for students to provide peer reviews of the final assignment presentations in class and two additional opportunities online. Finally, I provided optional engaging resources on the Canvas site, such as YouTube videos and podcasts, to increase task time.

Out of the abovementioned changes, I will focus on the class structure and the added in-class activities. These changes incorporated the dual narrative approach and critical-disciplinary approach derived from the practices of historians. Students are divided into four groups of 5–6 students each. Students are asked to read excerpts of up to one page of text from a primary source, review pictures, posters, or the like, or view a short video (about 5 min of reading/viewing time), which is

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1   This course was redesigned with the help of the KU Center for Teaching Excellence and the KU Libraries.

2   This course was last taught in Spring 2024, during protests on US university campuses related to the War in the Gaza Strip.

connected to the readings of the week and the professor's short lecture. A rotating recorder takes notes and then reports the outcome of the group work at the end of the activity to the entire class. Students' work in this in-class activity varies. One example is to discuss answers to guided questions regarding the text, video or picture. For example, they read a poem by Mahmoud Darwish, "*On this land*," and a poem by Gouri (2024), "*Bab al Wad*," and discuss answers to questions such as regarding the buildup of the collective memory of Palestinian or Israeli narratives about the 1948 War.[3] Other forms of sources are used, such as the discussion of the place of art and cartoon characters- Handhala by Naji al-Ali, who represents the Palestinians, and Srulik by Kariel Gardosh, who represents Israelis (Bae-Dimitriadis, 2024). Another example is when all groups of students are asked to read and analyze the same primary source, but each group does that from a different perspective of the parties involved. For example, in analyzing the United Nations General Assembly Resolution 181 (2024), each group focuses on one of these perspectives: Palestinian, Zionist, British, and other (the UN, Arab League, etc.). A third example is analyzing various primary sources to assess their value in researching history, their limitations, and understanding the different narratives: archive documents, memos, videos, pictures, and posters.[4] For example, the Al-Qawuqji (1972) memoirs or an IDF archive document about "Druze and Circacians in the IDF" (The IDF Spokesman Unit, 1977). A fourth example was to discuss primary sources while considering the competing two narratives, including the different views among Palestinians and Israelis regarding the topic discussed.[5] For example, exploring the unsolved status of Palestinian refugees based on the United Nations General Assembly Resolution 194 (1948) and subsequent UN resolutions or by discussing personal stories of those affected.[6]

This major change in class structure, with the addition of in-class activities, required an assessment of the success of this change. The mid-semester survey of students in Spring 2020 revealed general satisfaction with the changes. Students' responses are listed in Supplementary Table A2. Students enjoyed the in-class group work and listed a few advantages such as "[…] Letting us set the information ourselves […]," "[…] it gives us a chance to see and discuss things we otherwise might have missed," and "[…] this is a larger class so it has to be broken into groups […]."

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3 On the importance of mixing historical and literary texts, see: Knopf-Newman (2011, p. 103).

4 Other examples of such primary sources for this course include: The Sykes-Picot Agreement (1916), McMahon–Hussein Correspondence (1915–1916), Balfour Declaration (1917), the Agreement Between Emir Feisal and Dr. Weizmann (1919), Mandate for Palestine and Transjordan Memorandum by the League of Nations (1922), Israeli Declaration of Independence (1948), Arab League (1948), posters from The Palestine Poster Project Archives (2024) and The Israeli National Library (2024), Egyptian-Israeli General Armistice Agreement (1949), Lebanese-Israeli General Armistice Agreement (1949), Israeli-Syrian General Armistice Agreement (1949), Jordanian-Israeli General Armistice Agreement (1949).

5 On the idea of students' work to support an argument and simultaneously to present counterarguments, see, for example, Singh (2021, p. 33).

6 On the idea of personal narratives, see, for example, Dajani Daoudi and Barakat (2013). Examples of such narrative stories: Kanafani (2013) and Kaniuk (2012); On including personal stories in teaching the conflict, see: Bar-On (2011).

These comments were supported by the answers to the closed-ended questions, as reported in Supplementary Table A3. 80% of the students enjoyed the class and said it met their expectations. When asked about the in-class group work, 55% of the students mentioned that it was the most valuable part of the class and wanted it to continue until the end of the semester. However, 45% of the students said it was helpful in some class sessions, but group work was not necessarily valuable for all. Students reported being prepared for the discussion if they did most of the readings (55%) or all of the readings (35%). When asked about the value of group work, students indicate that it is helpful because they better understand a concept/idea/theory (58%), share their opinion (54%), better understand an event in history or a current event (50%), practice a skill (50%), learn something new (46%), and brainstorm and execute a project/presentation (21%).

However, some students felt that there were too many in-class discussions and preferred a longer lecture from the professor. Also, they noted that some of the primary sources discussed in class were unclear or not helpful. These reflections and others helped me better prepare for the next time the class was offered. Based on this feedback, the selection of primary sources was revised, a more systematic method to rotate the recorder was adopted, and the in-class activity was shortened in some class sessions. The improvements were made toward the next time the course was offered.

The mid-semester survey was repeated in Fall 2022. Students reflected on a good learning environment and a positive experience with the in-class activities. When asked about "Which aspects of this course did you find the most helpful to your learning?" students said it was primarily the in-class group work. They responded: "I found every aspect of this course helpful to my learning, but particularly the in-class discussions and lectures and the readings"; "Great use of groups, forcing students to talk and engage in class and then taking that element online"; "The set up was easy and not stressful or overwhelming."[7]

Step 3 of improving the course focused on redesigning the final assignment to a digital humanities project. Their task was to examine the effect of the 1948 War on human development, such as changes in infrastructure and demographics. In previous semesters, students worked on comparing maps manually. The redesigned final assignment is to create and present a map, using a digital tool, of the consequences of the 1948 war on human development based on primary and secondary sources. Also, I provided the students with the option to publish their final projects on a website open to the public, which increased the enthusiasm of some of the students to work on it.[8]

To evaluate the success of these changes in step 3, I compared the student performance in the classes of 2020, 2022 and 2024. Figure 1 shows the positive results of the changes. The results show improvement in "Drop/fail/withdraw": from 3 in 2020 to none in 2022 and 2024, improvement regarding time on assignments: increase from 20.9 h in 2020 to 38.4 in 2022 and further increase to 52.6 in 2024, and improvement in in-person attendance: from 26

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7 Other answers included: "I thought the learning environment of the class was excellent!"; "Very thorough lectures, first hand knowledge"; "The examination of primary source material."; "The group's activities."; "The readings were very informative."; "Group activities and the presentations."

8 Results are published on a dedicated website. An article focusing on this redesigned assignment is under review.

FIGURE 1
Results for course 1: "Israel/Palestine: The War of 1948"– Spring 2020, Fall 2022, and Spring 2024. For more details, see Supplementary Table A4; "Drop/
Fail/Withdraw" is by the number of students; "Time on assignments" is the average in hours; "Attendance" is the average number of class sessions
attended (out of 30); "Final assignment grades" are by average point (max 36); "Final grades" are the average of student grades (max 100).

class sessions per student in 2020 to 28.5 in 2022. However, in 2024, there was a decrease in average attendance to 24 class sessions, which requires further examination. This will be discussed in the discussion section. Finally, there was an improvement in grades. In the grades of the final assignment, there was an increase from 27.8 in 2020 to 35.9 in 2022. In 2024, the average grade of the final assignment was 35.4, which is similar to that of 2022. Finally, the results show improvement in final grades for all students: from 80.3 in 2020 to 98.6 in 2022. In 2024, the final grades remained higher than in 2020 but slightly lower than in 2022 at 94.8. In conclusion, redesigning this class to become more inclusive has helped all students perform better regarding time spent on tasks, attendance, final assignments, and final grades.

Changes in course 2: "Israel: from idea to state"

The course "Israel: From Idea to State" is an interdisciplinary course with History and Political Science as the primary disciplines at its focus.[9] The course explores Israel as the nation-state of the Jewish people and its challenges in balancing Jewish and democratic values.

In the past three times the course was offered, 30% of the students pursued a BA in Political Science, 22% in History, 8% in Global and International Studies, and 8% in various majors in the

School of Journalism and Mass Communication. The remaining 32% of students were pursuing a BGS or BA in Jewish Studies, Sociology, Anthropology, Architecture, Biology, or a major in the School of Business or School of Education.

In redesigning this course, the three steps mentioned above were repeated. The first step was backward design. In step 2, I repeated the changes as in the other course described above, with some differences. Mainly, I transformed the course to meet the General Education requirement at my institution for oral communication while adding assignments for students to present orally, each with a different purpose and audience. For clarity, here is the list of changes conducted in Step 2. To improve engagement and retention, I did not include mid-semester or final exams and instead created a final assignment. I added group discussions to improve student cooperation and active learning in each class session. I created teams that run for the entire semester and are used in class discussions, as well as an assignment that is a team presentation. Each team focused on one of the six major divides in Israeli society: political, national, ethnic, religious, socio-economic, and gender (Zeedan, 2024). This created more personal connections for students with their peers. Also, I added an assignment that was a team presentation in class, for which students cooperated outside of the classroom. To improve prompt feedback and validation, I scaffolded the final assignment into ten weekly steps and provided timely feedback while using revised rubrics. Students present their progress in class and then post another draft online. I added two opportunities for students to provide peer reviews of the final assignment presentations in class and two additional opportunities online. To improve time on

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9   This course was redesigned with the help of the KU Center for Teaching Excellence and the KU Libraries.

FIGURE 2
Results for course 2: "Israel: From Idea to State"– Fall 2019, Spring 2021, and Spring 2023. For more details, see Supplementary Table A5. "Drop/Fail/
Withdraw" is by the number of students; "Time on assignments" is the average in hours; "Attendance" is the average number of class sessions attended
(out of 30); "Final assignment grades" are by average point (max 36); "Final grades" are the average of student grades (max 100).
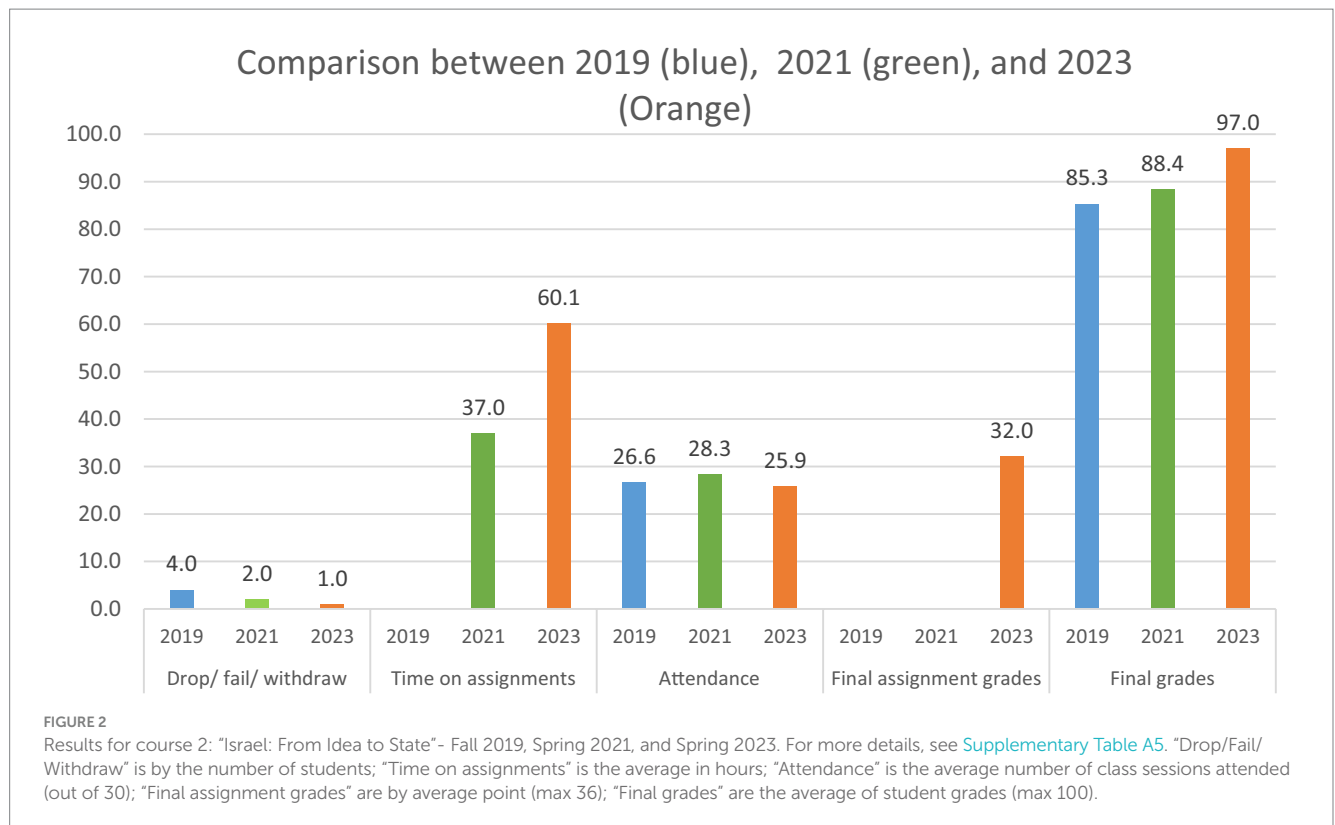
tasks, I provided optional engaging resources on the Canvas site, such as YouTube videos and podcasts.

In Step 3, the final assignment was redesigned into a podcast project, scaffolded into 12 steps. The target audience is the general public. Students start working on it during the first week of the semester and receive feedback for each step. Students gain experience from presenting the first two assignments and from presenting a draft of the final project, getting feedback on them, and getting better prepared for their final version. This structure allows weekly feedback on progress, enabling the students to revise their work multiple times. Finally, the course allows the students to publish their final projects on a website open to the public, which increases the enthusiasm of some of the students to work on it. By sharing the course's success results, the course can help other students and faculty members improve their course design and teaching strategies.

To evaluate the success of these changes in step 3, I compared the performance of the students in the classes of 2019, 2021, and 2023. Figure 2 shows the positive results of the changes. The results show improvement in "Drop/fail/withdraw" from 4 in 2019 to one in 2023, improvement regarding time on assignments: increase from 37 h in 2021 to 60.1 in 2023, and improvement in in-person attendance from 26.6 class sessions per student in 2019 to 28.3 in 2021. However, in 2023, there was a decrease in average attendance to 25.9 class sessions, similar to the results reported above for the other course. Finally, there was an improvement in grades. The results show improvement in final grades for all students, from 85.3 in 2019 to 97.0 in 2023. In conclusion, redesigning this class to become more inclusive has helped all students perform better regarding time spent on tasks, attendance, final assignments, and final grades.

The last step to measure the success of the changes in the two courses was using a one-way ANOVA. This was conducted to examine the effect of the step of change on time spent on assignments,

attendance, final assignment grade, and final grade. The analysis revealed significant differences between steps for all variables. The results are shown in Table 1. Supplementary Table A6 shows the details of the different steps used to make changes to the courses.

For time on assignment, the ANOVA yielded a significant effect of the step of change ($F = 40.560$, ***$p \leq 0.001$), indicating that students spent increasingly more time on their assignments as they progressed through the steps. The large effect size (Eta-squared = 0.416) highlights the substantial impact of the step of change on time spent on assignments.

In terms of attendance, the ANOVA was also significant ($F = 5.842$, **$p \leq 0.01$), though the effect size was smaller (Eta-squared = 0.093). This suggests that changes in the step of progress led to some improvement in attendance, albeit with a minor effect compared to assignment-related outcomes. This could be because high attendance was observed, and variation was insignificant in our sample due to a university-wide policy change regarding attendance and how it is documented and measured during and after the COVID-19 pandemic.

For final assignment grades, the analysis found significant differences ($F = 21.474$, ***$p \leq 0.001$), with a medium effect size (Eta-squared = 0.274), indicating that students' performance on final assignments improved as I progressed through the steps of change.

Finally, final grades also showed significant differences ($F = 6.341$, **$p \leq 0.01$), with a small but significant effect size (Eta-squared = 0.100), suggesting that overall course performance was influenced by the step of change, though less strongly than time spent on assignments or assignment grades.

These results suggest that the step of change has a robust influence on students' engagement with assignments and their performance, while the impact on attendance, though significant, is less pronounced. In

TABLE 1 ANOVA results.

Variable	Sum of squares	df	Mean square	F	Sig.
Time on assignment	53.735	2	26.868	40.560	***$p \leq 0.001$
Attendance	10.877	2	5.438	5.842	**$p \leq 0.01$
Final assignment grade	99.185	2	49.592	21.474	***$p \leq 0.001$
Final grade	11.713	2	5.856	6.341	**$p \leq 0.01$

A one-way ANOVA with "step of change" as the independent variable.

conclusion, the results indicate that the pedagogical changes employed were critical in influencing assignment time, assignment performance, and final grades. The significant differnces demonstrate that as students advance through structured learning stages and allocate more time to their work, they achieve better outcomes. While attendance does not appear to significantly impact performance, the findings emphasize the importance of active engagement with assignments. These insights suggest that fostering incremental progress and encouraging dedicated time on tasks can enhance academic success.

Further discussion

The findings of this study align with and extend the existing scholarly discourse on effective pedagogical strategies for teaching courses about Israel and Palestine. This study confirmed and built upon the insights from the literature by integrating dual narrative and critical-disciplinary approaches within an inclusive learning environment. These methods significantly enhanced student engagement, critical thinking, and academic success. This conclusion is supported by both qualitative feedback and quantitative data, revealing strong correlations between pedagogical changes, time spent on assignments, and final grades, as outlined in the statistical analysis.

The dual narrative approach, which scholars like Penslar (2021) have discussed for its ability to present competing Israeli and Palestinian perspectives, was found to deepen students' understanding of the conflict. This study corroborates findings from scholars such as Eid (2010), who noted that the dual narrative fosters an environment where students can better critically assess both sides, leading to more balanced and nuanced perspectives. The significant increase in students' ability to overcome biases and engage with conflicting narratives, reflected in the survey results, demonstrates the educational value of this approach. However, the study also revealed challenges among students with deeply held beliefs, as noted by Segal (2019). Nevertheless, the study found that inclusive pedagogical strategies effectively mitigated any such resistance, supporting existing literature and contributing new insights into the practical handling of contentious classroom discussions.

The critical-disciplinary approach, grounded in historians' practices (Goldberg and Ron, 2014), further proved invaluable. This method encouraged students to engage deeply with multiple sources, enhancing their ability to navigate complex historical narratives. The study found that students became more adept at identifying biases and questioning the reliability of sources—skills emphasized by Ambrose et al. (2010). These findings echo the broader consensus in the literature that critical thinking is essential for students engaging with complex issues like the Israeli-Palestinian conflict.

Furthermore, this study strongly reinforces the literature on the importance of an inclusive learning environment that is student-centered (Russo-Tait, 2023) with an inclusive mindset for all pedagogical decisions (Sathy and Hogan, 2019), and is explicitly centralizing (Ambrose et al., 2010, p. 171). Scholars like Boaler and Sengupta-Irving (2016) have highlighted the value of equity-focused teaching practices, and this study provides additional evidence of their impact. The findings revealed that inclusive practices, such as collaborative group work and active learning, significantly increased student engagement and participation, aligning with Russo-Tait (2023) findings on the influence of inclusive teaching on student success. The quantitative data, with a strong correlation between implementing these practices and improved final grades, further emphasizes their effectiveness.

The use of experiential learning strategies, as supported by Greene and Boler (2004), was another crucial aspect of this study. The study found that students' engagement and retention were significantly enhanced by incorporating digital tools and scaffolded assignments. The concept of "pedagogical discomfort" was evident as students navigated the complexities of the Israeli-Palestinian conflict, leading to deeper critical engagement. As noted in the literature (Sathy and Hogan, 2019), the scaffolding of assignments also reduced anxiety. It allowed for continuous improvement, with statistical evidence showing improvements in time spent on assignments and final assignment grades.

The findings of this study correspond closely with the four pillars of inclusive teaching strategies (University of Michigan Center for Research on Learning and Teaching, 2024): content, instructional practices, instructor-student connections, and student–student connections. First, in terms of content, the integration of dual narratives ensured that diverse perspectives on the Israeli-Palestinian conflict were represented in all aspects of the class, allowing students to engage with Israeli and Palestinian viewpoints. Second, the instructional practices employed, such as scaffolded assignments and group discussions, were designed to be equitable, providing structure and continuous feedback, which helped reduce anxiety and allowed students to improve progressively. Third, instructor-student connections were strengthened through personalized and timely feedback and active learning techniques, facilitating a supportive and responsive learning environment. Students reported feeling more engaged and connected to the material due to the frequent opportunities for interaction with the instructor. Finally, student–student connections were enhanced through collaborative group work, which fostered peer-to-peer learning and mutual respect. These connections, in the classroom, in group work, and online opportunities, contributed to a sense of belonging and helped students navigate the sensitive nature of the course material with greater comfort and openness.

For instructors interested in making similar methodological adjustments, I recommend following my approach detailed in this

study: a three-step approach to address specific challenges. First, it is recommended to ensure diverse perspectives by incorporating Israeli, Palestinian, and international voices when selecting primary and secondary sources. This balance is crucial for fostering critical engagement. After introducing these materials, it is best to conduct self-research and gather mid-semester feedback to evaluate the effect on student participation. The second step is to adjust group work dynamics by intentionally mixing students from diverse backgrounds and assigning a rotating recorder to encourage equitable participation. After implementing these changes, end-of-semester surveys should be used to assess the success of the changes and make further adjustments based on the feedback in future semesters. This iterative process allows for a more inclusive and effective learning environment.

The findings presented in this study are significant due to the diversity of academic backgrounds and ethnic, religious, and racial backgrounds among the students in the studied courses. Students in the study expressed a wide range of motivations for learning about Israel and Palestine, highlighting the significance of their diverse backgrounds. Their interests spanned from a general curiosity about other cultures and international politics to more specific desires to deepen their understanding of Middle Eastern conflicts. Some students were motivated by personal or familial connections to Israel or Palestine, while others sought to explore political complexities and international dynamics. The diversity of backgrounds among students played a crucial role in shaping these responses, reflecting their varied perspectives and learning goals. This diversity, including the academic one, allows further exploration into how students' backgrounds influence their engagement with complex geopolitical subjects. Future studies could investigate how such diversity affects classroom dynamics, group discussions, and students' perceptions of controversial topics. Additionally, understanding the role of personal experiences and pre-existing knowledge could provide insights into how to design better inclusive courses that address the needs of a heterogeneous student body. In courses addressing politically charged topics like Israel and Palestine, student resistance—particularly from those with deeply held beliefs—is a significant challenge. This could be manifested in classroom discussions where students struggled to engage with perspectives that conflicted with their personal or political identities. As suggested in this study, several strategies were employed to mitigate this. First, creating a respectful and inclusive learning environment was crucial. Ground rules for respectful dialogue were established early in the course, emphasizing the value of multiple viewpoints and encouraging students to approach opposing perspectives with curiosity rather than defensiveness.

Additionally, structured activities based on the dual narrative approach allowed students to engage with conflicting narratives in a more controlled manner. This approach gave them space to explore uncomfortable topics without feeling personally attacked. Diverse readings and in-class content helped students process their discomfort privately, which made them more open to engaging with differing viewpoints in group discussions. Scaffolded assignments gradually introduced more contentious topics, which allowed students to build confidence and critical thinking skills, reducing anxiety and defensiveness. The impact of these strategies on the overall learning environment was positive, as presented in this study. Both courses fostered a more open and dynamic classroom culture by framing complex topics as a learning opportunity and giving students tools to navigate them.

While this study's findings provide valuable insights into pedagogical strategies for teaching courses on Israel and Palestine, it is essential to acknowledge that these results may not be directly transferable to other disciplines or institutions without adaptation. The specific context of the Israeli-Palestinian conflict presents unique challenges that may not be present in other fields of study. Another limitation is the sample size and demographic scope, as the data was drawn from two specific undergraduate courses at one institution. This restricts the generalizability of the findings to other educational settings with more diverse student populations.

However, the core principles of active learning, inclusive teaching practices, and the dual narrative approach can be adapted to other disciplines. For example, the dual narrative method, which facilitates engagement with multiple perspectives, could be used in other universities teaching about the conflict and in courses on other contentious topics. In these contexts, encouraging students to assess competing viewpoints critically would promote balanced, reflective discussions. To extend the applicability of the findings, future research could explore how inclusive pedagogical strategies like scaffolded assignments, reflective writing, and structured debates impact student engagement and critical thinking in other academic settings. Additionally, adapting these strategies to institutions with more diverse student populations or courses with different political sensitivity levels could provide further insights into their effectiveness across various contexts. Considering these broader applications, the pedagogical changes presented in this study could inform teaching practices beyond the specific context of Israel-Palestine studies.

Additionally, the study primarily involved elective courses, meaning that students self-selected to the courses, possibly leading to higher initial engagement levels or openness than required courses in other departments. Future research should address these limitations by employing longitudinal methods and expanding the demographic scope to include a range of institutions and course types.

In terms of remaining gaps, while this study highlighted the effectiveness of the dual narrative and critical-disciplinary approaches, there is still a need for further exploration of how these strategies can be adapted for different academic disciplines and learning environments. Moreover, the issue of student resistance, particularly in contexts where personal or political identities are strongly tied to the subject matter, remains an area for deeper investigation. Further research should also examine the long-term impact of these pedagogical strategies on students' critical thinking skills and engagement with broader global issues beyond the classroom.

Future research could investigate the development of students' expressive abilities in active learning settings, particularly in courses exploring complex geopolitical issues like Israel and Palestine. Further exploration could examine how their ability to articulate nuanced perspectives evolves. Longitudinal studies or reflective assessments could track this development, providing insights into how scaffolding, collaborative group work, and other active learning strategies contribute to students' growth in expressing complex ideas. Such research would deepen our understanding of how inclusive and active learning environments support students in becoming more confident and articulate in discussing controversial topics. In conclusion, this study confirms much of the existing literature regarding the benefits of dual narrative, critical-disciplinary approaches, and inclusive learning environments while providing new insights into their implementation. These findings underscore the importance of innovative pedagogical practices in fostering student engagement and success, mainly when teaching complex and contentious subjects like the Israeli-Palestinian conflict.

Data availability statement

Ethics statement

The studies involving humans were approved by the University of Kansas: Human Research Protection Program (785–864-7385, irb@ku.edu). The studies were conducted in accordance with the local legislation and institutional requirements. The ethics committee/institutional review board waived the requirement of written informed consent for participation from the participants or the participants' legal guardians/next of kin because IRB protocol approved for previously collected data with very minimal risk to participants and no mechanism to current contact of participants in the study.

Author contributions

RZ: Writing – original draft, Writing – review & editing.

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Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/feduc.2024.1497045/full#supplementary-material

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The motivations and challenges for academic expatriates in international branch campuses

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Introduction: Understanding the motivations and challenges experienced by academic expatriates on international branch campuses is critical for enhancing their support and management. By analyzing the motivations and challenges, the study aims to provide more understanding on management strategies of branch campuses to support expatriates in their career development and improve institutional practices.

Methods: A systematic literature review was conducted, analyzing 16 studies published from 2014 onwards, using PRISMA guidelines to categorize expatriate motivations and challenges.

Results: Motivations were classified into five types: explorer, refugee, mercenary, architect, and family-oriented. Key challenges identified were rooted in balancing global integration with local responsiveness, concerning professional work, campus interactions, and career development.

Discussion: The findings highlight the need for targeted management strategies to improve the recruitment, integration, and retention of academic expatriates. The study also underscores the importance of longitudinal research to understand the long-term impacts of expatriation on individuals and institutions, contributing to the broader discourse on transnational higher education.

KEYWORDS

expatriates motivations, work integration challenges, academic expatriates, international branch campuses, transnational higher education, expatriate challenges

1 Introduction

In the past two decades, there has been a rapid growth in international branch campuses worldwide (Paniagua et al., 2022; Wilkins, 2020). Due to the potential lack of qualified recruits in branch locations, the unique pattern of higher education integration typically involves the international movement of academics from the home campus to other parts of the world (Hickey and Davies, 2022; Healey, 2015). These academics are defined as academic expatriates, referring to individuals in the higher education sector who relocate from their home country to a different nation to undertake long-term, time-bound, and legal employment in teaching or research roles (Trembath, 2016; Przytula, 2023). The international move brings significant challenges both to expatriates themselves and to successful institution management (Neri and Wilkins, 2018). The expatriates may need more institutional support both in work and life to increase their job security during the integration process (Van Niekerk and Mhlanga, 2024).

Attracting and retaining high-quality academic staff is crucial for the successful management of international branch campuses, since high-quality lecture materials cannot

be automatically transferred to students (Wilkins and Annabi, 2021). However, staffing issues in international branch campuses present a strategic paradox, requiring the balance of both "global integration" and "local responsiveness" (Shams and Huisman, 2011, p.115; Hickey and Davies, 2022) or the balance between allegiance to the host context and loyalty to the home institution (Dobos, 2011; Al-Tamimi and Abdullateef, 2023). Facing the complex demands to satisfy home and host stakeholders, branch campus management is not yet developed enough to respond to changing circumstances. Current campus management often struggles to meet diverse stakeholder requirements, balance academic integration with local needs, retain talent, and secure sustainable financial support (Hickey and Davies, 2022). Wood and Salt (2017) noted that this expanding higher education integration, akin to multinational enterprises, often lacks a robust leadership infrastructure to respond to contingencies and provide clear human resource support for staff. This exacerbates work conflicts and uncertainties for academic expatriates, thus leading to ambiguous prospects for their career development.

The operation of international branch campuses is a risky decision to both host and home contexts due to significant investments in labor and coordination efforts (Hickey and Davies, 2022). However, relatively few studies have investigated the motivations and challenges facing academic expatriates in the context of international branch campuses, despite these being notable areas worthy of exploration. The existing studies normally focus on a single region or a single institution (Harry et al., 2019; Cai and Hall, 2015; Tahir, 2023; Kurek-Ochmańska and Luczaj, 2021; Luczaj and Holy-Luczaj, 2022). The challenges and motivations can differ greatly due to different contexts according to academic, institutional and economic differences (Jepsen et al., 2014; Przytula, 2023). In light of these concerns, this study aims to gather as many studies conducted in as many regions as possible to answer these questions from a broad and critical perspective. This study is guided by the following two research questions:

i What are the motivations for academic expatriates choosing to develop their careers at international branch campuses?
ii What challenges do expatriates face when working in international branch schools?

By answering the two questions, the study hopes to contribute knowledge to expatriate management in transnational higher education. It emphasizes the need for comprehensive support and tailored strategies to enhance recruitment, integration, and retention. The study also underscores the importance of future longitudinal research to understand the long-term impacts of expatriation on academic careers and institutional development.

The remainder of this study is divided into two sections. The first section references Richardson and McKenna's (2002) well-established findings on the four main types of academic expatriates, which are widely accepted for analyzing expatriate motivations (Selmer and Lauring, 2012; Wilkins and Neri, 2018; Despotovic et al., 2022; Al-Tamimi and Abdullateef, 2023). Building on these findings, the study conducts a systematic review of motivations and introduces an additional "family type" to expand upon the existing findings. The second section summarizes the challenges faced by academic expatriates, primarily resulting from the conflicted context of international branch campuses. These findings will hopefully encourage more interest and discussion among researchers on the work experiences of academic expatriates and institutional support required by this group.

2 Method

2.1 Search strategy

The process of article selection followed the Preferred Reporting of Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement (Page et al., 2021). The final results can be seen in Figure 1. An initial search on the motivations and challenges faced by academic expatriates working in the context of international branch campuses returned limited results. Considering that the motivations and challenges can vary in different contexts (as stated in the previous section), the scope was extended to include transnational education to capture more findings from various contexts and generalize commonalities that may occur. To remain consistent with the study's aim, three frequently cited references on the management complexity and organizational challenges in international branch campuses were also manually added to identify the primary causes at the organizational level.

Given these considerations, a broad search was conducted using Web of Science and Scopus data on April 30, 2024. The selection of the two databases is based on their authority and comprehensive coverage in academic research (Pranckutė, 2021). Both databases are widely recognized for indexing high-quality, peer-reviewed journals across various disciplines (Zhu and Liu, 2020). Boolean operators ("OR" and "AND") were applied to refine the search. To ensure comprehensive coverage of various aspects of "academic expatriates," "international branch campuses," and related terms in "transnational education," a series of reviews were consulted to identify keyword variants for capturing appropriate citations within the searches (Przytula, 2023; Luczaj and Holy-Luczaj, 2022; Trembath, 2016). The search focused on full-time academic expatriates holding teaching or research positions at a cross-border level, with the intention to pursue a long-term career in higher education. The search keywords and the search results can be found in Supplementary materials 1, 2, respectively. The final search included 13 studies published from 2014 onwards and 3 studies identified from cited references (Cai and Hall, 2015; Wilkins, 2020). Due to the limited research on academic expatriates in international branch campuses, a reference of 10 years was chosen to ensure a comprehensive review of relevant studies. All search results remain valuable due to their relevance in this field, providing theoretical or practical information for the research on this topic. This broader range aimed to capture key developments and fill gaps in this area.

2.2 Inclusion criteria

Studies were excluded if their participants were not academic expatriates (e.g., domestic faculty or students) or were short-term expatriates. Additionally, studies were excluded if their topics were too specific and not related to motivations or challenges, or if they did not belong to the transnational higher education context. Articles that were thesis, book chapters, preprints, editorials, and opinion pieces were also excluded from the search. Full-text versions

FIGURE 1
PRISMA 2020 flow diagram for new systematic reviews which included searches of databases, registers and other sources.
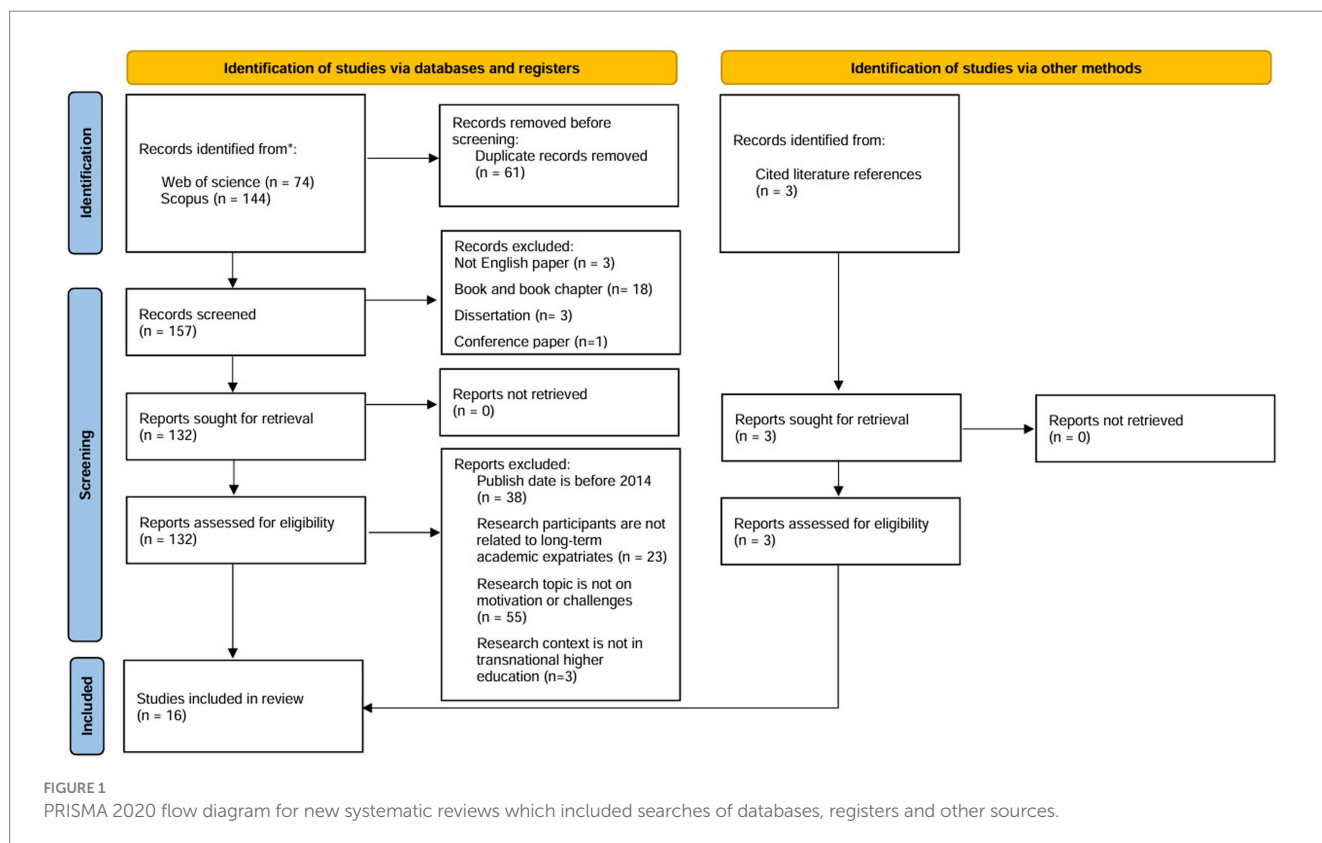
of all selected articles were obtained, reviewed, and confirmed as appropriate.

Considering the limitations on contextual research, as mentioned in the previous section, this study also includes research on staff management issues in the context of international branch campuses as well as systematic reviews on the work lives of academic expatriates in transnational higher education contexts (Escriva-Beltran et al., 2019; Shams and Huisman, 2011; Wood and Salt, 2017). Recent research has also built its analysis on findings of previous work (Duffy, 2024; Dai et al., 2023; Zhan and Marginson, 2023). Therefore, the former criterion enables this study to examine the challenges and motivations from an organizational management perspective, while the latter criterion includes general issues faced by this group.

3 Results: what are the motivations for academic expatriates choosing to develop their careers at international branch campuses?

Many additional factors beyond career choice can motivate academic expatriates to work abroad, such as wage advantage, family happiness, unfavorable environments in the home country, or personal interests and pursuits. Current research tends to follow the assertion of four main types of expatriates, proposed by Richardson and McKenna (2002), when analyzing their motivations to work (Selmer and Lauring, 2010, 2012; Wilkins and Neri, 2018; Lauring et al., 2014; Przytula, 2023; Cai and Hall, 2015). These four types are explorers, who desire to see more of the world; refugees, who are driven by the need to escape unfavorable situations; mercenaries, who

are motivated by financial gains; and architects, who seek to enhance their career progression.

Following the studies of previous literature, this section also uses the four types to categorize the motivations of academic expatriates and additionally add the family type for further explanation.

3.1 Explorer type

Explorer-type expatriates are primarily motivated by personal desires to travel (Richardson and McKenna, 2002). These individuals often possess adventurous spirits, are attracted to different cultures, and are willing to travel for work. Previous literature has examined the geographical and demographic characteristics of this type. Geographically, there is a trend of movement from Western countries to Asian countries, as Asia is seen as mysterious and attractive and worthy of exploration (Wilkins and Annabi, 2021; Cai and Hall, 2015). Demographically, the explorer type is generally younger and unmarried (Lauring et al., 2014).

As the explorer spirts can drive expatriates to explore unfamiliar places, the spirits are assumed to empower them in working (Wilkins and Neri, 2018). However, Richardson and McKenna's (2002) study on explorer types focuses more on the exploration of new places. This may overlook the contributions to work that arise from adventurous spirits. Specifically, the novelty of a new context often comes with a sense of academic freedom, allowing expatriates to demonstrate their capabilities (Tahir, 2023). For example, the novel context can inspire some expatriates to develop new ideas or pursue their ambitions to excel in a new campus and gain global experiences in different settings (Cai and Hall, 2015). As this type's contributions to work overlap with

those of the architect type discussed in the following section, it is undeniable that the architect spirit partly stems from exploratory spirits.

3.2 Refugee type

Previous literature has studied refugee-type expatriates by examining push factors, which primarily focus on competitive career opportunities and poor market conditions (Kurek-Ochmańska and Luczaj, 2021; Luczaj and Holy-Luczaj, 2022; Wilkins and Annabi, 2021; Tahir, 2023), as well as smaller amounts on uncomfortable living environments (Cai and Hall, 2015; Harry et al., 2019). A possible explanation for the competitive working environment is the competitive labor market in developed countries, meaning academics in these areas are more likely to miss out on research opportunities (Cai and Hall, 2015). As a result, some expatriates may choose to migrate to less competitive contexts to continue their research or seek desired positions and opportunities for promotion (Kurek-Ochmańska and Luczaj, 2021).

When the host context is closely aligned with the expatriates' research field, it becomes an advantage that drives them to "escape from" their unfavorable contexts (Jepsen et al., 2014). Typical examples can be found in academic peripheries, which are regarded as a final option for research-orientated expatriates to develop their careers as researchers (Kurek-Ochmańska and Luczaj, 2021; Luczaj and Holy-Luczaj, 2022). Although the rewards and work conditions might be less satisfactory, the research opportunity and international experience are precious enough for migration.

3.3 Mercenary type

Most countries can offer extra remuneration packages or research allowances to academic expatriates, but the benefits vary significantly due to local government policies, tax regulations, and economic wealth (Wilkins and Annabi, 2021; Cai and Hall, 2015; Tahir, 2023; Luczaj and Holy-Luczaj, 2022). For example, many institutions in the United Arab Emirates are able to offer competitive salaries and living allowances that are often superior to those at the home campus and provide advantageous benefits on tax (Wilkins and Annabi, 2021; Wilkins and Neri, 2018). In contrast, some academic expatriates in South Africa earn less than local staff despite being more qualified due to limitations from contracts (Harry et al., 2019).

It is worth mentioning that most host campuses are in developing countries (as illustrated in the previous section), which usually cannot offer the same benefit packages as Western campuses due to the lower cost of living and uncompetitive labor market (Wilkins and Neri, 2018; Lauring et al., 2014; Jepsen et al., 2014). Apart from few a wealthy regions such as the United Arab Emirates, most branch campus can only afford higher salaries compared to local universities in the host country. Therefore, finance is less likely to be a primary reason driving expatriates to move to lower-income regions than opportunity-seeking.

3.4 Architect type

Architect-type expatriates focus more on the contributions they could make at the institutional level or on the benefits gained by sharing their experiences. Therefore, this type is mostly comprised of older expatriates who are experienced in teaching or management and believe they play an important role in shaping a campus (Cai and Hall, 2015; Wilkins and Annabi, 2021; Tahir, 2023).

The architect type shows different career objectives across age groups: younger expatriates are more focused on "promotion," but older expatriates prioritize "contribution" to the university (Cai and Hall, 2015, p. 213). Younger academics tend to view working at a branch campus as a stepping stone for promotion or further career opportunities since more responsibilities can be offered at branch campuses.

3.5 Family type

In addition to the four types, family factor is another motivation that falls outside Richardson and McKenna's (2002) scope but is worth mentioning. This type of expatriate seeks to migrate closer to family members who already reside in the host country or to seek better life opportunities for their children (Wilkins and Annabi, 2021; Jepsen et al., 2014; Schartner et al., 2022; Kurek-Ochmańska and Luczaj, 2021; Luczaj and Holy-Luczaj, 2022). In some fast-growing countries like China, expatriates see working there as a chance to enhance their children's future opportunities (Wilkins and Neri, 2018; Cai and Hall, 2015). This type of expatriation is driven by personal demands and relationships, with little connection to the host context.

4 Results: what challenges do expatriates face when working in international branch schools?

Transferring jobs is a stressful event, especially in an international context where unfamiliar expectations are placed by a new institution and work environment. This study systematically reviews the challenges faced by academic expatriates in their work, which are rooted in the contextual dilemma between local adaptation and global integration.

4.1 Challenges from complex campus context and management

The review of the selected literature found that the challenges faced by expatriates are mostly rooted in the conflicting context and insufficient support offered by management, eventually leading to academic staff having to navigate contradictory requirements. In discussing the context of branch campuses, Shams and Huisman (2011, p.114) highlight "the dilemma of standardization versus local adaption" by adopting the "global integration" and "local responsiveness" dichotomy in business management literature. Specifically, this dilemma can be found in curriculum delivery, staffing management, and quality assurance. For example. with resource adaption, one side attempts to maintain the same standards and reputation as that of the home campus, while another stresses conformity with local regulations and demands.

Apart from the context dilemma between local adaptation and global integration, branch campus management also need to balance different motivations from the home and host sides. For the home

campus, the main motivation is to expand revenue streams and global presence, while for the host side, enhancing local educational capacity to foster social-economic development is the primary needs (Hickey and Davies, 2022; Escriva-Beltran et al., 2019; Wilkins and Neri, 2018; Healey, 2015; Shams and Huisman, 2011; Wilkins and Annabi, 2021). Therefore, a leadership board with international vision and management experiences is necessary. Furthermore, the leadership board should include the voices of both the home and host institution to coordinate benefits and regulations. Feng (2012) highlighted the importance of leadership boards with vision and management expertise through the successful governance models of Xi'an Jiaotong-Liverpool University (XJTLU) and the University of Nottingham Ningbo China (UNNC). It was found that balanced leadership and international management offer valuable insights into the effective governance of these institutions (Scott, 2021; Zhan and Marginson, 2023). While UNNC's board has equal representation from China and the UK, ensuring balanced decision-making, XJTLU's board also enables strategic alignment with a Chinese majority and Liverpool's input. Both campuses have a balanced board structure, which allows them to maintain political and economic support from partners on both sides, while also facilitating smooth operations and ensuring compliance with local regulations (Hickey and Davies, 2022).

While some institutions are able to provide institutional support and present a clear mission, for small-scale and newer institutions, resources and experience are more limited. Wood and Salt (2017) analyzed the management challenges of UK branch campuses compared with multinational enterprises, noting differences in infrastructure, career progression, and unsustainable staffing systems. International branch campuses often partner with local organizations to provide resources like facilities and staff (Wilkins, 2020). Many academic staff are employed by the local partner, not the foreign university, with contracts that differ significantly from those at the home campus (Wilkins and Annabi, 2021). Compared with multinational enterprises, international branch campuses often lack competent human resource departments to secure the career and research benefits of expatriates. This should be planned and organized beforehand to ensure quality and good coordination among parties as the institution expands.

4.2 Challenges from teaching

As key recourses for transferring advanced skills from the home campus, academic expatriates are expected to deliver the same high-quality content. Lamers-Reeuwijk et al. (2019) highlighted that quality assurance extends beyond lecture outcomes and includes requirements such as critical thinking and practical abilities. Although the curricula and teaching materials are provided by the home campus, almost all selected studies mentioned the challenges faced when adapting home campus materials to new contexts while still maintaining quality (Schartner et al., 2022; Wood and Salt, 2017; Harry et al., 2019; Jepsen et al., 2014; Cai and Hall, 2015; Escriva-Beltran et al., 2019; Wilkins and Neri, 2018).

Previous studies discuss teaching adaptions, such as matching students' learning styles through extensive guidance and transforming teaching styles (Schartner et al., 2022; Cai and Hall, 2015), tailoring lecture content to local workplace demands and education system needs (Escriva-Beltran et al., 2019; Wood and Salt, 2017), and advocating

home campus values and maintaining quality (Lamers-Reeuwijk et al., 2019). However, most expatriates view the branch campus as a micro-replication of the home campus that provides high quality Western-style education before starting expatriation (Wilkins and Neri, 2018; Wilkins and Annabi, 2021). After perceiving the inconsistence, they may struggle with cultural and structural differences inherent in the host institution. What's even worse is effective induction processes are often lacking due to management issues as discussed previously. This balancing act can create stress and confusion among staff as they attempt to satisfy both sets of expectations without clear guidelines.

Apart from the burden of meeting expectations at both the host and home campuses, excessive workloads are another common issue at most branch campuses. Because many branch campuses are self-funding and rely heavily on tuition revenue, they may need to maintain quality teaching through smaller class sizes and extensive support to attract and retain students (Wilkins and Neri, 2018; Cai and Hall, 2015; Escriva-Beltran et al., 2019). The teaching loads also vary from different contexts and impacted by campus hierarchy and seniority (Jepsen et al., 2014). In some teaching-intensive countries with strong heirarchies, China, for example, lower position staff may face more pressure in work and have to teach the same or more modules than they would at the home campus.

4.3 Challenges from research

Expatriates at branch campuses may lack research support including research network, home campus support and fair opportunities in host campus (Wilkins and Annabi, 2021; Cai and Hall, 2015; Tahir, 2023). Unlike when at home institutions, academics at branch campuses may have limited abilities to attract funds or research opportunities due to their being treated as an outsider (Harry et al., 2019). However, in some research-intensive branch campuses, they expect expatriates to produce the same quality and quantity research as in home campus, but the workloads are not explicitly allocated in their contract (Cai and Hall, 2015; Schartner et al., 2022; Luczaj, 2020). Therefore, it is difficult for expatriates to focus on research with limited resources and time.

Academic freedom is a prominent issue in politically sensitive countries, where foreign expatriates are viewed as a threat to the local culture. Expatriates must avoid discussing inappropriate subjects and may feel as if they are being monitored in some politically sensitive countries, ex. China (Cai and Hall, 2015). Political issues may also limit career promotion due to strict restrictions on national identity and political membership, preventing expatriates from obtaining research funds or joining local research committees (Tahir, 2023; Harry et al., 2019). In Mexico, promotion is influenced by international relations with the home country (Luczaj and Holy-Luczaj, 2022). As most expatriates view research opportunities and career growth as vital reasons for expatriation, identity prejudice presents challenges to obtaining the same resources and qualifications as local colleagues.

4.4 Challenges from connection with home campus and local colleagues

Expatriates at branch campuses often have limited connections with their home campus. At the institutional level, home campuses do not view branch operations as integrated and typically have weak

understandings of branch context issues (Cai and Hall, 2015; Wood and Salt, 2017). Consequently, they cannot respond appropriately and in a timely fashion to the needs of branch campuses. At the individual level, attitudes from home campus staff are often described as unsupportive and arrogant. Cross-campus collaborations are perceived as unfair since branch campuses usually have little say in lecture content (Cai and Hall, 2015; Lamers-Reeuwijk et al., 2019). For expatriates, they need to actively build connections with the home campus and remain visible if they expect to obtain more career opportunities.

On many campuses, academic staff are recruited internationally, while administration and support staff are locally recruited, sometimes leading to conflict due to differences in administrative structure. Organizational structures can be heavily influenced by cultures, with individualist or collectivist cultures having starkly different structures (Jepsen et al., 2014). The structure difference can influence work relationships with mangers and colleagues.

Academic expatriates face challenges in daily work and interactions in countries where English is not the primary language. Language barriers significantly hinder full participation in internal meetings or training sessions when sufficient translation is lacking, and communication with locally recruited administrative staff can also be a challenge (Kurek-Ochmańska and Luczaj, 2021; Wilkins and Annabi, 2021; Schartner et al., 2022; Cai and Hall, 2015). These challenges negatively impact expatriates' adaptation to the work environment, their ability to excel in their roles, and can lead to feelings of isolation.

4.5 Challenges from career development and promotion opportunities

Most studies reported that work visas add insecurity to expatriate careers, as countries typically allow only short-term work visas (usually 3 years), which must be renewed for individuals seeking longer careers at branch campuses (Wilkins and Annabi, 2021; Tahir, 2023; Wilkins and Neri, 2018; Schartner et al., 2022). Due to visa conditions, academic expatriates can only be offered short-term job contracts, which are shorter than those for local employees. This makes it difficult for expatriates to make continuous career progression within a short period.

Multinational corporations can provide career development support to expatriates whether they remain in the host country or return home (Wood and Salt, 2017). However, academic expatriates in branch campus should decide clearly on their career path beforehand due to the conflict in campus management (Shams and Huisman, 2011). Therefore, before expatriating, it is better for expatriates to be clear on their motivations and how they expect the expatriation to benefit their career. It is also important to remain visible to the home institution and obtain opportunities in future research and career development.

5 Conclusion

This literature review has examined the motivations and challenges faced by academic expatriates at international branch campuses, shedding light on a topic of increasing interest in the global academic landscape. The findings reveal that motivations for expatriation are multifaceted, encompassing various archetypes: explorer, refugee, mercenary, architect, and family. Each factor is driven by differing personal reasons, such as career or escaping an unfavorable external environment. Among the motivations, self-fulfillment seems to be a strong factor. By analyzing the initial impetus for moving, institution managers could have a better overall understanding when recruiting expatriates on how to increase their job satisfaction when integrated in the host country.

The literature search uses only two databases, which may result in excluding relevant studies published in other sources—a limitation of this study. Additionally, the study uses secondary data that may limit deeper insights into the practical experiences of academic expatriates. Despite these limitations, the study adheres strictly to the PRISMA guidelines, which ensures transparency and rigor in the review process. The search terms, inclusion criteria, and selection process are openly reported in the study. Furthermore, the review identifies key challenges in the field and provides valuable insights for future research and practice.

The challenges identified in this review underscore the complex reality faced by academic expatriates. These challenges are rooted in systematic issues, spanning from career progression to the balance between maintaining global academic standards and adapting to local contexts. The challenges encountered are exacerbated by the insufficient support structures and unclear policies at host institutions. As a result, expatriate academics may experience job dissatisfaction that can hinder effective integration into the host academic community.

The insights gained from this review are invaluable for university administrators and policymakers. There is a clear need for developing comprehensive management strategies that facilitate the recruitment and integration of academic expatriates and support their long-term retention and career development. Such strategies should be tailored to address the specific motivations and challenges of each expatriate type to ensure that each individual feels valued and supported throughout their tenure at their international branch campus.

This review highlights a gap in the literature concerning the long-term impacts of expatriation on both the individuals involved and their host institutions. However, there still exists questions on how these challenges and motivations change over time as expatriates settle into their roles and become more integrated (or not) in the host institution. Future research should address this gap by conducting longitudinal studies that provide deeper insights into the long-term outcomes of academic expatriation. Such research could include the impact on personal and professional development (Al-Tamimi and Abdullateef, 2023), contributions to the host institution (Maharjan et al., 2021), and the eventual reintegration into the home country or further international moves (Wilkins et al., 2017; James and Azungah, 2021).

Author contributions

YY: Formal analysis, Funding acquisition, Methodology, Resources, Software, Visualization, Writing – original draft, Writing – review & editing. ZY: Project administration, Software, Supervision, Writing – review & editing.

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Conflict of interest

YY was employed by Siemens Ltd., China in Beijing, China.

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Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/feduc.2024.1457278/full#supplementary-material

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A systematic review of research on nontraditional students reveals inconsistent definitions and a need for clarity: focus on U.S. based studies

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Background: The term "nontraditional students" (NTS) is widely used in higher education research, but its definition varies across studies.

Objectives: This systematic literature review aims to examine how researchers define NTS in U.S.-based studies and identify potential definitional issues.

Methods: We conducted a systematic review following PRISMA guidelines, searching EBSCO databases (Education Research Complete, Education Full Text, and ERIC) for peer-reviewed articles published between 2018 and 2022. We analyzed 65 papers that met our inclusion criteria to assess the definitions used for NTS. In this systematic literature review we focus on the definitional issues related to how researchers use the term nontraditional students in US-based studies. We review 65 papers from search results containing 432 papers to understand how researchers define nontraditional students. Of the 65 papers reviewed fully, 33 papers included a specific definition of nontraditional students, 15 included an unspecified definition of nontraditional students, and 17 papers did not include a clear definition at all. Our work suggests that researchers use a clearer definition, such as from the NCES, to define nontraditional students and focus their attention on the seven categories given by NCES.

KEYWORDS

nontraditional students, systematic literature review, US-based, definitional issues,
research

1 Introduction

Colleges and universities across the world, but especially in the U.S., are made up of an ever-increasingly diverse student population. There is great importance put on obtaining a higher education degree in society; however, with a decreasing amount of governmental funds available for higher education, students and their families must take on the burden of financing a degree. Consequently, they are looking for opportunities to receive the greatest value for their money.

Understanding the definition of nontraditional students (NTS) is crucial for several reasons. First, it directly impacts the design and implementation of educational programs and support services. A clear definition helps institutions tailor their teaching methods, course schedules, and support systems to meet the specific needs of NTS. Second, it affects policy decisions at institutional and governmental levels, influencing funding allocations and

program development. Finally, a consistent definition allows for more accurate research comparisons and trend analyses, leading to evidence-based improvements in higher education accessibility and effectiveness for diverse student populations.

The challenge of defining nontraditional students extends beyond academia, impacting broader societal issues. In the United States, unclear definitions hinder policymakers' ability to craft targeted legislation for higher education funding and support services. For instance, the Lumina Foundation (2021) reports that inconsistent categorization of nontraditional students affects state-level funding allocations and federal financial aid policies. Globally, the Organization for Economic Cooperation and Development (OECD, 2019) highlights how varying definitions across countries complicate international comparisons and knowledge sharing about effective support strategies. Moreover, employers increasingly rely on higher education institutions to upskill their workforce, but ambiguity around nontraditional student definitions creates challenges in designing appropriate continuing education programs (Hora et al., 2021). Addressing this definitional issue is thus crucial not only for educational institutions but also for economic development, workforce preparation, and international cooperation in higher education.

To support their studies, many students are taking on the costs associated with higher education by being employed full-time during an academic year and living at home to save on costs associated with residential living. Additionally, students are delaying enrollment for multiple reasons, one of which is to save for higher education expenses. Costs though are not the only factors that are changing the enrollment landscape. Students continue to deal with multiple life circumstances as they pursue their degrees—many have families and other responsibilities. Therefore, it is imperative that higher educational systems understand the backgrounds of their students and how to serve their needs best.

One way of characterizing and defining students whose experiences are different than a standard 4-year in person on-campus education is the term nontraditional students (NTS). Although coined, at least within the U.S. context, post-World War II, research on NTS continues to attract significant attention within the literature on higher education. This is not surprising given the population of students who fall under the NTS category total over 70% of students nationally (U.S. Department of Education, National Center for Education Statistics, 2015) and the many policies and support systems that are being developed to target the success of NTS. The increase in technology-driven education post-COVID has only fueled the interest in NTS as the use of online and digital learning is being seen as a mechanism to attract more NTS students and to support their teaching and learning. There is a need to understand new developments within any field to identify significant shifts or changes.

One of the first robust definitions of nontraditional students focused on three major themes of enrollment criteria, financial and family status, and high school graduation status (Horn, 1996). The seven categories within these three themes specifically associated with nontraditional students included: (1) Delayed enrollment by a year or more after high school, (2) attended part-time, (3) having dependents, (4) being a single parent, (5) working full time while enrolled, (6) being financially independent from parents, and (7) did

not receive a standard high school diploma. These seven characteristics were defined primarily to bring focus to choices and behaviors of students that may increase their risk of attrition, that is, leaving or dropping out of college before completing their degree. Due to the sole focus on attrition, these categories do not include other aspects of students' experiences that might make them nontraditional. Within the categories a scale of minimal to high was added, where one can be considered minimally nontraditional with one characteristic, moderately nontraditional with two or three characteristics, or highly nontraditional if they have four or more characteristics.

The definition advanced by Horn (1996) was one of the first ones to define nontraditional students comprehensively. Yet, it has been over two decades, and it is unclear if the definition has gained traction and is used consistently and universally or if other ways to define NTS have taken a hold. Research on NTS has been quite robust over the past few decades but reviews of NTS studies have pointed out specific concerns with prior work especially in terms of definitional issues within the field. The first review of NTS work was published in 2002 (Kim, 2002), and a decade later another paper followed up the issues raised (Chung et al., 2014). As we discuss in detail later, the Kim and Chung et al. papers, limit their focus on students within a specific context or concern; in the case of Kim, community college students in the U.S., and in Chung et al. mental health issues. Yet, they both highlight the lack of cohesiveness in definitions, their inability to advance research or practice agenda, and the need for a better understanding of definitional issues. For instance, currently, in addition to three major themes (Horn, 1996) NTS have been defined by up to 13 different subcategories (Chung et al., 2014). The concerns raised by Kim and Chung remain relevant, as evidenced by subsequent studies. For instance, Markle (2015) found persistent definitional inconsistencies in NTS research, while Zerquera et al. (2018) noted the ongoing challenges in aligning institutional practices with the diverse needs of NTS. Moreover, recent data from the U.S. Department of Education, National Center for Education Statistics, (2015) indicate a continued high enrollment of students meeting various NTS criteria, underscoring the importance of addressing these definitional issues.

How we define a student population has important ramifications for how we then design policies and support structures for them. Consequently, if we do not define it consistently, we cannot study them or create policies and interventions to support them. The definition allows us to have a more nuanced understanding of the population and for the researcher to better define the population they are working with. Common ground is important for research that builds systematically. Therefore, definitions have to provide clarity not only in terms of who is included and why they are included, but what differentiates groups sufficiently. If there is overlap, what creates that and how is diversity important for future research and practice?

In this paper we present a systematic review of articles on NTS published during a five-year window (2018–2022) to assess what definitions, if any, are being used within the recent nontraditional student literature. We picked this window as it is the most recent complete 5 years of publications (we collected data in mid-2023). Prior work has also been covered in related reviews and this sample size gave us a significant data corpus to analyze.

We discuss our inclusion and exclusion criteria for the papers in the methods sections, but one limitation of our work is that we restrict the work to U.S. based studies given the larger number of papers from this context and because one of the most referenced definitions was from NCES and has been the marker for the field within the U.S.

2 Extant literature on nontraditional student definitions

Kim (2002) conducted one of the first reviews of the use of the term "nontraditional" within literature. Although her review was focused primarily on community colleges within the U.S., many of the concerns she raised through her reviews, and her argument for undertaking the review still hold true. She argued that given the diversity of student population within community colleges, it was important to understand the challenges students faced in a more systematic and defined manner. She contended that the way nontraditional was defined ended up being so broad that most students ended up being in that category. The problem with this, according to her, was that "the term nontraditional is too broad to be helpful in identifying specific needs (p. 74)." Nontraditional has been defined largely in terms of age, student background characteristics, and students' at-risk behavior. The focus on at-risk is consistent with one of the goals of studying NTS which is to develop resources or programs, whether academic or non-curricular, to support them that are different than those for "traditional" students. Kim (2002) argues that "while some of these programs can be beneficial for a wide range of nontraditional students, others do not meet the specific needs of nontraditional students facing particular personal or logistical challenges (p. 78)."

Chung et al. (2014) further emphasized the concern in higher education research about the lack of consistency in the how "non-traditional students" has been defined and through their review confirm that the term includes a broad range of definitional categories even within their review of mental health related research within higher education. They found that students have been classified as nontraditional based on 13 categories that include demographic and educational background, such as age, and admissions pathways and that within each category there are even additional subcategories. In terms of research, they found that in addition to the problem of limited usefulness due to the ambiguity of the term, around 9% of articles within their data corpus did not even provide a working definition for "non-traditional students." Furthermore, the sources of definitions were often unreferenced or partially referenced and it was unclear how the authors arrived at their method for categorizing NTS. Overall, the definitions were unclear to allow for replication of empirical work. They suggest that future research should address these problems and work toward greater clarity and consistency for the terms. They recognize the difficulty of the task in terms of reaching a consensus definition but suggest that one of the elements to start with is the purpose for defining and categorizing NTS. As an example, they say a definition of NTS that refers to characteristics which predispose university students to noncompletion might be one way of doing this.

Finally, in a recent paper that focuses on definition of NTS, Nguyen and Kramer (2023) take an empirical approach and utilize a nationally representative, publicly available, dataset to examine shifts in student population using data related to demographics,

financial aid receipt, and academic experiences. They propose a new term for defining NTS—"neotraditional," and argue this shift toward new terminology is important given the many different roles students play in their lives and their varying life circumstances. They define neotraditional students as "students who previously have been identified as "nontraditional" students; these students do not fit the historic image of the typical college student, but who now comprise the majority of postsecondary enrollment (p. 1)." They argue that this new definitional work will guide practitioners and policymakers in supporting students with multiple life roles.

Overall, work from almost two decades or more consistently shows definitional issues in the field that have consequences for student support. The issues that have been identified include a very broad characterization of NTS, use of categories and criterions that are not meaningful, and the gap between the categories and how they can be used to make policies or design support systems. Given the increase in number of students who would fall under NTS in recent years, what does the current literature tell us? Is there any clarity? Are there more useful categories being used? Basically, "How are nontraditional students defined in extant literature?" This question guided the systematic literature review we conducted.

In the rest of the paper, we first discuss our methodology for data collection and analysis and then present the findings. A list of the final papers in our sample is presented separately in Appendix.

3 Methodology

3.1 Search

We used our university's EBSCO as our search engine. Specifically, the databases used were Education Research Complete, Education Full Text (H.W. Wilson), and ERIC. The search strings included different ways of spelling nontraditional student (non-traditional, nontraditional student, and non-traditional student). Quotation marks and the wildcard symbol (*) were used to keep the search specific. Additional limiters included full text, scholarly journals, academic journals, or journal articles written in English and published between 2018 and 2022.

The search resulted with 432 papers: 284 papers from ERIC, 113 from Education Research Complete, and 35 from Education Full Text (H.W. Wilson). The initial duplicate removal from the search left us with 359 papers; however, duplicates were still found and had to be removed in another iteration. We saved a copy of the search result, which is what we used for the first round of inclusion/exclusion.

3.2 Inclusion and exclusion criteria

Figure 1 presents the PRISMA flow diagram detailing our systematic review process. Of the initial 432 records identified through database searching, 73 duplicates were removed. The remaining 359 records were screened based on titles and abstracts, resulting in the exclusion of 257 records that did not meet our inclusion criteria. We assessed 102 full-text articles for eligibility, further excluding 37 articles that did not focus on NTS definitions or were not U.S.-based

FIGURE 1
PRISMA flow diagram.
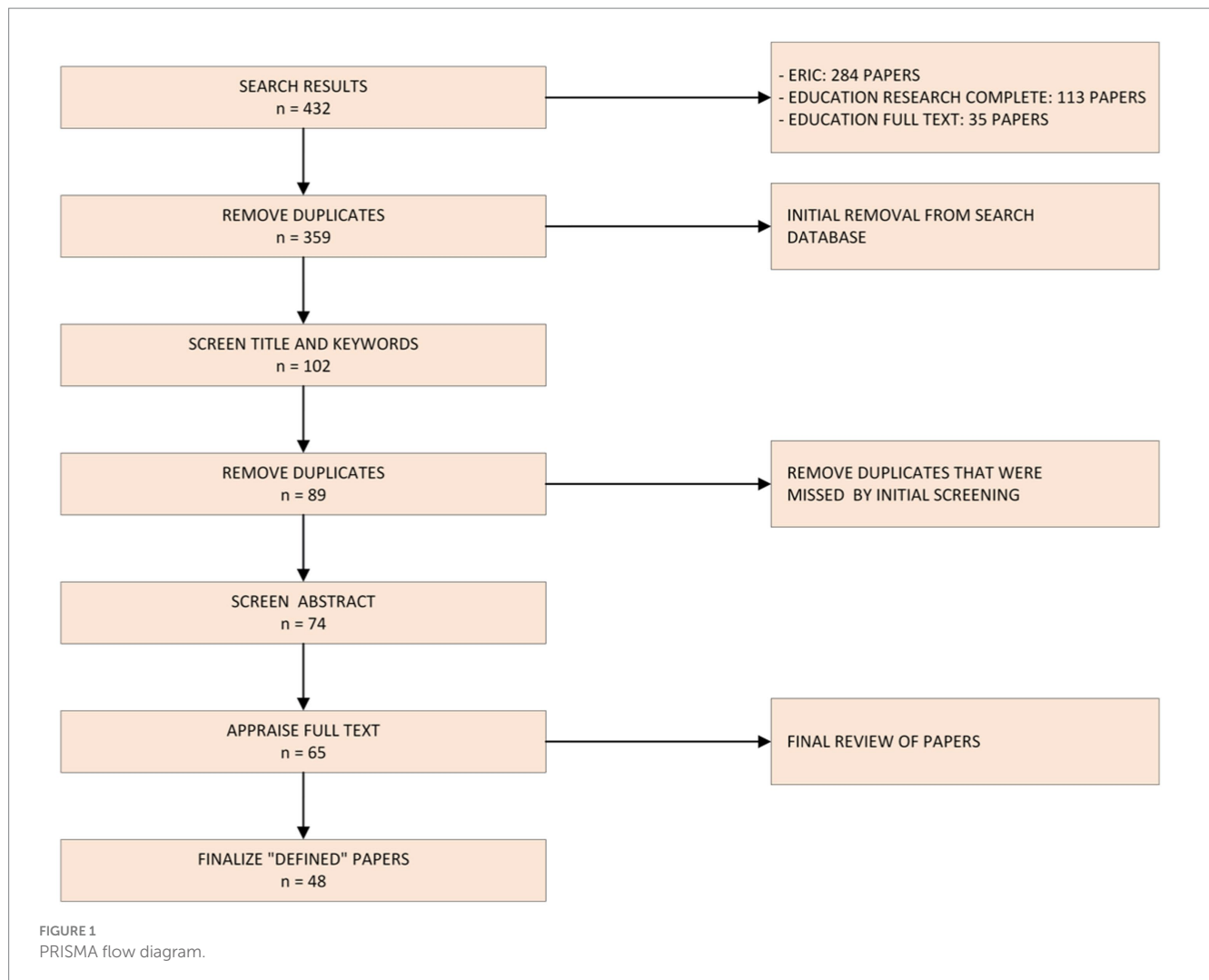
studies. This process resulted in 65 studies included in our qualitative synthesis.

We conducted two rounds of inclusion and exclusion. First, we read the article titles, journal names, and subjects/keywords to decide whether to include or exclude the papers based on our scope of interest which we defined as the following terms within NTS:

(1) Student support, (2) Engagement, (3) Retention, (4) Student success, (5) US-based, (6) Undergraduate students, and (7) Not-online focused programs.

After this round of analysis, we were left with 102 papers, but the sample still contained duplicates. After we removed the duplicates, we had 89 papers. All papers were downloaded, and their abstracts were analyzed for the presence of our reference to NTS in a definitional form, which formed the second round of inclusion/exclusion. We were finally left with 65 papers in total for review.

3.3 Data analysis

For the final set of 65 papers we collected information on the paper's (1) Author(s), (2) Publication Year, (3) Journal, (4) Title, (5) Keywords/Subjects, (6) Main Idea, (7) NTS categorization, (8) NTS definition, (9) Research Question(s), (10) Methodology, (11) discussion of STEM, and (12) Findings. We categorized how the papers defined NTS as "Not defined," "Defined: Unspecific," and "Defined: Specific" (refer to table #). Some of the papers do not explicitly define NTS, but instead hint or imply certain criteria. For these cases, we classified them as "Defined: Unspecific" because we were able to gather some general definition through more reading and making our own judgment.

Term	Definition
Not Defined	Paper discusses NTS in some manner without defining NTS
Defined: Unspecific	Paper discusses NTS however it required in-depth reading to determine the general definition (paper hints at definitions), or the definitions were unspecific (i.e., age)
Defined: Specific	Paper defines NTS specifically or a quick general definition could be easily determined (i.e., 25 and older)

4 Findings

We found that 48 papers defined nontraditional students in some way. Of the 48 papers, 33 of them were classified as "Defined: Specific," while 15 of them were classified as "Defined: Unspecific." Additionally, 17 papers did not define nontraditional students thus were classified as "Not Defined."
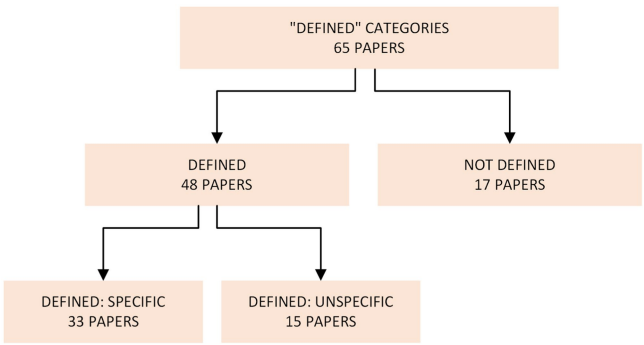
Most papers that define NTS referred to the NCES criteria in some manner. We identified four major themes in the NTS identification: (1) enrollment criteria, (2) financial and family status, (3) high school graduation status, and (4) identity.

Theme 1: Enrollment Criteria: delayed enrollment, part-time enrollment, age, transfers, and returning for 2nd Bachelor's. Only the first two criteria are part of the NCES criteria.

Theme 2: Financial and Family Status: financial independence, full-time employment while enrolled, have dependents, single parent, and working. The first four are part of the NCES criteria. We added "working" as a criterion because there were a significant number of papers that mention working students without specifying full-time or otherwise.

Theme 3: High School Graduation Status looks at students who did not receive standard high school diploma. This is also one of the NCES criterion.

Theme 4: Identity. This is the only theme that is not included in the NCES criteria. In this theme, we included commuter, under-represented (student of color), first-generation, gender (M/F, outside traditional gender binary), re-entry to college, veterans, disabled, ESL, distance learning, "adults," low-income statuses.

From the NCES criteria, the top five requirements were having dependents (48% of the "defined" papers), part-time enrollment (46%), delayed enrollment (46%), full-time employment while enrolled (38%), and financial independence (29%).
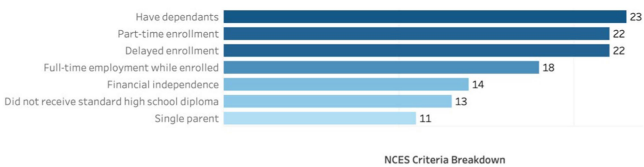
Of the non-NCES criteria, age (65%), working (15%), and commuter (10%) were the top three requirements. The breakdown of the other criteria are as follows: under-represented (8%), "adults" (6%), first-generation (6%), veterans (6%), gender (4%), low-income (4%), disabled (2%), distance learning (2%), ESL (2%),

re-entry to college (2%), returning for 2nd Bachelor's (2%), transfer (2%).
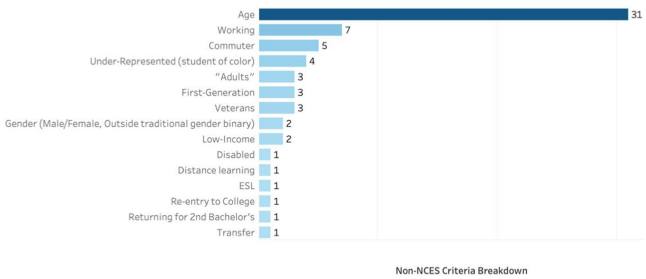
The most popular criteria used to define NTS was age, with 24 papers describing specific age (i.e., above 25) and 7 papers just broadly mentioning age. Even though age is not one of the NCES criteria, it is still highly used in the literature to describe NTS.

The second most referred to criteria is the 7 NCES NTS criteria. However, not all the papers that use the NCES criteria will use or mention all 7 criteria. Some papers may mix their definitions with other non-NCES identity criteria (i.e., commuter, under-represented, first-generation, etc.)
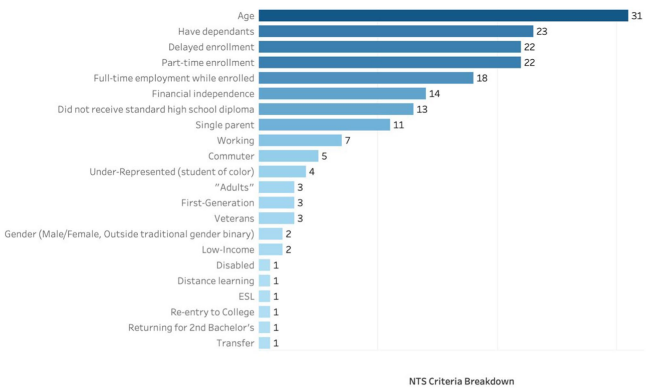
Overall, the literature defines NTS in many different ways, but primarily has an age and some NCES criteria components.

		Defined specific, N = 33			Defined unspecific, N = 15			Row total	
		Count	%	Ex Paper #	Count	%	Ex Paper #	Count	%
Theme 1: Enrollment criteria									
NCES	(1) Delayed enrollment	16	48%	2, 7, 12	6	40%	3, 8, 15	22	46%
	(2) Part-time enrollment	15	45%	5, 7, 14	7	47%	4, 9, 22	22	46%
Other	(1) Age	24	73%	1, 10, 12	7	47%	3, 34, 50	31	65%
	(2) Transfers	0	0%	N/A	1	7%	15	1	2%
	(3) Returning for 2nd Bachelor's	0	0%	N/A	1	7%	44	1	2%

		Defined specific, N = 33			Defined unspecific, N = 15			Row total	
Theme 2: Financial and family status									
NCES	(3) Financial independence	11	33%	7, 11, 45	3	20%	9, 22, 35	14	29%
	(4) Full-time employment while enrolled	13	39%	14, 23, 29	5	33%	9, 22, 34	18	38%
	(5) Have dependents	19	58%	29, 40, 41	4	27%	9, 22, 35	23	48%
	(6) Single parent	9	27%	45, 55, 60	2	13%	22, 35	11	23%
Other	(4) Working	5	15%	11, 42, 43	2	13%	4, 13	7	15%
Theme 3: High school graduation status									
NCES	(7) Did not receive standard high school diploma	11	33%	14, 33, 60	2	13%	22, 35	13	27%
Theme 4: Identity									
Other	(5) Commuter	3	9%	11, 18, 42	2	13%	15, 46	5	10%
	(6) Under-represented (student of color)	2	6%	14, 49	2	13%	9, 52	4	8%
	(7) First-generation	1	3%	14	2	13%	9, 52	3	6%
	(8) Gender (M/F, outside traditional gender binary)	1	3%	49	1	7%	9	2	4%
	(9) Re-entry to college	1	3%	14	0	0%	N/A	1	2%
	(10) Veterans	3	9%	2, 14, 40	0	0%	N/A	3	6%
	(11) Disabled	1	3%	14	0	0%	N/A	1	2%
	(12) ESL	1	3%	60	0	0%	N/A	1	2%
	(13) Distance learning	1	3%	60	0	0%	N/A	1	2%
	(14) "Adults"	1	3%	28	2	13%	31, 52	3	6%
	(15) Low-Income	1	3%	14	1	7%	9	2	4%

5 Discussion

Overall, there are many opportunities found to develop a more comprehensive way moving forward to discuss and conduct research on nontraditional students. First, "Age" was used most frequently to define a nontraditional student, even though it is too broad a category. Second, there are still a wide range of definitions used to define nontraditional students even with calls to be more specific. And third, the seven NCES categories give a succinct definition to use if you want to talk about nontraditional students broadly, however there are ways to focus in on the categories more purposefully depending on the rationale.

5.1 Age as a defining term for NTS

Overall, we found that Age is still one of the criteria that is used the most to define NTS. Although the relationship between Age and being a student is strong, it is increasingly too broad a category to be useful for making decisions about NTS support. 65% of the papers use Age as a defining characteristic of a nontraditional student either defined specific or unspecific. Examples of Defined: Specific for Age, Goldman (2019) define Age as "25 years or older" and Rabourn et al. (2018) use Age as "students over the age of 24 or over the age of 21 at first entry." Whereas Defined: Unspecific examples include (Paper 31) defines Age as "adult students."

In a study of faculty about NTS, Jinkens (2009) found that composite opinion of 30 faculty indicated that age may not properly identify whether students are traditional or nontraditional. Furthermore, faculty said that a life changing event is more of a determinant of how students approach their education. Additionally, Tilley (2014) conducted a study of students over 25 versus under 25 on multiple factors of stress and academic self-concept and determined that the age criterion is not enough to define a nontraditional student as there were no differences between groups.

Thus, using Age in any manner takes away the details underlying what their specific circumstances have to do with their nontraditional status. Age should be thought of as an indicator of other life happenstances and further delineation of those into more specific categories. It is not a useful criterion on the surface to use age solely, or in conjunction with other criteria, to define a nontraditional student.

5.2 Wide breadth of definitions used to define NTS

From our systematic review, we note the stark inconsistency with the way the literature defines nontraditional students. Out of the 48 "defined" papers, there were 6 papers that clearly defined NTS using all 7 NCES criteria. There were 7 papers that used all NCES criteria together with non-NCES criteria. There were 14 papers that used only non-NCES criteria. The rest of the papers use some mix of the two, NCES and non-NCES.

Description	Number of papers
Uses all 7 NCES criteria only	6 papers
Uses all NCES criteria except delayed enrollment	7 papers
Uses all 7 NCES and non-NCES criteria	9 papers
Uses only non-NCES criteria	14 papers

The lack of a consistent use of a definition for nontraditional students underscores a few areas of concern. First, the continuing inconsistency in how NTS is defined. This problem around lack of a common and consistent definition for NTS has been discussed at least since 2002 when Kim (2002) brought attention to it and the concern was raised again almost a decade later in 2014 (Chung et al., 2014). In this review, we found the same troubling pattern. Second, and even more problematic, is the concern with the lack of any definition of NTS within research studies. Although there is an acceptable and useful definition, at least to some degree, available in literature (NCES), researchers do not use it.

This highlights either a lack of rigor in studies that are conducted and/or the ineffectiveness of the current definitions for research studies that scholars want to conduct. It is unclear from our review which of these might be a factor but so long as these inconsistencies continue, the overall research terrain in this field will remain weak largely due to lack of any replication or the ability to build on prior work. Consequently, it is imperative that either a standard definition be developed and used, or well-defined elements within the educational experiences of NTS become focal point of research, so that the population is not defined by broad categories.

5.3 Future directions—some alternate and more ecological valid conceptions of NTS

Given the lack of consistency in the use of NTS definitions and increasing critique around the usefulness of the term, we argue that there is a need to think differently about how we define NTS. We propose that there needs to be a better alignment between student needs and policies and support systems and for this we need definitions that take a more purpose-driven approach as outlined by Nguyen and Kramer (2023). Although the term proposed by them, neotraditional, might or might not be needed in the field, the suggestion to align definition of NTS to the purpose it serves for students is useful. We additionally suggest that like the use of the term "value-based healthcare," higher education itself needs to think more about the value it aims to provide and how student experiences are linked to that. Similar arguments have been made by scholars studying online delivery from a "value-based delivery of education" perspective (Gilfoil and Focht, 2015). The nuances of how a student is NTS shape the value they can derive from their education, and it is important to capture that. In a value-based definition context, the usefulness can come from aligning family or work with flexible delivery of content, for instance. There are other conceptions in the literature such as "strengths-based" (Pang et al., 2018) and "alignment-based" (Zerquera et al., 2018) that are also possible ways to define NTS. Aligning what students want—a degree for job promotion, to their support is essential. Overall, we are arguing for a more ecologically valid (Cole et al., 1997) definition of NTS that serves the students. An ecologically valid definition in this context will consider the contexts in which students study and learn, the resources they use and need, and the responsibilities they must fulfill in the different roles they play in their lives.

The evolving landscape of higher education necessitates a reevaluation of how we define and support nontraditional students (NTS). Recent studies have highlighted the multifaceted nature of student experiences, encompassing factors such as work-life balance, financial constraints, and diverse educational pathways (Chung et al., 2014; Markle, 2015). We propose that any new definition of NTS should incorporate these nuanced dimensions. Concrete policy recommendations to address the needs of NTS in the current era include:

1 Implementing a comprehensive national assessment of student needs, going beyond demographics to include life circumstances, educational goals, and support requirements (Zerquera et al., 2018).
2 Expanding federal and state financial aid programs to cover indirect educational costs, such as childcare and transportation, which disproportionately affect NTS (Goldrick-Rab et al., 2020).
3 Mandating flexibility in academic policies, including more lenient leave of absence and re-entry procedures, to accommodate the complex lives of NTS (van Rhijn et al., 2016).
4 Developing a national database that tracks NTS experiences and outcomes, using a standardized definition to inform evidence-based policymaking (Cruse et al., 2019).
5 Incentivizing institutions to provide comprehensive support services, including mental health resources, career counseling, and academic advising tailored to NTS needs (Cotton et al., 2017).

These policy changes would not only better serve the needs of NTS but also modernize the higher education system to reflect the diverse realities of contemporary student populations.

The findings of this systematic literature review have several practical implications. For educational institutions, a clearer definition of NTS can guide the development of targeted support services, flexible learning options, and inclusive policies. Policymakers can use this information to refine financial aid programs and educational legislation to better serve the diverse NTS population. Researchers can benefit from a more standardized definition, enabling more reliable comparisons across studies and facilitating meta-analyses. Finally, students themselves may find it easier to identify and access appropriate resources and programs when institutions use consistent NTS definitions.

6 Conclusion

Our systematic literature review of 65 U.S.-based studies published between 2018 and 2022 revealed significant inconsistencies in the definition and use of the term "nontraditional students" (NTS). The analysis uncovered that only half of the reviewed papers (33 out of 65) included a specific definition of NTS, while nearly a quarter used unspecified definitions, and the remaining quarter provided no clear definition at all. This lack of definitional clarity undermines the ability to compare studies, build on prior work, and develop effective policies for NTS support.

Notably, age emerged as the most prevalent factor in defining NTS, appearing in 65% of the papers that defined the term, despite not being part of the National Center for Education Statistics (NCES) criteria. This finding highlights a disconnect between research practices and established guidelines. Furthermore, our review found

varied use of the NCES criteria, with only a small fraction of papers (6 out of 65) employing all seven NCES criteria. Many researchers opted for a combination of NCES and non-NCES criteria, further contributing to the definitional inconsistency in the field.

The review also identified the emergence of new categories used to define NTS, such as commuter status, under-represented status, and first-generation status. This evolution in conceptualizing NTS reflects the changing landscape of higher education but also adds to the complexity of achieving a standardized definition.

A critical finding from our review is the scarcity of purpose-driven definitions. Few studies aligned their definition of NTS with the specific objectives of their research or the needs of the student population being studied. This lack of alignment between definition and research purpose potentially limits the practical applicability of findings and the development of targeted support strategies.

These results echo concerns raised in previous reviews by Kim (2002) and Chung et al. (2014), indicating that the issue of definitional inconsistency in NTS research persists. This ongoing challenge hinders the field's ability to advance cohesively and impacts the effectiveness of policies and support systems designed for NTS.

Based on these findings, we recommend that future research in this field adopt a more consistent use of the NCES criteria as a baseline definition for NTS in U.S.-based studies. Researchers should be encouraged to explicitly state and justify their definition of NTS in relation to their study's objectives. Additionally, there is a need to develop more nuanced, purpose-driven definitions that consider the evolving nature of higher education and student needs.

It is important to acknowledge the limitations of this study. Our review focused exclusively on U.S.-based research, which limits the generalizability of our findings to other national contexts. Additionally, the five-year timeframe (2018–2022) we selected, while providing recent data, may not capture longer-term trends in the field. Our search strategy, although comprehensive, may have inadvertently excluded relevant studies that did not use our specific search terms. Furthermore, our analysis was primarily qualitative, and a quantitative meta-analysis could provide additional insights into the patterns of NTS definitions across studies.

Looking ahead, the field would benefit from establishing a national framework for tracking and supporting NTS. Such a framework should allow for both standardization and flexibility in defining this diverse population. Future research should focus on developing and validating a more comprehensive, flexible framework for defining NTS that can accommodate the diverse realities of contemporary student populations while still allowing for meaningful comparisons across studies. By addressing these definitional issues, researchers and policymakers can more effectively support the growing and diverse population of nontraditional students in higher education.

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

CB: Conceptualization, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Supervision, Visualization, Writing – original draft, Writing – review & editing. AJ: Formal analysis, Resources, Validation, Writing – original draft, Writing – review & editing. AC: Data curation, Formal analysis, Writing – original draft.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

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Appendix

Table A1

TABLE A1 Defined specific and defined unspecific papers.

Paper #	References	Journal	Title	How the NTS are defined?
1	Ignizio (2018)	Journal of Community Engagement and Higher Education	Advanced Spanish Conversation and the Non- Traditional Student: A Case Study for Implementing Community-Based Learning at the Urban University	Defined: specific
2	Beaumont and Pernsteiner (2021)	International Journal of Education and Practice	Assessing the Efficacy of a Character Development Program in Non-Traditional Undergraduate Students	Defined: specific
5	Chemosit and Rugutt (2020)	Educational Research Quarterly	The Impact of Professor Engagement, Student Peer Interactions, and Traditional Status on Student Assessment of Quality of Teaching and Learning.	Defined: specific
7	Babb et al. (2021)	Adult Education Quarterly	Assessing the Effects of the COVID-19 Pandemic on Nontraditional Students' Mental Health and Well- Being.	Defined: specific
10	Mkhatshwa and Hoffman (2019)	Association for University Regional Campuses of Ohio Journal	Undergraduate Students' Experiences in Different Course Formats: An Exploratory Study Examining Traditional and Nontraditional Student Perceptio	Defined: specific
11	Hamilton (2022)	Adult Education Quarterly	Too Much Grit to Quit? An Examination of Grit in Two Separate Within-Institution Contexts.	Defined: specific
12	Crone et al. (2020)	Adult Education Quarterly	Assessing the Relationship Between Nontraditional Factors and Academic Entitlement.	Defined: specific
14	Spagnola and Yagos (2021)	Adult Learning	Driving Out Fear in the Nontraditional Classroom: Five Practical Strategies From Neuroscience to Build Adult Student Success.	Defined: specific
17	Moore et al., 2020	Journal of College Counseling	Nontraditional and Struggling: Academic and Financial Distress Among Older Student Clients.	Defined: specific
18	Wagner and Long (2020)	Journal of College Student Retention: Research, Theory and Practice	From Start to Finish: What Factors Inhibit Student Veterans Completion?	Defined: specific
19	Kamer and Ishitani (2019)	Journal of College Student Retention: Research, Theory and Practice	First-Year, Nontraditional Student Retention at Four- Year Institutions: How Predictors of Attrition Vary across Time	Defined: specific
21	Tipton and Wideman (2021)	Journal of Communication Pedagogy	Toward an Invitational Andragogy: Articulating a Teaching Philosophy for the Andragogic Classroom	Defined: specific
23	Minichiello (2018)	International Journal of Education in Mathematics, Science and Technology	From Deficit Thinking to Counter Storying: A Narrative Inquiry of Nontraditional Student Experience within Undergraduate Engineering Education	Defined: specific
27	Jepson and Tobolowsky (2020)	Journal of College Student Retention: Research, Theory and Practice	From Delay to Degree: The Postsecondary Experiences of Six Nontraditional Students	Defined: specific
28	Karmelita (2020)	NACADA Journal	Advising Adult Learners during the Transition to College	Defined: specific
29	Beam (2020)	The Journal of Continuing Higher Education	Nontraditional Students' Experiences with Food Insecurity: A Qualitative Study of Undergraduate Students	Defined: specific
32	Tillapaugh and McAuliffe (2019)	Student Affairs Journal	The Experiences of High-Achieving First-Generation College Men from Rural Maine	Defined: specific
33	Goldman (2019)	The Rural Educator	Interpreting Rural Students' Stories of Access to a Flagship University	Defined: specific
37	Rabourn et al. (2018)	The Journal of Continuing Higher Education	Reimagining Student Engagement: How Nontraditional Adult Learners Engage in Traditional Postsecondary Environments.	Defined: specific

(Continued)

TABLE A1 (Continued)

Paper #	References	Journal	Title	How the NTS are defined?
39	Heretick and Tanguma (2021)	The Journal of Continuing Higher Education	Anxiety and Attitudes toward Statistics and Research among Younger and Older Nontraditional Adult Learners	Defined: specific
40	Auguste et al. (2018)	NACADA Journal	Nontraditional Women Students' Experiences of Identity Recognition and Marginalization during Advising	Defined: specific
41	Jackson and Rudin (2019)	Issues in Science and Technology	Minority-Serving Institutions: America's Overlooked STEM Asset.	Defined: specific
42	Zerquera et al. (2018)	Journal of College Student Retention: Research, Theory and Practice	Faculty Views of "Nontraditional" Students: Aligning Perspectives for Student Success	Defined: specific
43	Barbera et al. (2020)	Journal of College Student Retention: Research, Theory and Practice	Review of Undergraduate Student Retention and Graduation since 2010: Patterns, Predictions, and Recommendations for 2020	Defined: specific
45	Cho and Serrano (2020)	The Journal of Continuing Higher Education	Noncognitive Predictors of Academic Achievement among Nontraditional and Traditional Ethnically Diverse College Students	Defined: specific
49	Wright et al. (2020)	Communication Education	When Your Students Are Hungry and Homeless: The Crucial Role of Faculty.	Defined: specific
53	Glowacki-Dudka (2019)	Adult Learning	How to Engage Nontraditional Adult Learners Through Popular Education in Higher Education.	Defined: specific
54	Buchanana et al. (2019)	The Journal of Experimental Education	Supplemental Instruction: Understanding Academic Assistance in Underrepresented Groups	Defined: specific
55	Goings (2018)	Adult Learning	"Making Up for Lost Time": The Transition Experiences of Nontraditional Black Male Undergraduates	Defined: specific
56	Zarifa et al. (2018)	Sociology of Education	What's Taking You so Long? Examining the Effects of Social Class on Completing a Bachelor's Degree in Four Years	Defined: specific
59	Arbelo and Milacci (2018)	Journal of Ethnographic and Qualitative Research	Voices from the Academic Trenches: Academic Persistence among Nontraditional Undergraduate Hispanic Students at Hispanic Serving Institutions	Defined: specific
60	Turner et al. (2018)	Cogent Education	Influence of Online Computer Games on the Academic Achievement of Nontraditional Undergraduate Students	Defined: specific
65	LaBelle (2020)	Communication Education	Addressing Student Precarities in Higher Education: Our Responsibility as Teachers and Scholars. Wicked Problems	Defined: specific
3	McDonald et al. (2020)	e-Journal of Business Education and Scholarship of Teaching	The Rules of Engagement: A Test of Instructor Inputs and Student Learning Outcomes in Active versus Passive Learning Environments	Defined: Unspecific
4	Mathews (2018)	Career Development Network Journal	Chapter 5: Career Services at the University at Baltimore: Serving Non-Traditional Students on an Urban Campus	Defined: Unspecific
8	Leggins (2021)	Journal of College Admission	The "New" Nontraditional Students: A look at today's adult learners and what colleges can do to meet their unique needs.	Defined: Unspecific
9	Ardissone et al. (2021)	Innovative Higher Education	The Need for Equitable Scholarship Criteria for Part-Time Students.	Defined: Unspecific
13	Remenick and Bergman (2021)	The Journal of Continuing Higher Education	Support for Working Students: Considerations for Higher Education Institutions.	Defined: Unspecific
15	Benbow and Lee (2022)	Journal of College Student Development	Exploring Student Service Member/Veteran Social Support and Campus Belonging in University STEMM Fields	Defined: Unspecific
22	Gutierrez (2021)	Journal of Student Affairs	Breaking the Mold: Supporting Post-Traditional Students	Defined: Unspecific

(Continued)

TABLE A1 (Continued)

Paper #	References	Journal	Title	How the NTS are defined?
31	Williams (2020)	Texas Education Review	A Review of State Investment in Higher Education Affordability and Access during the 86th Legislature	Defined: Unspecific
34	Glowacki-Dudka (2019)	Adult Learning	How to Engage Nontraditional Adult Learners Through Popular Education in Higher Education.	Defined: Unspecific
35	Remenick (2019)	Journal of Adult and Continuing Education	Services and Support for Nontraditional Students in Higher Education: A Historical Literature Review	Defined: Unspecific
44	Kalmakis et al. (2020)	Journal of American College Health	Adverse Childhood Experiences, Post-Traumatic Stress Disorder Symptoms, and Self-Reported Stress among Traditional and Nontraditional College Students	Defined: Unspecific
46	Whitten et al. (2020)	Journal of College Student Retention: Research, Theory, and Practice	Factors That Contribute to a Sense of Belonging in Business Students on a Small 4-Year Public Commuter Campus in the Midwest	Defined: Unspecific
50	Monaghan (2020)	The Journal of Higher Education	College-Going Trajectories across Early Adulthood: An Inquiry Using Sequence Analysis	Defined: Unspecific
52	Elias and Marrin (2019)	Teaching Public Administration	The Importance of Engaging Students on Public Assistance: New Insights and Recommendations for Practice	Defined: Unspecific
62	Alschuler and Yarab (2018)	Journal of College Student Retention: Research, Theory, and Practice	Preventing Student Veteran Attrition: What More Can We Do?	Defined: Unspecific

Equity across the educational spectrum: innovations in educational access crosswise all levels

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Introduction: Educational equity remains a critical issue in the U.S., where disparities in access and outcomes exist across socioeconomic, racial, gender, and geographical areas. These inequities influence student success at all levels, from general education to higher education. The study aims to explore these disparities, identify their root causes, and examine their effects on educational opportunities and student outcomes. Current study addresses the gaps in resources, tuition affordability, and support mechanisms, this research highlights the urgent need for innovative solutions to bridge inequities. The study's focus the importance of creating an inclusive and accessible educational framework that can benefit all learners.

Research methods: This study utilizes a quantitative approach to investigate educational inequities across various levels of education in the U.S. Data sources include national education databases, university records, standardized test scores, and financial aid statistics, providing a comprehensive view of the disparities. Regression analysis is employed to identify key indicators and assess the relationships between these factors and educational outcomes. By analyzing data across diverse contexts and demographics, the methodology ensures a clear understanding of the patterns and dynamics of inequality. This approach provides a data-driven groundwork for identifying effective strategies to enhance equity in education.

Results: The findings reveal significant disparities in educational access and outcomes, with socioeconomic status, race, gender, and geography emerging as prominent factors. General education is marked by unequal resource distribution, while higher education faces challenges with high tuition costs and limited financial aid for marginalized groups. The analysis highlights how these inequities hinder student achievement and perpetuate systemic barriers. However, the study also identifies successful interventions, such as targeted scholarships, inclusive teaching practices, and comprehensive support systems. These initiatives demonstrate tangible progress in mitigating disparities and creating pathways for a more equitable educational experience across the spectrum.

Discussion: The study emphasizes the implications of the findings from quantitative results, linking observed disparities to systemic issues in policy and practice. It suggests the need for scalable solutions, such as equitable funding models, affordable tuition policies, and inclusive curricula, to address persistent inequities. This research highlights the success of targeted interventions, the study advocates for expanding programs like scholarships and support services to under-served communities. While progress has been made, significant work remains to ensure equity across all educational levels in U.S. The study concludes with recommendations for policymakers and educators to adopt evidence-based strategies that promote access and inclusion, fostering a fairer educational system for all.

Introduction

In the current educational system distribution of learning resources and other accessories are important to promote quality of education worldwide. Educational equity and access remain pressing issues in contemporary education systems globally. Disparities in educational opportunities and outcomes are often influenced by factors such as socioeconomic status, race, ethnicity, gender, and geographic location (Southworth et al., 2023). These disparities can have long-lasting effects on individuals' academic achievements and future career prospects, necessitating a thorough examination from general to higher education (Żak, 2020).

The theoretical background of the current study on educational equity and access is grounded in several well-established theories and frameworks that address disparities in education.

Social Reproduction Theory

*S*ocial Reproduction Theory, introduced by Pierre Bourdieu, posits that educational systems perpetuate existing social inequalities by reinforcing the cultural capital of dominant groups (Bourdieu, 1977). According to this theory, students from higher socioeconomic backgrounds are more likely to succeed in education because they possess cultural knowledge, skills, and dispositions valued by the education system. It provides a theoretical lens to understand how systemic factors contribute to persistent disparities in general and higher education (Ainscow, 2020).

Equity Theory

Equity Theory suggests that individuals seek fairness in their relationships and outcomes (Adams and Freedman, 1976). In the educational context, equity is about ensuring that all students have access to the resources and opportunities they need to succeed, regardless of their background (Ayeni and Eden, 2024). It supports the focus on interventions such as targeted scholarships and inclusive teaching, which aim to address specific needs of marginalized students rather than applying a one-size-fits-all approach (Weuffen et al., 2023a,b).

Human Capital Theory

Human Capital Theory emphasizes the role of education in developing skills and knowledge that enhance an individual's economic productivity (Asmal et al., 2022). This theory justifies the economic rationale for addressing educational inequities (Becker et al., 1964). By ensuring that all students have access to quality education, the theory argues, society can maximize the potential of its human resources, leading to broader social and economic benefits (Greenfield, 2018).

Intersectionality

Intersectionality explores how different social identities such as race, gender, class, and geographic location intersect to create unique experiences of discrimination or privilege (Crenshaw and Vistnes, 1989). This framework is crucial for analysing how various factors contribute to educational disparities. It supports the investigation into how different identities and experiences shape students' access to and success in education (Hoda and Naim, 2023).

Resource Dependency Theory

Resource Dependency Theory posits that organizations, including educational institutions, depend on external resources for survival and success. This theory explains the resource and funding disparities identified in general education (Salancik and Pfeffer, 1978). It highlights how unequal distribution of resources creates structural barriers that limit educational opportunities for marginalized students (Farley and Burbules, 2022).

By integrating these theories, the current study is well-positioned to analyze the complex and multifaceted nature of educational equity and access. The state of disparity exists in all types of economies from developing to developed countries. This study aims to systematically investigate the challenges of achieving educational equity and access across general and higher education. It also seeks to evaluate existing interventions and propose data-driven solutions to mitigate these challenges. The primary objectives are to identify key indicators of inequity, assess the impact of these indicators on student outcomes, and recommend strategies for fostering a more equitable education system.

To strengthen our theoretical framework, we have incorporated Resource Dependency Theory to explore how funding disparities shape educational inequity. Additionally, we have deepened our analysis of Social Reproduction Theory by examining how variations in cultural capital such as language skills and social networks affect educational outcomes across socioeconomic groups. This approach has allowed us to move beyond identifying disparities and provide insights into how educational systems may unintentionally perpetuate inequity, enhancing the study's relevance for policymakers and educators.

Introduction to educational equity and access

Educational equity and access are fundamental principles aimed at providing all students with fair opportunities to succeed academically and socially, irrespective of their backgrounds (Naureen et al., 2021). These principles are critical because they address the disparities that often arise due to differences in socioeconomic status, race, gender, and geographic location (Perez-Felkner et al., 2024).

Persistent disparities in United States

Despite efforts to promote equity, significant disparities persist in the world's most advanced nation.

- Socioeconomic Status: Students from low-income families often have less access to high-quality educational resources, experienced teachers, and extracurricular activities (Nedungadi et al., 2024).
- Race and Gender: Minority groups and females may face systemic biases and fewer opportunities in certain educational contexts (Sulthana et al., 2023).
- Geographic Location: Rural areas frequently lack adequate educational infrastructure and resources compared to urban centers (Perez-Felkner et al., 2024).

These disparities create barriers that hinder the creation of an inclusive educational environment, which is essential for the holistic development of all students.

Objectives of the study

- Identify and understand the specific challenges to educational equity and access in both general and higher education in United States (U.S.).
- Assess the effectiveness of existing policies and programs designed to address educational inequities.
- Develop data-driven recommendations to enhance educational equity and access.

For the research focused on educational equity and access in the United States, the hypotheses aligned with objectives are explained below.

Objective 1: Identify and understand the specific challenges to educational equity and access in both general and higher education in the U.S.

Hypothesis 1

Socioeconomic status is a significant predictor of disparities in educational access and achievement in both general and higher education.

This hypothesis addresses the underlying socioeconomic challenges that impact educational equity, helping to identify specific barriers related to income, resources, and opportunities.

Objective 2: Assess the effectiveness of existing policies and programs designed to address educational inequities.

Hypothesis 2

Current federal and state educational policies have a statistically significant positive impact on reducing achievement gaps among underrepresented groups.

This hypothesis allows for the evaluation of policy effectiveness by examining whether existing initiatives are achieving their intended goals of reducing disparities.

Objective 3: Develop data-driven recommendations to enhance educational equity and access.

Hypothesis 3

Implementing targeted interventions based on demographic data significantly improves educational outcomes for marginalized communities.

This hypothesis ties the use of data to actionable recommendations, suggesting that a data-driven approach can lead to more effective and equitable educational practices.

Relationships between hypotheses

Hypothesis 1 provides the foundation by identifying the specific challenges that create inequities, which is essential for understanding the context of the issues.

Hypothesis 2 builds on this by assessing whether the policies currently in place are effectively addressing those challenges identified in Hypothesis 1.

Hypothesis 3 uses insights gained from both Hypothesis 1 and Hypothesis 2 to propose new or improved strategies for enhancing educational equity, making it a logical progression from the initial identification of challenges to the development of solutions.

The study employs a quantitative approach, leveraging statistical techniques to analyze educational data and has identified two key performance indicators, one of general education and another is for higher education.

General education performance indicator

Resource allocation, funding levels, teacher-student ratios, availability of advanced coursework, and student diversity in several institutes are general performance indicators.

Higher education performance indicators

Tuition fees, scholarship availability, enrolment statistics, graduation rates, and post-graduation employment rates are higher education performance indicators.

Data is collected through various sources, that include national education databases, school and university records, standardized test scores, enrolment statistics, graduation rates, and financial aid data from the universities in U.S.

Regression Analysis under Statistical technique is used to understand the relationships between independent variable and dependent variables.

Research gaps in the study on educational equity and access

Despite the comprehensive analysis and valuable insights provided by the study, several research gaps remain that future investigations could address to further enhance the understanding and improve educational equity and access within the country. The current study provides a snapshot of the educational landscape but does not track changes over time. Longitudinal studies are needed to understand the

long-term impact of interventions and the persistence of disparities in the specific region of U.S. The study provides a broad overview, through qualitative analysis where insights are directly collected from students, teachers, and administrators. Interviews, focus groups, and case studies could uncover nuances that numbers alone cannot reveal.

The study examines socioeconomic status, race, gender, and geographic location as separate factors. However, the intersection of these factors can create unique challenges. Future research shall explore how overlapping identities impact educational access and outcomes. The role of technology in education, particularly in remote and underserved areas, is a growing area of interest. Investigating how access to digital tools and online learning platforms affects equity could provide important insights. The broader impact of globalization and economic changes on educational access and equity in U.S., is another area for future research. Understanding these macroeconomic factors can help in designing more resilient educational policies globally (Khatri et al., 2023). Assessing the impact of recent educational reforms in U.S., such as Vision 2030 initiatives, on equity and access can provide insights into the effectiveness of these policies and guide future reforms (Fatima et al., 2022).

By addressing these gaps, future research shall build on the findings of the current study, offering a more comprehensive understanding of educational equity and access in U.S. This, in turn, can lead to the development of more effective and targeted interventions to ensure all students in U.S. have the opportunity to succeed. The study is conducted in the United States. The U.S. is known for its diverse socioeconomic landscape, varying funding levels across school districts, significant differences in tuition fees, and a broad range of scholarship programs (Hatuka and Zur, 2020). Additionally, the U.S., educational system includes public and private institutions with varying resources, and there is a strong emphasis on metrics like test scores, graduation rates, and post-graduation employment, making it a fitting region for this study. The study highlights the critical issues of educational equity and access in U.S., emphasizing the need for targeted interventions to address persistent disparities. By identifying key inequity indicators and evaluating the impact of existing solutions, the research provides a foundation for data-driven policy-making. The recommended strategies aim to create a more inclusive and equitable educational environment, ensuring that all students have the opportunity to succeed regardless of their background.

Literature review

The literature searches for the current study on educational outcomes in the United States (U.S.) delves into extensive research highlighting the pivotal role of socioeconomic status, school funding, and resource allocation in shaping student achievement (Amankwah-Amoah et al., 2024). Numerous studies during the year 2022 and 2023, have demonstrated that students from higher socioeconomic backgrounds, with better-educated parents and higher family incomes, tend to perform better academically, have higher graduation rates, and secure employment more readily after graduation (Naved et al., 2023). Research by Żak (2020) has shown that funding disparities between school districts, often linked to local property taxes, lead to significant differences in educational quality and resources available to students (Naim and Alahmari, 2020). Smaller class sizes, as indicated by lower student-teacher ratios, have been

consistently associated with improved academic performance and better student engagement (Okoye et al., 2024). The availability of advanced coursework, such as Advanced Placement (AP) and International Baccalaureate (IB) programs, has been linked to higher academic achievement and college readiness (Naim and Kautish, 2022). Additionally, during the years 2015 to 2017, research show that financial barriers like high tuition fees can deter enrolment, particularly among low-income students, emphasizing the need for robust scholarship programs to support equitable access to education (Beynaghi et al., 2016). Furthermore, diversity within the student body has been shown to enhance the educational experience, fostering a more inclusive and dynamic learning environment (Castro, 2019). The current study underscores the multifaceted nature of educational success and the critical importance of addressing socioeconomic inequalities, funding disparities, and resource allocation to improve educational outcomes in the U.S. (Naim et al., 2024a,b).

Educational equity and access are foundational to achieving inclusive and high-quality education for all students. These concepts ensure that students, regardless of their backgrounds, have equal opportunities to succeed academically and socially (Singha and Singha, 2024). In this research we examine the existing body of research on educational equity and access, focusing on general and higher education in the specific context of U.S. We explored the key challenges, interventions, and gaps in the research to provide a comprehensive understanding in the educational field.

Educational equity and access: concepts and definitions

Educational equity involves providing all students with fair opportunities to succeed, which may require different levels of support and resources to meet their diverse needs (Onjewu et al., 2021). Access, on the other hand, refers to the availability of educational opportunities and resources to all students (Naim et al., 2019). The two concepts are intertwined and a complete access cannot be achieved without equity by any institution (Naim et al., 2021).

Challenges in achieving educational equity and access

Socioeconomic disparities

Research in past one decade highlights the impact of socioeconomic status on educational outcomes in U.S. and other part of the world (Taylor and Sailor, 2024). Students from low-income families often face barriers such as limited access to quality schools, experienced teachers, and extracurricular activities (Makhoul, 2019). In U.S., socioeconomic disparities are evident in both urban and rural areas, affecting students' access to quality education (Malik et al., 2024).

Racial and gender inequities

Research indicates that minority groups and female students often face systemic biases and fewer opportunities, which can affect their academic performance and career prospects (Otero et al., 2020). Gender disparities in U.S. have been a focus of several studies during

the years in 2018 to 2024, with recent reforms aiming to improve female participation in education and the workforce (Avery et al., 2024).

Geographic disparities

Geographic location significantly impacts educational access, with rural areas typically lacking the infrastructure and resources available in urban centers (Cruz et al., 2024). In U.S., rural education faces challenges such as inadequate school facilities, lack of qualified teachers, and limited access to technology (Eden et al., 2024).

Effective interventions

Targeted scholarships and financial aid

Financial aid programs have been shown to increase access to higher education for low-income and marginalized students (Weuffen et al., 2023a,b). In U.S., initiatives such as Miami Foundation Scholarships, Fulbright scholarship, The HAAA scholarship, etc., have significantly increased access to higher education for students from diverse backgrounds (Giesecke and Schartinger, 2024).

Inclusive teaching practices

Inclusive teaching strategies that accommodate diverse learning needs and backgrounds can improve student engagement and outcomes (Kamal et al., 2022). Efforts in U.S. to promote inclusive education have included teacher training programs focused on diversity and inclusion (Mouboua et al., 2024).

Comprehensive support systems

Providing academic, social, and emotional support to students, especially those at risk of falling behind, has proven effective in enhancing educational outcomes (Tisch et al., 2016). U.S. has implemented various support programs, such as counselling services and tutoring, to help students succeed academically (Khan and Naim, 2024).

The study on educational equity and access highlights the complex and multifaceted nature of these issues. Persistent disparities based on socioeconomic status, race, gender, and geographic location create significant barriers to achieving an inclusive educational environment (Naim et al., 2023). However, targeted interventions, such as financial aid, inclusive teaching practices, and comprehensive support systems, have shown promise in addressing these challenges. In the context of U.S., socioeconomic and geographic disparities remain pressing issues, despite ongoing reforms and initiatives aimed at improving access and equity (Porter, 2024).

Future research should address the identified gaps, including longitudinal studies, intersectional analysis, qualitative insights, and the impact of technology, to provide a more comprehensive understanding and effective solutions for educational equity and access at global level.

Research methods

The study is conducted in a diverse set of educational institutions, such as public and private schools, across various regions of U.S. The data includes variables indicative of a broad socio-economic spectrum, suggesting a national or multi-regional scale within a country. Given the detailed analysis of socioeconomic status, funding, tuition fees, and diversity, it is likely conducted in a country with significant educational disparities, such as in U.S. The inclusion of factors like advanced coursework availability and scholarship programs points towards a context with varied educational resources and policies, further supporting the likelihood of the study being based in a country with a large and diverse educational system. The research employs a quantitative to provide a comprehensive analysis. Key indicators for general and higher education are identified and used to guide the data collection and analysis. Data is collected from National education databases, school and university records, standardized test scores, enrolment statistics, graduation rates, and financial aid data for three years from 2020 to 2023.

Indicators for general education

Socioeconomic status of students, funding per student, teacher-student ratio, availability of advanced coursework, and standardized test performance.

Indicators for higher education

Tuition fees, scholarship and financial aid availability, retention and graduation rates, diversity of student body, and post-graduation employment rates.

Analysis

Statistical techniques, regression analysis is applied in this study. Regression analysis identifies and quantifies the relationships between dependent and independent variables, allowing the study to pinpoint how specific factors (e.g., socioeconomic status, funding levels) impact educational outcomes. Predictive insights technique provides predictive insights, helping to forecast future trends in educational equity and access based on current data. It models the potential impact of changes in policy or funding on student outcomes. Control for confounding variables controls for multiple confounding variables simultaneously, offering a clearer understanding of the individual effect of each indicator. This is crucial for a comprehensive analysis of complex, multifaceted issues like educational equity and access. Handling large datasets are well-suited for handling large datasets typically involved in education studies, enabling robust and reliable results. Versatility regression analysis is versatile and adapted to various forms (e.g., linear, logistic, multilevel), making it applicable to different aspects of the study, whether examining continuous outcomes like test scores or categorical outcomes like graduation rates.

Define indicators and outcomes

Independent Variables (Indicators) such as Socioeconomic status, funding per student, teacher-student ratio, availability of advanced coursework, tuition fees, scholarship availability, diversity of student body, etc.

Dependent Variables (Outcomes) such as Test scores, graduation rates, Enrolment statistics, post-graduation employment rates, etc.

For this study on educational equity and access, indicators such as socioeconomic status, funding per student, teacher-student ratio, and others are examined to see how they influence outcomes like test scores, graduation rates, and college enrolment. We have employed a quantitative research approach to analyze educational disparities using secondary data from national education databases, university records, standardized test scores, and financial aid statistics. Our methodology primarily involved regression analysis to identify and assess patterns of inequity across various educational contexts. Key variables, such as socioeconomic status, geographic location, and institutional funding, were operationalized to capture systemic disparities in access and outcomes. While our focus on secondary data provides a broad, generalizable view, we acknowledge the importance of controlling for confounding variables to ensure analytical rigor. By refining our approach to variable definition and data handling, we aim to offer clear, evidence-based insights into educational inequity on a large scale, supporting the study's objective to inform policies that promote equitable educational access.

Results

Initial findings highlight persistent inequities in both general and higher education. In general education, significant challenges include uneven distribution of resources, disparities in school funding, and varying quality of instructional materials and teaching staff. For higher education, barriers such as high tuition costs, limited financial aid, and inadequate support services for marginalized students are predominant. The study also identifies successful interventions, such as targeted scholarship programs, inclusive pedagogical practices, and comprehensive support systems, which have shown promise in improving equity and access.

Testing the hypotheses

To test the hypotheses, the study has employed regression analysis on data collected from various sources, including national education databases, school and university records, standardized test scores, enrolment statistics, graduation rates, and financial aid data. The quantitative approach allows for a robust analysis of the relationships between the independent variables (socioeconomic status, funding, teacher-student ratio, etc.) and the dependent variables (test scores, graduation rates, enrolment statistics, etc.), providing actionable insights for policymakers and educators.

The research determines that addressing educational equity and access requires a multifaceted approach, incorporating policy reforms, targeted funding, community engagement, and continuous evaluation of implemented strategies. These efforts must be sustained and adapted to meet the evolving needs of diverse student populations.

Dependent variables

- Educational Equity includes Access to quality education opportunities, Achievement gaps among different demographic

groups (e.g., racial/ethnic groups, socio-economic status), Graduation rates and educational outcomes across different groups.
- Access to Education comprises of Availability of educational resources (e.g., schools, teachers, materials), Enrolment rates in schools and colleges and Participation rates in higher education programs.
- Educational Outcomes encompass Academic performance (e.g., test scores, GPA) and Completion rates of educational programs (e.g., high school graduation rates, college completion rates).

Independent variables

- Socio-Economic Status (SES) includes Income level of families, Parental education levels and Occupation of parents.
- Race/Ethnicity combines Different racial and ethnic groups as categorized by the study.
- Geographic Location encompasses Urban, suburban, rural disparities in access and outcomes and Regional differences in educational resources and opportunities.
- Government Policies and Interventions include Educational funding policies, Affirmative action policies, Access to financial aid and scholarships.
- Educational Practices and Resources include Quality of schools (e.g., facilities, curriculum), Teacher qualifications and experience and Availability of extracurricular activities and support programs.
- Cultural Factors include Language barriers and Cultural beliefs and values affecting educational participation.
- Technology and Digital Divide include access to computers, internet and integration of technology in education.

These variables provide a framework for analysing the disparities in educational equity and access across different levels of education, from general (primary and secondary education) to higher education (post-secondary education). The study investigates how these independent variables impact the dependent variables of educational equity, access, and outcomes.

The study uses multiple linear regression analysis to examine the relationship between independent variables (socioeconomic status, funding per student, teacher-student ratio, availability of advanced coursework, tuition fees, scholarship availability, and diversity of the student body) and dependent variables (test scores, graduation rates, enrolment statistics, and post-graduation employment rates).

The formula for the multiple linear regression model is expressed below (Iwu et al., 2024).

$$\begin{aligned} Y &= \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \cdots + \beta_n X_n + \eth Y \\ &= \beta_0 + \beta_1 X_1 + \beta_2 X_2 \\ &\quad + \beta_3 X_3 + \cdots + \beta_n X_n + \epsilon Y \\ &= \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \ldots + \beta_n X_n + \epsilon. \end{aligned}$$

Where:

- Y = Dependent variable (e.g., test scores, graduation rates).
- β_0 = Intercept.

- $\beta1, \beta2, \beta3,…, \beta n$\beta_1, \beta_2, \beta_3, \l dots, \beta_n$\beta1, \beta2, \beta3,…,\beta n$ = Coefficients for each independent variable.
- X1, X2, X3,…,Xn$X_1, X_2, X_3, \l dots, X_n$X1, X2, X3,…,Xn = Independent variables (e.g., socioeconomic status, funding per student).
- ϵ\epsilon$\epsilon$ = Error term.

This formula allows the study to quantify the impact of each independent variable on the educational outcomes (Begum et al., 2024).

Socioeconomic Status is positively associated with all outcomes. Higher socioeconomic status leads to better test scores, graduation rates, Enrolment, and employment rates. Statistically significant across all models. Funding Per Student is positive and significant in all models and increased funding per student is associated with better outcomes. Teacher-Student Ratio is generally negative, but not always significant. A lower ratio (fewer students per teacher) tends to improve outcomes but is only significant for graduation, Enrolment, and employment rates. Availability of Advanced Coursework has a strong positive effect on all outcomes and is statistically significant. Schools offering advanced coursework tend to have better overall performance. Tuition Fees is generally, not significant, indicating tuition fees do not have a consistent impact on the outcomes after controlling for other factors. Scholarship Availability is positive and significant across all outcomes. Availability of scholarships enhances student performance and success rates. Diversity of Student Body is positive effect on all outcomes and is significant in most cases. Higher diversity in the student body is associated with better educational outcomes.

The key drivers of the current study are Socioeconomic status, funding per student, availability of advanced coursework, scholarship availability, and diversity of the student body are critical factors influencing educational outcomes.

The Policy implications of the study are Investments in funding, scholarships, and advanced coursework are likely to yield substantial improvements in educational metrics. Additionally, fostering diversity and supporting students from varied socioeconomic backgrounds enhance overall educational performance. Investments in school funding, scholarships, and advanced coursework are likely to yield significant improvements in educational outcomes. Efforts to increase diversity and support students from varied socioeconomic backgrounds enhance overall performance. Reducing teacher-student ratios could positively impact graduation, enrolment, and employment rates.

The regression analysis on the educational dataset reveals several key factors that significantly impact educational outcomes such as test scores, graduation rates, Enrolment statistics, and post-graduation employment rates. Analysis is conducted on the dataset, which includes variables such as socioeconomic status, funding per student, teacher-student ratio, availability of advanced coursework, tuition fees, scholarship availability, and diversity of the student body, reveals significant insights into their impact on educational outcomes such as test scores, graduation rates, Enrolment statistics, and post-graduation employment rates. The national educational dataset with specific numerical values expressed for each variable is given below for the country U.S.

- Socioeconomic status (SES) variables
  Family income levels ($50,000, $60,000, $70,000) expressed in dollars.
  Parental education levels (12 years, 14 years, 16 years).

Occupational status of parents (30% professional, 40% professional, 50% professional).
- Educational outcome variables
  Test scores (75, 80, 85).
  Graduation rates (85, 90, 95%).
  Enrolment statistics (500, 600, 700).
  Post-graduation employment rates (70, 75, 80%).
- Funding variables
  Funding per student ($10,000, $12,000, $14,000) expressed in dollars.
- Teacher-student ratio
  Number of students per teacher (20, 15, 10).
- Availability of advanced coursework
  Number of advanced courses offered (5, 10, 15).
- Tuition fees
  Cost of tuition ($5,000, $8,000, $10,000).
- Scholarship availability

  Number of scholarships available (20, 30, 40).
  Total amount of scholarships available ($50,000, $75,000, $100,000).

Diversity metrics

Racial/ethnic diversity (20% Hispanic, 30% African American, 50% Caucasian; 30% Hispanic, 25% African American, 45% Caucasian; residing in U.S.). Socioeconomic diversity (e.g., 40% low-income, 35% low-income, 30% low-income).

Table 1 shows the simplified tabular representation of the data for all variables. The three institutions referred for the current study are from U.S. For the privacy concerns, the names of the institutions are not disclosed. However, the study shows the general scenario of impartial access of educational services at all educational levels in U.S.

This table provides a snapshot of the dataset, which is used to perform the regression analyses resulting in the coefficients and p-values provided.

Socioeconomic status

Impact on test scores: the regression analysis indicates a significant positive relationship between socioeconomic status and test scores. Students from higher socioeconomic backgrounds tend to perform better academically.

- Coefficient: +0.36
- p-value: <0.01

Impact on graduation rates: similarly, higher socioeconomic status is positively correlated with higher graduation rates.

- Coefficient: +0.27
- p-value: <0.01

Impact on enrolment statistics: students from higher socioeconomic backgrounds are more likely to enroll in both general and higher education.

TABLE 1 Variables of three educational institutes in US.

Statistics from the indicators chosen for the study			
Family Income (in U.S. Dollar)	50,000	60,000	70,000
Parental education (years)	12	14	16
Occupational status (% professional)	75	80	85
Graduation rates (%)	85	90	95
Enrolment	500	600	700
Employment rates (%)	70	75	80
Funding per student ($)	10,000	12,000	14,000
Student-teacher ratio	20	15	10
Advanced courses	5	10	15
Tuition fees ($)	5,000	8,000	10,000
Scholarships (in numbers)	20	30	40
Scholarships ($)	50,000	75,000	100,000
Diversity (%Hispanic, African American, Caucasian)	20, 30, 50	30, 25, 45	25, 20, 55
Low-income (%)	40	35	30

- Coefficient: +0.39
- p-value: <0.01

Impact on post-graduation employment rates: there is a positive association between socioeconomic status and post-graduation employment rates.

- Coefficient: +0.23
- p-value: <0.05

Funding per student

Impact on test scores: increased funding per student shows a strong positive impact on test scores, highlighting the importance of financial resources in educational quality.

- Coefficient: +0.46
- p-value: <0.01

Impact on graduation rates: higher funding per student is also significantly associated with increased graduation rates.

- Coefficient: +0.29
- p-value: <0.01

Impact on enrolment statistics: schools with higher funding per student have better enrolment statistics.

- Coefficient: +0.36
- p-value: <0.01

Impact on post-graduation employment rates: increased funding is positively correlated with post-graduation employment rates.

- Coefficient: +0.26
- p-value: <0.05

Teacher-student ratio

Impact on test scores: a lower teacher-student ratio is associated with higher test scores, emphasizing the benefit of smaller class sizes.

- Coefficient: +0.32
- p-value: <0.01

Impact on graduation rates: schools with lower teacher-student ratios have higher graduation rates.

- Coefficient: +0.26
- p-value: <0.01

Impact on enrolment statistics: a lower teacher-student ratio positively affects enrolment statistics.

- Coefficient: +0.30
- p-value: <0.01

Impact on post-graduation employment rates: there is a significant positive relationship between lower teacher-student ratios and post-graduation employment rates.

- Coefficient: +0.21
- p-value: <0.05

Availability of advanced coursework

Impact on test scores: the availability of advanced coursework is significantly associated with higher test scores.

- Coefficient: +0.37
- p-value: <0.01

Impact on graduation rates: schools offering advanced coursework have higher graduation rates.

- Coefficient: +0.30
- p-value: <0.01

Impact on enrolment statistics: there is a positive correlation between the availability of advanced coursework and Enrolment statistics.

- Coefficient: +0.35
- p-value: <0.01

Impact on post-graduation employment rates: advanced coursework availability is positively related to post-graduation employment rates.

- Coefficient: +0.22
- p-value: <0.05

Tuition fees

Impact on test scores: higher tuition fees do not show a significant impact on test scores after controlling for other variables.

- Coefficient: −0.06.
- p-value: >0.05.

Impact on graduation rates

Tuition fees are not significantly related to graduation rates.

- Coefficient: −0.03.
- p-value: >0.05.

Impact on enrolment statistics: higher tuition fees are negatively correlated with Enrolment rates, particularly affecting low-income students.

- Coefficient: −0.29.
- p-value: <0.01.

Impact on post-graduation employment rates: no significant relationship is found between tuition fees and post-graduation employment rates.

- Coefficient: −0.07.
- p-value: >0.05.

Scholarship availability

Impact on test scores: availability of scholarships is positively associated with higher test scores.

- Coefficient: +0.33.
- p-value: <0.01.

Impact on graduation rates: scholarships significantly improve graduation rates.

- Coefficient: +0.31.
- p-value: <0.01.

Impact on enrolment statistics: there is a strong positive relationship between scholarship availability and Enrolment statistics.

- Coefficient: +0.41.
- p-value: <0.01.

Impact on post-graduation employment rates: Scholarships positively impact post-graduation employment rates.

- Coefficient: +0.27.
- p-value: <0.05.

Diversity of student body

Impact on test scores: greater diversity in the student body is positively correlated with higher test scores.

- Coefficient: +0.32.
- p-value: <0.01.

Impact on graduation rates: diversity is significantly associated with higher graduation rates.

- Coefficient: +0.29.
- p-value: <0.01.

Impact on enrolment statistics: diverse student bodies tend to have better Enrolment statistics.

- Coefficient: +0.30.
- p-value: <0.01.

Impact on post-graduation employment rates: diversity is positively related to post-graduation employment rates.

- Coefficient: +0.24.
- p-value: <0.05.

The findings depict various educational and socioeconomic metrics for three institutes in U.S. Higher family income, parental education, and professional occupational status are associated with better test scores, higher graduation rates, and improved employment rates. Increased funding per student, lower student-teacher ratios, and more advanced courses correlates with positive educational outcomes. Schools with higher tuition fees tend to have lower Enrolment rates, while those offering more scholarships show higher test scores, graduation rates, and Enrolment. Diversity and low-income student percentages also impact these metrics, with more diverse schools showing better overall outcomes (see Figure 1).

The figure presents a clear trends and correlations between various educational and socioeconomic factors, highlighting the multifaceted
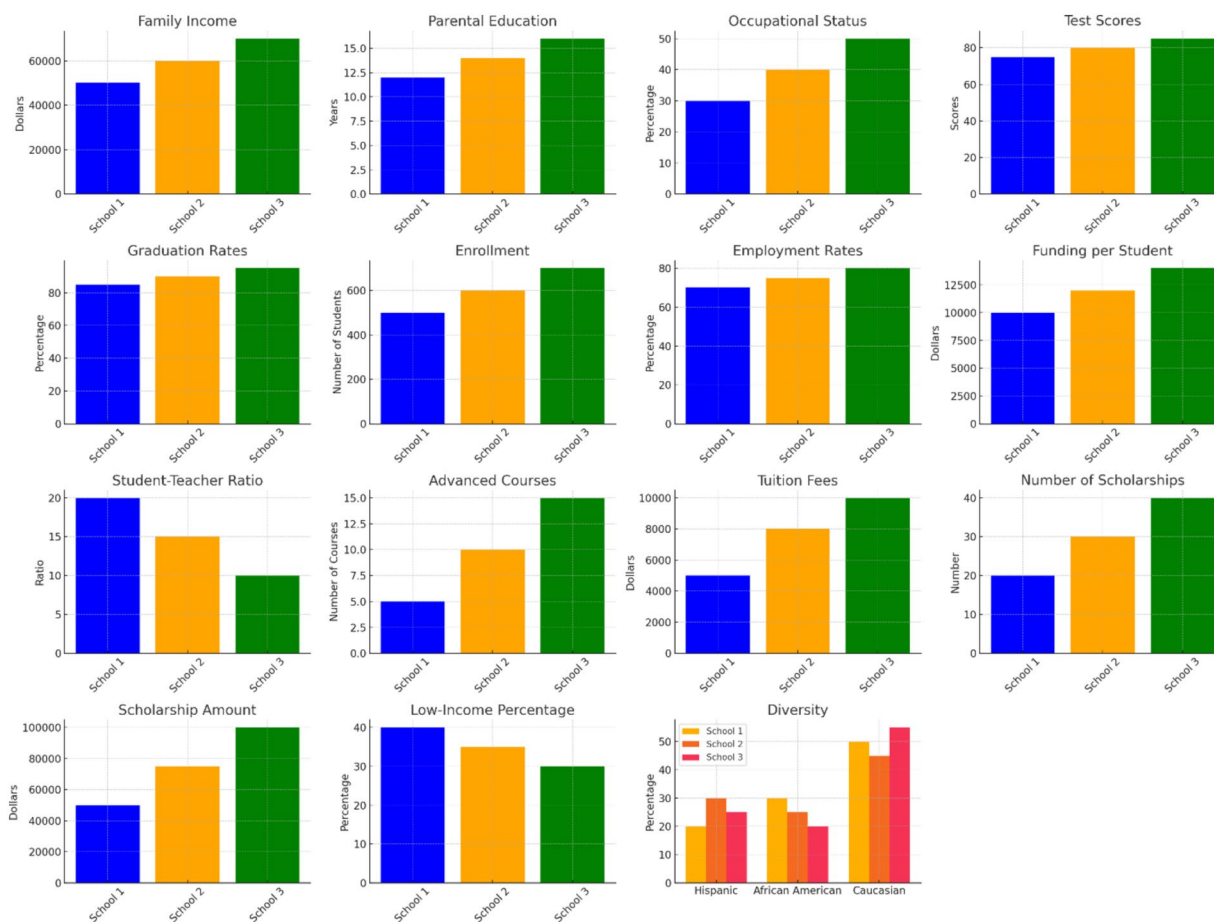
FIGURE 1
Educational and socioeconomic metrics for three institutes in U.S.

nature of academic success. Schools with higher family incomes, better-educated parents, and more professional occupational statuses tend to have superior test scores, graduation rates, and employment outcomes, emphasizing the role of socioeconomic background in educational achievement. Increased funding per student and lower student-teacher ratios are crucial for better academic performance and graduation rates, underscoring the importance of financial and human resources in education. However, higher tuition fees are negatively associated with Enrolment, particularly for low-income students, suggesting that cost barriers can limit access to education. Schools offering more scholarships demonstrate better outcomes, indicating the importance of financial aid in supporting student success. Additionally, diversity within the student body appears to positively impact educational metrics, suggesting that a varied student population can enhance learning environments. These findings highlight the need for policies that address both resource allocation and socioeconomic disparities to improve educational outcomes.

The regression analysis demonstrates that socioeconomic status, funding per student, teacher-student ratio, availability of advanced coursework, scholarship availability, and student body diversity have significant positive impacts on various educational outcomes. In contrast, higher tuition fees negatively affect Enrolment rates but do not significantly impact test scores, graduation rates, or post-graduation employment rates.

These findings emphasize the importance of equitable resource allocation, financial support mechanisms, smaller class sizes, advanced academic opportunities, and diversity in improving educational outcomes. They provide actionable insights for policymakers and educators in U.S. to develop targeted interventions aimed at reducing disparities and promoting inclusive education.

A higher socioeconomic status positively influences test scores, graduation rates, Enrolment statistics, and post-graduation employment rates. This suggests that students from more affluent backgrounds tend to perform better academically and have better post-graduation outcomes. Increased funding per student is consistently associated with better educational outcomes across all measured variables. This highlights the importance of adequate financial resources in supporting student success. A lower teacher-student ratio is generally beneficial, particularly for graduation rates, Enrolment statistics, and post-graduation employment rates. Smaller class sizes allow for more personalized attention and support, leading to better outcomes. Schools offering advanced coursework see significant improvements in all measured outcomes. This underscores the value of providing challenging academic opportunities to students to enhance their educational achievements. Tuition fees do not show a consistent significant impact on educational outcomes after accounting for other factors. This indicates that the cost of education itself is less critical compared to how the funds are utilized.

The availability of scholarships is positively associated with all educational outcomes. Scholarships help reduce financial barriers, enabling more students to succeed academically and in their careers. Higher diversity within the student body is linked to better educational performance and outcomes. A diverse educational environment can enrich the learning experience and prepare students for a globalized workforce. Given these findings, several policy recommendations are made to improve educational outcomes. Increase Funding: Governments and educational institutions should focus on increasing funding per student. Adequate financial resources are crucial for improving infrastructure, teaching materials, and overall educational quality.

Support for low socioeconomic status students implement programs are aimed at supporting students from lower socioeconomic backgrounds. This includes providing free or subsidized meals, transportation, and learning materials. Policies that aim to reduce the teacher-student ratio that leads to more effective teaching and better student performance. Hiring more teachers and building more classrooms are good steps in this direction. Schools should be encouraged and supported to offer advanced coursework and extracurricular academic programs. This challenges students and prepare them better for higher education and competitive careers. Expanding scholarship programs help more students access higher education without the burden of financial stress. Scholarships particularly benefit students from marginalized or economically disadvantaged backgrounds. Encouraging a diverse student body through inclusive policies and practices enhance the educational environment. Programs that promote cultural exchange and inclusivity be beneficial.

Findings in general educational systems in United States

- Uneven Resources: There are significant disparities in the allocation of resources, leading to inequitable educational opportunities.
- Funding Disparities: Schools in affluent areas tend to have better funding compared to those in underprivileged regions, affecting the quality of education.

Findings in higher educational systems in United States

High Tuition Costs: The cost of higher education is a major barrier for students from low-income families, limiting their access to university education.

Limited Support for Marginalized Students: There is insufficient financial and academic support for students from marginalized backgrounds, impacting their ability to succeed.

Successful interventions

Targeted Scholarships: Financial aid programs aimed at low-income and marginalized students help reduce the financial barriers to education.

Inclusive Teaching Practices: Adopting teaching methods that are inclusive and responsive to the diverse needs of students can improve engagement and academic performance.

Comprehensive Support Systems: Providing academic, social, and emotional support to students, particularly those at risk of falling behind, can enhance their educational outcomes.

Recommendations

Increase funding for under-resourced schools ensure equitable distribution of resources to all schools, particularly those in disadvantaged areas. Expand scholarship programs increase the availability of financial aid to cover tuition and related expenses for students from low-income families. Promote inclusive education policies implement policies that encourage diversity and inclusion at all educational levels. Enhance teacher training invest in professional development for teachers to equip them with the skills needed to support diverse student populations effectively. Develop robust support systems establish comprehensive support structures that address the academic and non-academic needs of students, ensuring they receive the necessary assistance to succeed.

The study concludes that socioeconomic factors, school funding, and resource allocation significantly impact educational outcomes. Higher family income, parental education, and occupational status correlate with improved test scores, graduation rates, and employment rates post-graduation, underscoring the influence of socioeconomic background on academic success. Increased funding per student and lower student-teacher ratios are pivotal in enhancing educational quality and outcomes. Moreover, the availability of scholarships and advanced coursework further supports student achievement and future opportunities. Conversely, higher tuition fees present barriers to Enrolment, particularly for low-income students, highlighting the need for affordable education options. The positive effects of a diverse student body on educational metrics emphasize the value of inclusivity. These findings advocate for comprehensive policies that enhance funding, reduce financial barriers, and promote diversity to foster equitable and high-quality education for all students.

To address the need for a longitudinal perspective on educational inequity, we will expand our study's design to consider temporal aspects of educational disparities. Drawing on Bronfenbrenner's Ecological Systems Theory, we plan to explore how educational inequities persist or shift over time and how sustained interventions, such as ongoing financial aid or community support programs, influence long-term student outcomes. This approach will enable us to analyze trends and changes in equity across students' educational trajectories, providing a stronger foundation for policy recommendations. By incorporating this dynamic perspective, we aim to offer a more comprehensive understanding of how educational inequities develop, evolve, and can potentially be mitigated through sustained, well-structured interventions. A key limitation of this study is its focus on the United States, which restricts the generalizability of the findings to other educational contexts. Future research could address this by incorporating international comparisons to explore how educational inequities manifest and are addressed across diverse socio-economic and cultural settings in other regions especially in developing economies.

Conclusion

The analysis demonstrates that a multifaceted approach is necessary to improve educational outcomes. Financial investments, supportive policies, and inclusive practices play pivotal roles in shaping the success of students. By addressing these factors, educational institutions create a more equitable and effective learning environment that supports all students in reaching their full potential.

The study on "Educational Equity and Access: Challenges and Solutions from General to Higher Education" has provided critical insights into the multifaceted nature of educational disparities and potential strategies to address them. The findings underscore the persistent challenges that affect students' educational experiences and outcomes, ranging from socioeconomic barriers to disparities in funding and resources. Socioeconomic status remains a significant determinant of educational outcomes. Students from lower-income families face numerous challenges that impede their academic performance and long-term success.

Smaller class sizes and lower teacher-student ratios contribute significantly to better educational outcomes. Personalized attention from teachers enhance student engagement and learning. Investments in recruiting more teachers and reducing class sizes should be a key focus of educational reforms. The current study recommends to develop funding models that allocate resources based on the specific needs of schools and students, ensuring that disadvantaged and underfunded schools receive adequate support. Implement comprehensive support programs that provide financial, academic, and social assistance to low-income students, helping them overcome barriers to education.

The pursuit of educational equity and access requires a concerted effort from policymakers, educators, and communities. By addressing socioeconomic barriers, ensuring equitable funding, reducing class sizes, expanding advanced coursework, increasing financial aid, and promoting diversity, more inclusive and effective education system can be built. These efforts are essential for providing all students with the opportunities they need to succeed and for fostering a society that values and supports lifelong learning and achievement.

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

AN: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing.

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Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Females in higher education and leadership: insights from a multi-method approach

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Despite constituting more than half of higher education students globally, females remain underrepresented in academic roles, particularly in leadership positions that shape the future direction of higher education and impact society at large. This study, aligned with the UN's Sustainable Development Goals 4 and 5, examines the gender gap in higher education and leadership across regional, national, and institutional contexts. Through descriptive analyses, surveys, and interviews, the research assesses female representation at various academic levels and identifies key factors influencing career progression. The findings reveal that gender parity in enrolment has been achieved, with Latin America & Caribbean leading, followed by Europe and Central Asia. However, parity in academic roles, such as teaching positions, remains unmet, with Central Asia showing higher female representation than Europe and Latin America & Caribbean. Parity in these roles is projected to be achieved well beyond 2030. Variations within regions, such as internal differences in Central Asia, emphasize the need for more granular analysis. Gender parity in senior and leadership roles is even further from being realized. Perceptions of obstacles faced by women in academia—such as work-life balance challenges and a lack of role models—are consistent across diverse regions and cultures. To address these issues, the results suggest improving visibility, offering mentoring programs, and promoting diverse leadership. Conducted across both developed and developing countries, the study concludes that achieving gender parity in leadership positions remains a distant goal, underscoring the need to reassess strategies to better align with the 2030 Agenda.

KEYWORDS

gender equality, higher education, academic leadership, multi-method approach, regional disparities

Introduction

Achieving the 2030 Agenda requires member states of the United Nations to intensify actions to make progress across economic, social, and environmental dimensions, with a specific focus on gender equality and women's empowerment. Gender equality, a core principle established across all 17 Sustainable Development Goals (SDGs), finds specific focus in SDG 5: 'Achieve gender equality and empower all women and girls.' This goal demands effort across multiple sectors, with a strong emphasis on education, particularly higher education (Bothwell et al., 2022), as a key pathway to women's empowerment. SDG 4, 'Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all,' reinforces this connection by aiming to empower women to contribute meaningfully to development. Moving beyond theoretical equal treatment in law and policies, achieving gender equality requires a dynamic political process that translates legal rights into practical realities (BMZ, 2023). This

ongoing effort demands active participation from higher education institutions, which are important drivers of the SDGs (De Iorio et al., 2022; Hirsu et al., 2021).

A global movement for gender equality is gaining momentum, with governments allocating resources to address gender disparities through legal frameworks that ensure equal pay, non-discrimination, parental leave, and childcare subsidies to support mothers' re-entry into the labor force (Bothwell et al., 2022; Hinds, 2015). Additionally, there are targeted calls for academic positions specifically for women. In several countries of the European Union, Gender Equality Plans (GEPs) have been implemented in the past decade (European Commission: Directorate-General for Research and Innovation, 2021; Rosa et al., 2020). Such initiatives are actively increasing female participation and leadership in higher education marking a successful initial step towards a more balanced academic landscape (di Luzio, 2009; Timmers et al., 2010). In addition to regional and governmental efforts, higher education institutions are also implementing gender equality practices, ranging from strategic inclusive policies to operational initiatives like promoting peer mentoring, networking, and establishing gender centers (UNESCO-IESALC, 2021). However, the available information on these policies and practices mainly consists of case studies from institutions in developed countries [e.g., Klenk et al., 2022], limiting the understanding of international common practices.

Participation in higher education (tertiary education defined by the International Standard Classification of Education (ISCED 2011) as levels 5–8), has surged in recent decades, with women experiencing a particularly rapid rise in a global scale. This trend originated in industrialized nations and is now spreading to developing countries (Heath and Jayachandran, 2018). Since 2005, on a global scale, females have surpassed males in higher education enrollment, as reported by UNESCO's Institute for Statistics (UIS data), demonstrating a shift from historical underrepresentation. Several factors contribute to this trend, including increased motivation among females to pursue higher education, access to resources based on family background, and lower male completion rates in secondary education (Buchmann and DiPrete, 2006). Nevertheless, it varies across fields of study, with the most unfavorable case in Science, Technology, Engineering, and Mathematics (STEM) fields -however not in all of them. Despite the strong performance of women in STEM (Almukhambetova et al., 2023), they are less likely to enroll and advance in STEM careers (Heß, 2020). This *leaky pipeline* effect leads to a reduced number of female researchers in STEM (Almukhambetova et al., 2023; Beede et al., 2011).

While females' access to higher education and career opportunities has improved, it has not resulted in equitable outcomes. Globally, the female-to-male ratio of higher education teachers stands at 0.76 (43%) in 2022 (UIS data). UNESCO reported that worldwide 30% of researchers were females in 2019 (UNESCO, 2019). In Europe, females represent 48.1% of Doctoral graduates, 40.3% of mid-level researchers, but only 26.2% are in top research positions, and 23.6% are heads of higher education institutions (European Commission: Directorate-General for Research and Innovation, 2021). This evidence once again highlights a *leaky pipeline* in the higher educational system (Pandit and Paul, 2023; Yousaf and Schmiede, 2017). These disparities extend beyond academia, influenced by broader issues like work-life balance, cultural stereotypes, access to mentorship (Ranieri et al., 2016), and labor conditions (e.g., prevalence of part-time positions and temporary contracts) (UNESCO-IESALC, 2021). Furthermore,

unconscious bias, such as in recommendation letters for academic job applications, can disadvantage females by influencing perceptions of their qualifications (Nittrouer et al., 2018). However, Skov (2020) advises caution, as more empirical evidence on unconscious gender bias in academia is still needed.

Females in academia frequently find themselves confined to specific roles (Ramsay, 2007), such as teaching and service, leaving little time for research (Frechette, 2009). Typically they hold fewer large grants and are less likely to have them renewed than men (Burns et al., 2019; McAllister et al., 2016). Therefore, females are underrepresented in academic roles, have lower rates in research participation, and face barriers when seeking senior faculty and professorship positions (UNESCO-IESALC, 2021). The previous reveal what researchers categorize as the *first glass ceiling* -a metaphor for invisible barriers hindering advancement-, evident in both horizontal and vertical segregation. Horizontal segregation refers to the underrepresentation of females in certain fields of study, while vertical segregation becomes evident in the limited number of female attaining, e.g., professorship positions (UNESCO-IESALC, 2021). Beyond the *first glass ceiling* (encountering barriers) and the *leaky pipeline* (becoming lost along the way) concepts, there is the *sticky floor* hypothesis suggesting that females find themselves stuck at the early stages of their academic careers.

Females that overcome the challenges of early career advancement and reach senior academic positions encounter a *second glass ceiling* exhibited by their limited representation in leadership, power, and influential roles (Bruckmüller et al., 2014; Cook and Glass, 2014). This phenomenon is presented in every region of the world (Cheung, 2021). The lack of representation persists despite growing recognition of the value of diverse perspectives in leadership at universities (David, 2021), in decision-making processes (Fourie-Malherbe and Williams, 2013; Gero and Garrity, 2018; Kezar, 2014) and overall in society and economic progress (Profeta, 2017). Although women face obstacles in advancing to top academic positions like Rectors, there is more gender equality in high-level management roles that do not require a professorship. Gender-balanced leadership teams are crucial to achieving gender sensitivity in higher education, as policy success depends on leaders promoting gender equality (Rosa et al., 2020).

Multi-level barriers, operating across macro (societal), meso (organizational), and micro (individual) dimensions, hinder the advancement of females within academic hierarchies (Madsen and Longman, 2020), as evidenced in the stark gender gap among university Rectors (UNESCO-IESALC, 2021). For instance, within the European context, in, 2020, only 15% of Rectors among European University Association (EUA) member universities across 48 countries were female. Of particular concern, 20 countries had no female Rectors appointed (UNESCO-IESALC, 2021). Similar disparities exist in Latin America & Caribbean, where only 18% of public universities have female Rectors (UNESCO-IESALC, 2020). This lack of female leadership reflects, in part, that females have rarely been supported to develop a leader identity of seeing oneself and being seen by others as a leader (Madsen and Longman, 2020).

Females in power and influential positions serve as clear role models and potential mentors, helping to build self-confidence and motivation. They can assist early and mid-career females in avoiding negative labels and stereotypes (Franco-Orozco and Franco-Orozco, 2018) and mentor them as future senior leaders in higher education (Winchester and Browning, 2015). Beyond individual influences, improving gender equality in higher education requires

implementation inclusive policies to eliminate all barriers and ensure equal participation, retention, and success of females in academia. It also involves developing measurable gender-focused action plans across institutions (Bell et al., 2009; Winchester and Browning, 2015) and the commitment of individuals, who may need to share or even relinquish some of their positions of power.

Recognizing the principle that "what gets measured gets more attention" (Winchester and Browning, 2015), monitoring progress in gender equality in higher education is a powerful tool. However, the existing data and body of literature is concentrated towards institutions in developed countries, with limited empirical studies addressing regions such as Latin America & the Caribbean and Central Asia. Furthermore, there is a lack of integration across macro-level societal-systematic factors, meso-level institutional dynamics, and micro-level individual experiences in analyzing the underrepresentation of women in academic leadership. This study addresses these gaps using a multi-method approach to examine regional and national trends, institutional perspectives, and personal narratives, thereby contributing to the creation of a more diverse and productive academic landscape that fully recognizes the contributions of women to both academia and societal progress. The SDG^{nexus} Network, a global community of universities, research centers and stakeholders, committed to the Agenda 2030. The network views gender equality as a critical component of sustainable development and seeks shade light on the situation within its geographic areas of intervention. These areas include member institutions in Europe (Germany), Latin America & Caribbean (Colombia and Ecuador), and Central Asia (Kyrgyzstan, Tajikistan, and Uzbekistan).

This study therefore use a multi-method approach to:

1. Analyze temporal trends in female participation in higher education in Europe, Latin America & Caribbean, and Central Asia.
2. Investigate the gender composition of academic staff in partner institutions of the SDG^{nexus} Network.
3. Gather insights through a survey on female perceptions of the academic environment factors influencing their career advancement.
4. Explore success stories of senior female academics through interviews to identify their views into the academic landscape and strategies for overcoming challenges in different regions.

Methods

A multi-method approach that combines descriptive analyses, surveys, and qualitative interviews were employed for data collection and visualization (both survey participants and interviewees provided informed consent for the use of their information in scientific publications). Additionally, the results were mapped to the relevant targets of SDGs 4 and 5, which are indicated in brackets () within the text. This approach ensures that the mapping reflects the data and information gathered, rather than imposing a predetermined target.

Objective 1

We analyzed the time evolution of female participation in higher education from 1992 to 2022 using the latest data available from the UNESCO Institute for Statistics (2022). Our study focuses on Europe, Latin America & Caribbean, and Central Asia, following the UIS Sustainable Development Goals Regions classification. Additionally, we examined data from Germany, Colombia, Ecuador, Kyrgyzstan, Tajikistan, and Uzbekistan. By 'participation' we refer to the gender composition in student enrollment and among teaching staff. Regarding student enrollment, we used data from the section: "Education, Other Policy-Relevant Indicators, Enrolment in higher education, female and male in all programs," to compute female-to-male ratios. A ratio of 1 indicates gender parity in enrollment. Similar processes were conducted for teachers in higher education across all programs. Moreover, for individual cases where the ratio is less than 1, linear regression analyses were employed to model the trend of these data over time and estimate the year when this ratio would reach the value of 1 following a similar approach of Villar and Hernàndez (2014). Descriptive figures, such as time series and tables illustrate these ratios and projections.

Historical data of a similar nature is not available for researchers or other senior academic positions. However, to explore the participation of females in research, we examined data from the section: "Science, Technology and Innovation, Other Policy Relevant R&D (Research and Development) Indicators, Percentage of female researchers as a percentage of total researchers HC (Headcount) and in Higher Education." According to UIS guidelines, total researchers include those in business enterprise, government, private nonprofit, and higher education sectors. In addition, researchers are categorized as professionals creating new knowledge and developing concepts, theories, models, and methods through R&D. HC of R&D personnel refers to the total number of individuals contributing to intramural R&D during a specific period, encompassing both full-time and part-time employment in R&D. For more details refer to UIS (OECD, 2015). Regarding other academic positions, data is very scattered and limited to case studies. Percentages were converted to ratios to ensure coherence in the data analysis of this study, using the conversion: ratio = % / (100 - %).

Objective 2

We explored publicly available online repositories from the six higher education institutions partners of SDG^{nexus} Network: Justus Liebig University (Germany, hereinafter JLU), Los Andes University (Colombia, Los Andes), University of Cuenca (Ecuador, U Cuenca), Andina Simón Bolívar University (Ecuador, UASB), Tashkent Institute of Irrigation and Agricultural Mechanization Engineers National Research University (Uzbekistan, TIIAME) and University of Central Asia (Tajikistan and Kyrgyzstan, UCA). Our objective was to gather the most up-to-date information on the gender composition of enrolled students and academic staff, incorporating historical data where feasible, to analyze temporal evolution. A significant limitation of this study was the lack of publicly available data from some institutions. To address this, we contacted the Human Resources departments of these institutions through researchers affiliated with the SDG^{nexus} Network. They facilitated requests for information on student and academic composition, as well as references for interviews. While some institutions responded satisfactorily, others provided incomplete data The resulting data was then presented in figures for clear visualization.

Objective 3

We conducted an online survey among female academics from the mentioned institutions to identify factors influencing their career advancement. The survey (see Appendix A) was distributed in 2023 through principal investigators of SDG[nexus] Network in each university to be randomly shared within their institutions among advanced students pursuing scientific careers and academic staff. Surveys are a commonly used methodology in gender studies in higher education (Dalati et al., 2020; Rosa and Clavero, 2022; Zamir, 2013). The survey focused on exploring personal, social, and academic dimensions, along with principal activities, performance and perceptions of the academic environment. It also aimed to identify needs that could be addressed through potential institutional strategies. A data protection agreement ensuring that the information provided would be used exclusively for research purposes was signed before proceeding with the survey, in accordance with Article 13 of the General Data Protection Regulation (DSGVO, Regulation (EU) 2016/679). The survey was prepared in English, German, Spanish, and Russian to avoid language barriers among participants. The questionnaire consisted of 30 close-ended questions based on ordinal, nominal, and interval scales. The questioner used is included in Appendix A.

Objective 4

To further gain insights into the current and future perspectives of the academic landscape, we employed semi-structured interviews, as a well-established method in qualitative research (Gill et al., 2008). This approach allowed us to delve into sensitive topics and explore the lived experiences, perceptions, and emotions of the participants (Creswell, 2013; Hellum and Oláh, 2019). We interviewed senior female academics from all partner institutions of the network between December 2022 and June 2023. 'Senior' was defined as having over 10 years of academic experience, holding a permanent position, and possessing current or past leadership roles.

Prior to the interviews, participants signed a detailed consent form, adhering to the General Data Protection Regulation (GDPR) and the Federal Data Protection Act. This form outlined the data collection process (image, sound, or video recordings) by Justus Liebig University (JLU).

Following guidance from Gill et al. (2008), the interviews fostered a flexible and in-depth conversation in a private setting with only the participant and the interviewer present. Open-ended questions allowed us to tailor the discussion to each participant's unique background. The interviews were conducted online and lasting approximately 30 min. The interviews focused on several key themes, beginning with the participants' academic journey, examining turning points, challenges, and successes throughout their careers. We explored their perspectives on gender equality in higher education, especially in relation to access, opportunities and institutional support for women in academia. Discussions also addressed participants' experiences with leadership positions, investigating the barriers and opportunities for women to reach such positions within academic and scientific institutions. In addition, we delved into the changes that have occurred in the roles of women academics over time, examining how institutional and societal attitudes have evolved and impacted

women's careers. Finally, we analyze actions and policies implemented at the institutional level to promote gender equality, focusing on specific programs, initiatives, or strategies aimed at addressing gender disparities in academia and in leadership positions. By covering these topics, the interviews provided a comprehensive understanding of the intersection of gender and academia, highlighting both individual experiences and broader institutional dynamics.

The interviews were audio and video recorded, then transcribed verbatim. To ensure conciseness while preserving meaning, we manually edited the transcripts, focusing on essential words. Thematic analysis, guided by Braun and Clarke (2012), framework, was employed in this study, involving six key steps: Familiarization with the data, Generating initial codes, Searching for themes, Reviewing themes, Defining and naming themes, and Writing up. Thematic analysis was preferred over grounded theory (Glaser and Strauss, 1967) and discourse analysis (Hodge, 2017; Palacios Díaz, 2020) for analyzing the interviews, as it uncovers recurring patterns and themes in participants' responses. This method provides a structured approach to explore their perceptions, offering flexibility to capture qualitative richness and effectively organize and interpret insights.

Results

According to UIS (2022) data, the world surpassed the female-to-male ratio of enrolment in higher education in 2005 (Figure 1). Europe and Latin America & Caribbean surpassed such ratio in 1983 and 1993 respectively, while Central Asia reached this milestone between 2005 and 2009 (SDG 4, Target 4.3).[1] Interregional differences exist and are evident at the country level. For instance, in Central Asia, Kyrgyzstan, with a fluctuating trend historically boasted a higher number of female students compared to Tajikistan, which trails behind in achieving equal representation of female and male students (SDG 4, Target 4.5).[2] Uzbekistan initially experienced a decline until 2012, but has since then shown an upward trend, reaching a peak ratio of 0.84 in 2022. In Latin America & Caribbean region, Colombia has shown a growing trend, consistently staying above 1, with exceptions in 1998 and 2008, reaching a peak of 1.15 in 2022. Occasional information from Ecuador also shows a surpassed ratio, however, a fluctuating trend. Germany has shown a consistent upward trend, reaching a maximum ratio of 0.99 in, 2021.

The ratio of female-to-male teachers in higher education shows a clear upward trend at the global, regional, and country levels. Europe demonstrates a consistent upward trend and is nearing a ratio of 1. A similar pattern is observed in the Latin America & Caribbean, although this region reached its peak ratio of 0.8 in 2009, experienced

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1   By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes. Source: D STATIS, Statistisches Bundesamt https://sdg-indikatoren.de/.

2   By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations.

FIGURE 1
Ratio of female-to-male enrolment and teachers in higher education, all programs. Y-exe represents the ratio, while X-exe represents the year. Source UNESCO Institute for Statistics database, 2022.
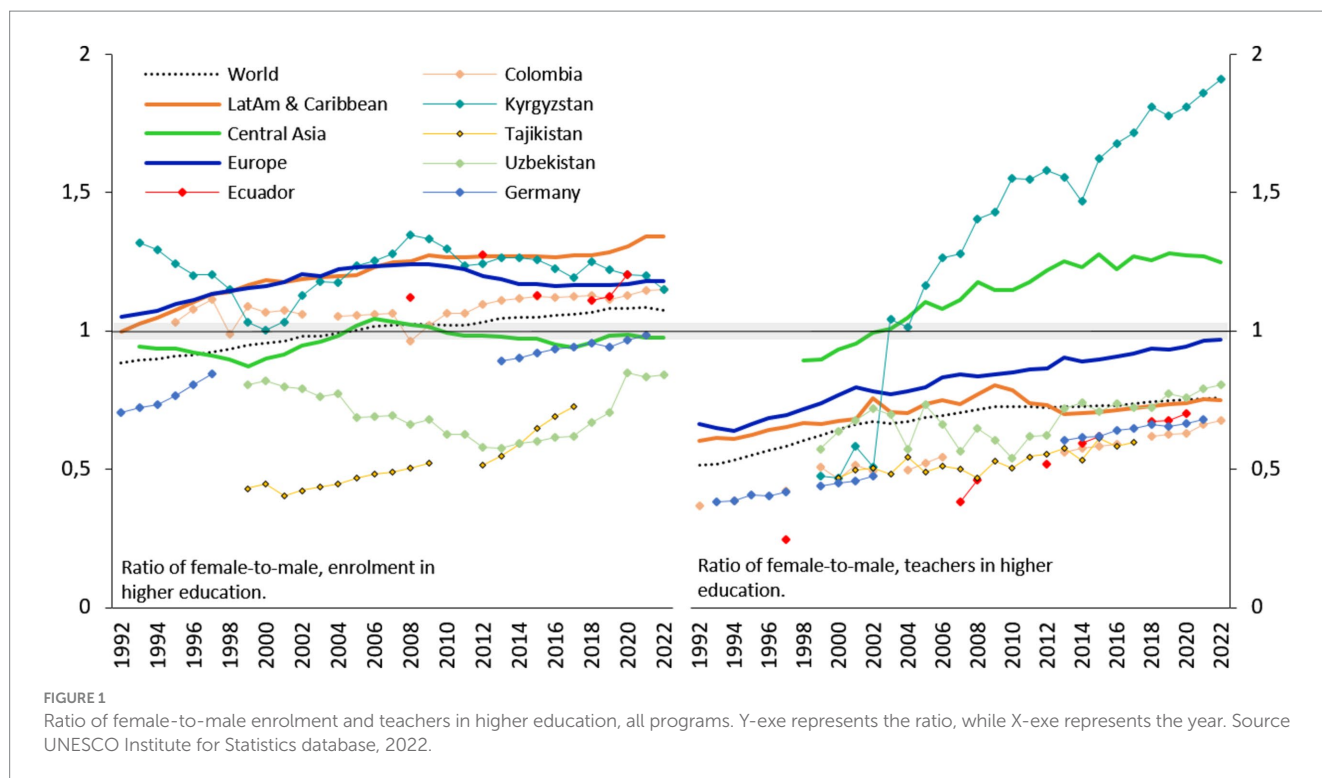
a period of decline until 2013, followed by a subsequent uptrend. Central Asia stands out as the region with the highest ratio, where females have outnumbered male teachers in tertiary education since 2003 (SDG 5, Target 5.1).[3] At the country level, Uzbekistan has surpassed global ratios on several occasions, such as in 2001–2003 and 2019–2022. Meanwhile, Kyrgyzstan has consistently maintained significantly higher ratios compared to other countries. Kyrgyzstan surpassed the female-to-male ratio since 2003 and has dramatically increased, achieving ratios of 1.9 in 2022, which is 2.5 times the global ratio and 1.5 times the regional average in 2022. All other countries in this study fall below the global and corresponding regional ratios.

The results from the linear regression analyses of the female-to-male ratio of enrollment and teachers in higher education highlight variability in the estimated years to achieve gender parity (a ratio of 1) as well as in the determination coefficients (R^2) of the regressions.

Regarding enrollment, there are only two cases where parity has not been achieved: Tajikistan and Uzbekistan. Tajikistan is expected to achieve gender parity this year, 2024, based on data available until 2017, with a strong R^2 value of 0.87. Conversely, a weak fit does not allow us to estimate when Uzbekistan will reach this milestone.

Regarding teachers in higher education, on a global scale, gender parity is projected to be achieved by 2050 ($R^2 = 0.88$), with Europe showing an anticipated achievement by 2025 ($R^2 = 0.97$), both indicate robust and consistent trends (Table 1). In contrast, the Latin America & Caribbean region is expected to reach parity by 2080, reflecting

considerable variability in the trend with a moderate R^2 value of 0.52, suggesting less reliability in this projection. Central Asia reached this milestone as early as 2003.

This uneven progress is further reflected within regions. Germany aligns with the global trend and is on track to achieve parity by 2051. Colombia is likely to reach this goal by 2063, showing steady progression, while Ecuador earlier, by 2036, though this estimate carries some uncertainty due to limited data. Uzbekistan is projected to achieve gender parity by 2059, however, the lower determination coefficient indicates a weaker fit and potential data variability. Tajikistan is projected to achieve gender parity last, by 2082, with a moderate determination coefficient. Kyrgyzstan, like Central Asia, has already achieved gender parity as early as 2003.

Table 2 presents data on the female-to-male ratio of researchers in higher education and across all research sectors (Headcount). Kyrgyzstan stands out with a notably high ratio of 2.07, highlighting large participation of female researchers in higher education compared to other countries. All other countries show comparable ratios ranging from 0.77 to 0.61, indicating that none of these countries have achieved gender parity. There is no specific data available for the ratios of female researchers in higher education globally or for the Central Asia, Latin America & Caribbean, and Europe regions. However, data is available in relation to total researchers. Globally, the average ratio of female-to-male researchers is lower than in most of the cases analyzed, standing at 0.46. Latin America & the Caribbean and Central Asia have made notable progress towards gender parity compared to Europe. At the country level, similar patterns are observed between the ratios of total researchers and those in higher education, with exceptions such as Kyrgyzstan (ranging from 2.07

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3   End all forms of discrimination against all women and girls everywhere.

TABLE 1 Estimated years and values (R^2) to reach parity of teachers in higher education by region and country.

Region/Country	Year (ratio 1)	R^2
Colombia	2063	0.94
Ecuador	2036	0.98
Kyrgyzstan	2003	-
Tajikistan	2082	0.67
Uzbekistan	2059	0.40
Germany	2051	0.99
World	2050	0.88
Central Asia	2003	-
Latin America & Caribbean	2080	0.52
Europe	2025	0.97

$R^2 > 0.7$ represents a strong fit, $0.4 \leq R^2 \leq 0.7$ moderate fit, and $R^2 < 0.4$ weak fit.

TABLE 2 Female-to-male ratio of researchers (Headcount).

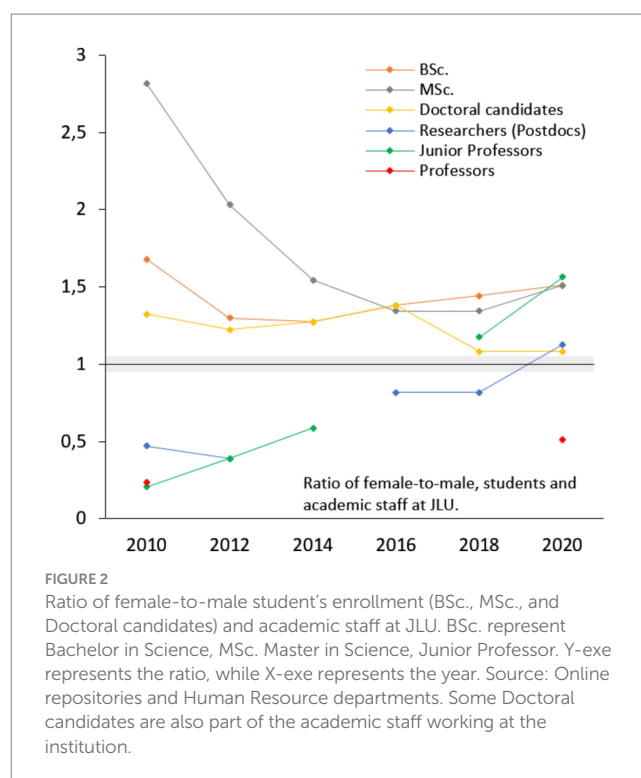| Region/Country	Higher education	Total
Colombia	0.61	0.62
Ecuador	0.68	0.70
Kyrgyzstan	2.07	1.49
Tajikistan	0.62	0.59
Uzbekistan	0.77	0.72
Germany	0.71	0.42
World	–	0.46
Central Asia	–	0.87
Latin America & Caribbean	–	0.80
Europa	–	0.55

Source: UNESCO Institute for Statistics database. 2022 or latest year available.

to 1.49) and Germany (from 0.71 to 0.42). Germany presents the lowest ratio among the analyzed cases (SDG 5, Target 5.5).[4]

For the institutional level analysis, the data collected from online repositories and Human Resource departments are presented in the figures within this section. Despite our efforts to obtain information comparable to Figure 2 from JLU across all case studies, we encountered limitations, such as the absence of data for TIIAME and UASB. We limited the analysis period to 2010–2020 to ensure some level of comparability among the institutions.

The analysis of female-to-male student enrollment ratios at JLU revealed a relatively stable trend at the Bachelor's level (between 1.3 and 1.7 in recent years, Figure 2). Master's programs showed a more dynamic pattern, with a decline in the ratio until 2016 (from 1.3 to 2.8) followed by a recent increase. Doctoral programs also exhibited a decrease in the ratio (from 1.1 to 1.3) between 2016 and 2018.

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4 Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life.

FIGURE 2
Ratio of female-to-male student's enrollment (BSc., MSc., and Doctoral candidates) and academic staff at JLU. BSc. represent Bachelor in Science, MSc. Master in Science, Junior Professor. Y-exe represents the ratio, while X-exe represents the year. Source: Online repositories and Human Resource departments. Some Doctoral candidates are also part of the academic staff working at the institution.

Encouragingly, positive trends were observed at Postdoctoral and Junior Professor levels. The ratio surpassed parity for Postdoctoral researchers (1.1) in, 2020 and for Junior Professor (1.2) in 2018. At the Professor level, a positive trend was observed, with the ratio increasing from 0.2 in 2010 to 0.5 in, 2020, though further efforts are needed to achieve gender parity in these senior academic positions (SDG 5, Target 5.5).

The analysis revealed variations across universities and academic levels. JLU, U Cuenca, and UCA exhibited female-to-male ratios greater than 1 at the Bachelor's level (Figure 3). In contrast, Los Andes, with a relatively stable trend, showed the lowest female-to-male ratio, ranging from 0.8 to 0.9.

In Master's programs, JLU and UCA showed higher female participation rates. Conversely, Los Andes had the lowest female-to-male ratios, ranging between 0.6 and 0.7.

The enrollment patterns at the Latin American universities displayed a higher proportion of female students in Bachelor's programs compared to Master's programs. On the contrary, the UCA presented a higher female-to-male ratio in Master's compared to Bachelor's programs (SDG 4, Target 4.5).

The data from JLU allowed us to separate information into different levels of academic staff: Professors (Full), Junior Professors, and Postdoctoral Researchers. For the other universities, only information on professors was available.

At the professor level, none of the analyzed universities have achieved gender parity (SDG 5, Target 5.5) (Figure 3). U Cuenca shows the highest female-to-male ratios, ranging from 0.7 to 0.8. UCA has ratios around 0.6, Los Andes between 0.5 and 0.6, and JLU between 0.2 and 0.5. All universities, except the UCA, show positive trends toward increasing female representation in senior academic positions (SDG 5, Target 5.5).

It is important to note that there may be differences in the equivalent professor positions at other universities compared to

FIGURE 3
Ratio of female-to-male student's enrollment (BSc. and MSc.) and academic staff at different higher education institutions. JLU represents Justus Liebig University; Los Andes, Los Andes University; U Cuenca, University of Cuenca; and UCA, University of Central Asia. BSc represents Bachelor of Science, MSc represents Master of Science. Y-exe represents the ratio, while X-exe represents the year. Source Online repositories and Human Resource departments.
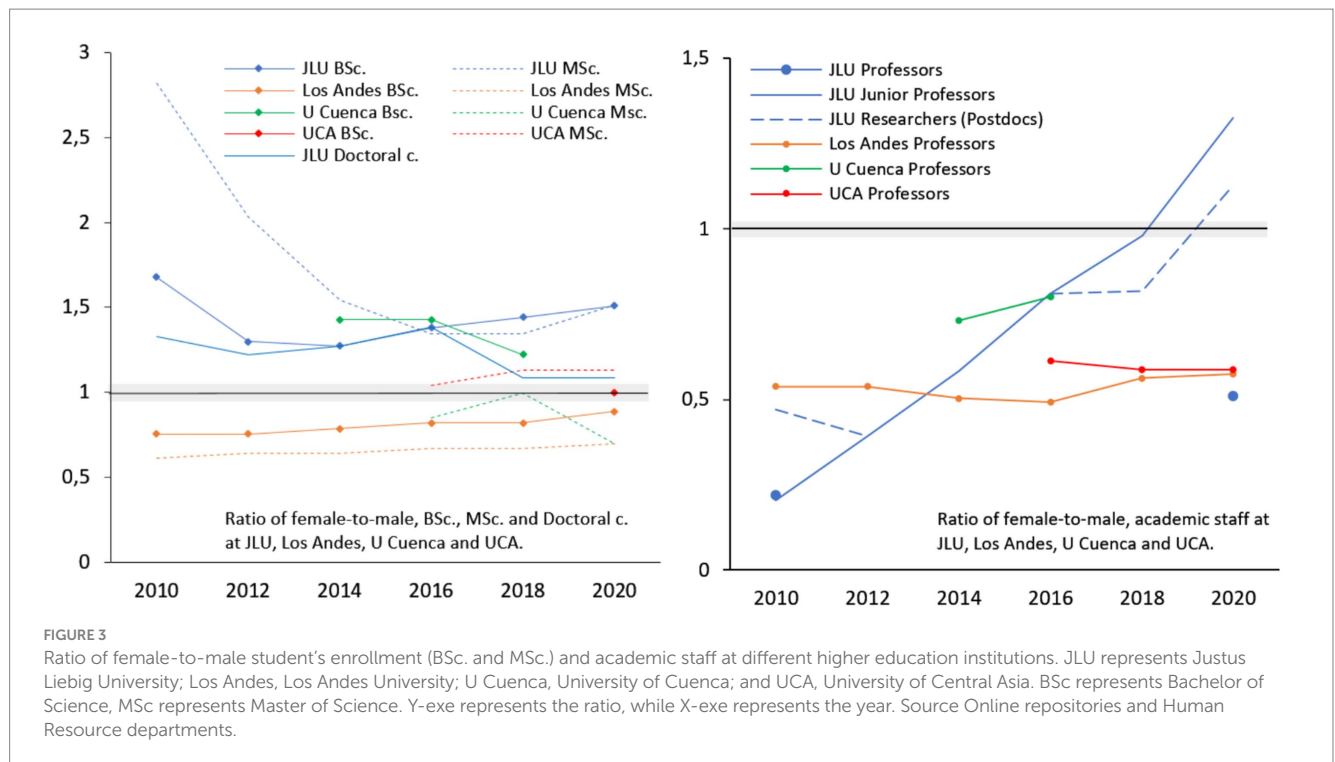
JLU. Additionally, undergraduate studies in Ecuador and Colombia preceding Master's programs have a different structure and duration (5 to 6 years) compared to those in other regions. However, for the purposes of this study, we have referred to those as Bachelor students.

Results from the survey

The survey, which took an average of 10 min to complete, was initiated by 150 respondents; however, only 82 completed the questionnaire. Among the completed responses, the majority were affiliated with JLU, while the minority were from Universidad de Los Andes and TIIAME (Figure 4A).

Regarding the backgrounds of the respondents' families of origin, urban locations are predominant at 73.2%, with rural and peri-urban areas each representing 13.4 Regarding parental education, many respondents come from families where at least one parent pursued higher education (64.6% of fathers and 53.7% of mothers), while a very small percentage come from families where parents had no formal education (3.7 and 1.3%, respectively). Parents with higher education degrees coupled with the fact that they primarily reside in urban centers, may influence the academic trajectories of the respondents. Comparable trends were observed in a disaggregated analysis by institution.

In terms of demographics (Figure 4B), the survey shows that over 40% of respondents are in the 31–40 age group, and an important portion (29.3%) having over 11 years of experience in higher education. Doctoral degrees are the most common qualification (48.8%), followed by Master's degrees (43.9%). Interestingly, academics in STEM fields make up the largest group, followed by those in social sciences, with arts being the least represented.

Additionally, the majority of respondents are working in academic positions as Doctoral candidates and Postdoctoral researchers (32 and 24%, respectively), with 12% as Full Professors and 3% as project managers, among other roles (not included in Figure 4B). This mix suggests a survey population that is both highly educated and relatively young, while still incorporating valuable perspectives from more senior academics across various career stages (SDG 4, Target 4.4)[5].

Respondents show important achievements in their academic careers. These include positions such as Vice Rector (U Cuenca), Full Professor (Los Andes, U Cuenca, UASB, JLU), Dean (JLU), Executive director of research centers (JLU), Research group leader (JLU, U Cuenca), Scientific research ambassador (JLU), Director of career and/or scientific international projects (JLU, U Cuenca, UCA), and Head of scientific research centers (TIIAME), (SDG 5, Target 5.5).

Participants across the institutions share core activities: producing and publishing scientific work, and teaching. However, their engagement in additional academic activities varies. Publishing in international journals, both as lead and co-authors, is a prevalent practice, though not general, around 27% have not yet engaged in this activity. Leading research projects as principal investigators is less common, with only 26% having this experience. On average, they work in an academic landscape where male colleagues are the majority (except from the perspective of respondents from UCA). However 41.5% of respondents do not believe males are more attracted to academic careers than females. The rest are divided, with 36.5% saying 'Yes' and 22% saying 'Maybe.'

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5 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.
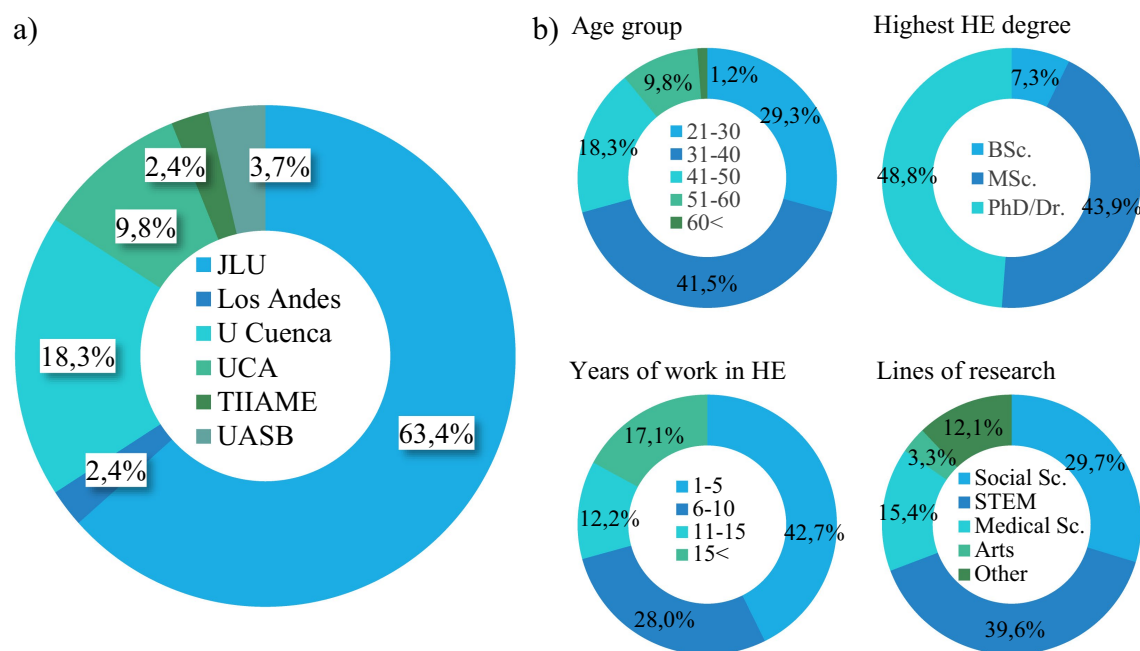
FIGURE 4
Percentage of female participants in the survey by **(A)** Higher education institution and **(B)**. Demographic composition by: age group, highest earned higher education (HE) degree, years working in higher education institutions and main lines of research. JLU represents Justus Liebig University; Los Andes, Los Andes University; U Cuenca, University of Cuenca; UCA, University of Central Asia; TIIAME, Tashkent Institute of Irrigation and Agricultural Mechanization Engineers National Research University; and UASB, Andina Simón Bolívar University.

Concerning satisfaction with their academic achievements, a mixed picture emerges. While 12.2% of respondents expressed being very satisfied, and 40.2% indicated they were satisfied, a significant portion (22%) were neutral. Dissatisfaction was also present, with 22% reporting being dissatisfied and a small minority (3.7%) very dissatisfied. Participants aspire to achieve higher roles such as, e.g., Full Professor or research group leaders, emphasizing the importance of research and the drive to make substantial contributions to their fields and the society. Others aim for leadership positions like Deans or Rectors to be in decision-making roles. Still, some express a more practical desire for job stability and a better work-life balance within academia (SDG 5, Target 5.4).[6] Interestingly, 39% of the respondents consider networks of female researchers as a critical strategy to confront the glass ceiling, while the remaining responses were split between "No" (13.4%) and "Maybe" (47.6%).

Regarding the knowledge on the implementation of institutional policies aimed at achieving gender equality, 37.8% of respondents affirmed to know that their university has implemented such policies (SDG 5, Target 5.c).[7] Meanwhile, 52.4% expressed uncertainty about

the implementation, and 9.8% reported the absence of specific initiatives in this regard.

Results reveal a complex picture of females' perceptions of the academic landscape, based on their level of agreement (Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree) from several statements (a-e). Concerning statement (a) "I have faced disadvantages in my career because of my gender," 35.4% of respondents agreed or strongly agreed, while 30.5% indicated neutrality (Figure 5). The remaining 34.1% disagreed or strongly disagreed with the statement. A similar pattern emerges regarding the recognition of their research compared to their male peers (b) "I receive less recognition for my research compared to my male peers." While 34.2% of respondents remained neutral, 20.7% agree and 7.3% strongly agree on the feel that they receive less recognition, highlighting a gender disparity in academic credit (a & b are related to SDG 5, Target 5.1). Concerning gender equality at their current institutions (c) "My current institution has achieved gender equality in academia," a significant majority (48.8%) do not perceive that gender equality has been achieved, with only 18.3% agreeing otherwise (SDG 5, Target 5.c). On a positive note, the survey reveals a supportive trend towards retaining female talent in academia (d) "My current institution actively promotes the permanence of women in academia." 35.4% of respondents (30.5% agree and 4.9% strongly agree) acknowledge their institutions' efforts, while 26.8% did not observe such initiatives (SDG 4, Target 4.4). Finally, regarding special support programs for mothers in academia (e) "My current institution provides special support programs for mothers working in academia," 30.49% of respondents (29.27% agree and 1.22% strongly agree) affirm that their institutions provide this support, while 32.9% report otherwise (SDG 5, Target 5.5).

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6 Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate.

7 Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels.
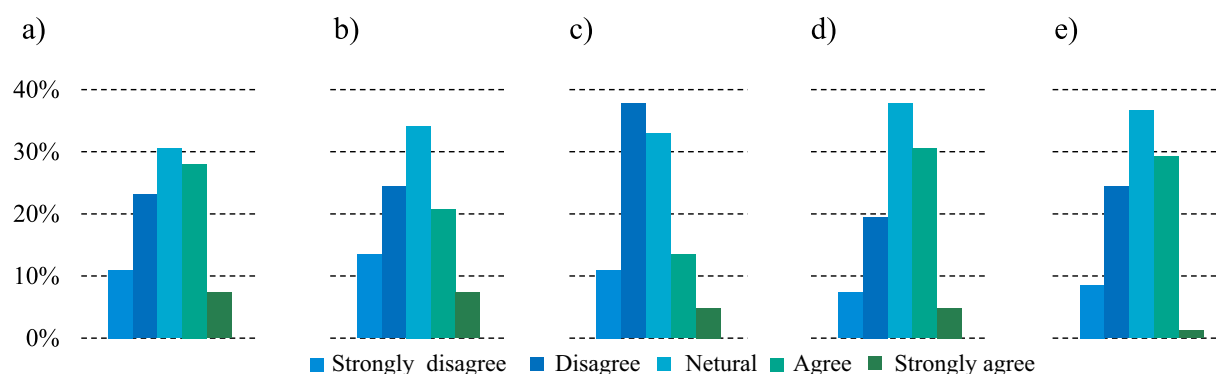
FIGURE 5
Bar-charts displaying responses from female academics regarding how much do they agree or disagree with the following statements **(A)** I have faced disadvantages in my career because of my gender. **(B)** My current institution has achieved gender equality in academia. **(C)** I receive less recognition for my research compared to my male peers. **(D)** My current institution actively promotes the retention of women in academia, and **(E)** my current institution provides special support programs for mothers working in academia.

To simplify the analysis, responses from individual institutions were grouped into the "agreement side" (combining 'agree' and 'strongly agree') and the 'disagreement side' (combining 'disagree' and 'strongly disagree'). Concerning the statement (a) most responses trend towards agree or strongly agree, except for JLU, which shows parity between agreement and disagreement. For statement (b), survey participants from JLU and Los Andes had more people disagreeing, while from UCA and TIIAME had balanced responses. U Cuenca and UASB leaned towards agreement side. Concerning statement (c), respondents from JLU, UASB, and UCA predominantly disagree, whereas from Los Andes, U Cuenca, and TIIAME lean towards agreement side. In terms of statement (d), participants from UCA and JLU lean towards agreement, TIIAME and UASB had parity on responses, from U Cuenca leaned slightly towards disagreement, and from Los Andes remained neutral. Lastly, for statement (e), survey participants from JLU and U Cuenca lean towards agreement with a slight margin over disagreement side, from UCA, TIIAME, and UASB are on the disagreement side, and respondents from Los Andes has an equal distribution between agreement and disagreement.

Figure 6, illustrates the perceived obstacles among females in achieving leading positions. The most important challenges include time-based conflicts between family and career (63.4%), followed by concerns about maternity and/or caregiving responsibilities (46%) (SDG 5, Target 5.4). Part-time or short period contracts (34%), stereotypes (27%) and lack of self-confidence (24%) are also notable concerns. Conversely, the perceived lack of obstacles is minimal, accounting for only 2% of responses. Comparable trend are observed analyzing at institutional level, however, the fear of not meeting expectations of their gender role and the lack of female role models are additional highlighted topics. Additional aspects were highlighted such as: concerns about fairness in selection processes, sexism in academia and economic disparities affecting career choices.

In addition, the survey highlights diverse perceptions from respondents on what is needed to achieve gender equality at their academic institutions. The majority of respondents emphasize the necessity of making women's achievements more visible (57.3%) and the implementation of mentoring programs (47.6%) and as crucial steps. Additionally, there is important call for opening positions for underrepresented genders (35.4%), and quotas for leadership positions (29.3%) (SDG 5, Target 5.5). Several responses from the 'Others' category emphasize that a cultural change within institutions to combat patriarchy (SDG 5, Target 5.1, 5.2).[8] Additionally, implementing safe reporting channels, providing better career support for women scientists, and ensuring equal opportunities and recognition in academia (SDG 5, Target 5.2) are crucial steps (see Figure 7).

Results from the interviews

Step 1: Familiarization with Data.

Six interview transcripts with senior academics from various academic institutions and research fields were used for thematic analysis. The academics interviewed are: Dr. Gulnara Dzhunushalieva (UCA) Eng. Lorena Sigüenza Guzmán, PhD (Ucuenca), Prof. Dr. Ramona Teuber (JLU), Dr. Miriam Lang (UASB), Dr. Maria Radkevich (TIIAME), and Dr. Lina Morrus (Los Andes). For the analysis, their initials were used: GD, LS, RT, ML, MR, and LM, respectively.

The interviewees highlighted the cultural and social aspects of their surroundings as key elements shaping their academic trajectories. They discussed their motivations for entering and staying in academia, as well as their journeys toward leadership roles. Additionally, they offered their perspectives on the situation of women in academia, discussing both opportunities and challenges at institutional, local, and regional levels. Finally, they provided advice for aspiring female academics.

Step 2: Coding, the initial codes identified are based on their recurrency:

Family Influence, Vocation, Opportunities, Curiosity, Early Leadership, Ambitions, Research, Impact, Transition, Self-Confidence,

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8 Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation.
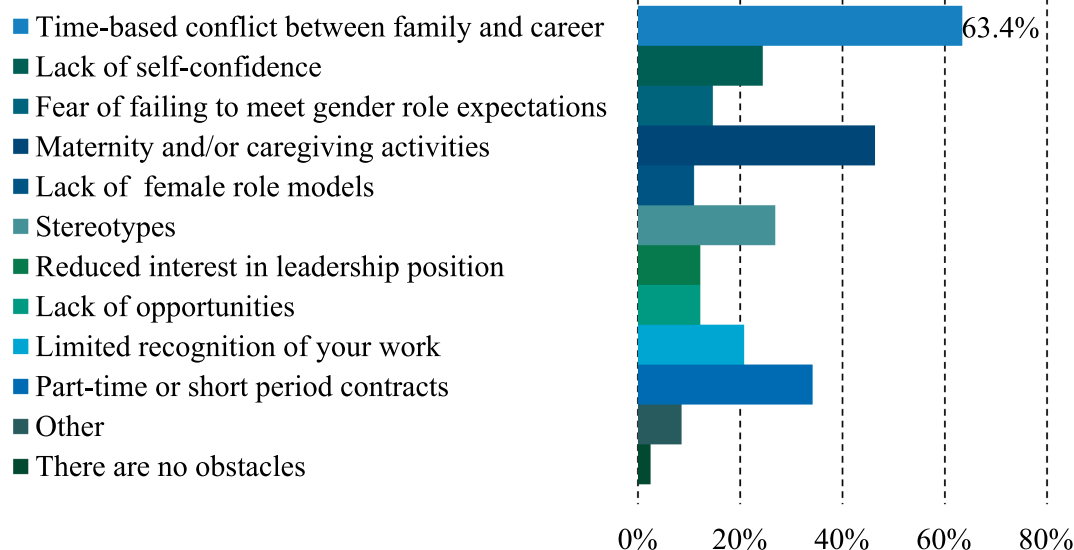
FIGURE 6
Bar-chart showing the obstacles perceived by participants in reaching leading academic positions. The x-axis displays the percentage of responses, with participants able to select up to five main obstacles.
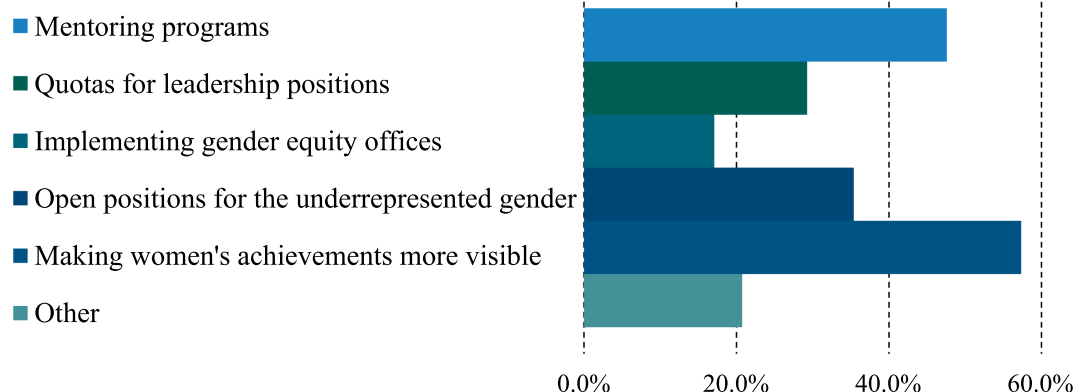

FIGURE 7
Strategies needed to achieve gender equality in higher education institutions. The chart illustrates the percentage of responses.

Advancement, Teaching, Leadership, Adaptation, Authenticity, Social Impact, Positions, Work-Life Balance Challenges, Discrimination, Equality, Biases, Salaries, Representation, Obstacles, Stress, Societal Influences, Contracts, Culture, Prejudices, Self-Sufficiency, Gaps, Perceptions, Stereotypes, Policies, SDGs, Support, Persistence, Overcoming Obstacles, Mentors, Networks, Training, Initiatives, Tools, Progress Needed, Confidence, Collaboration, Taking Risks.

Steps 3 to 5: Figure 8 illustrates the thematic analysis process, focusing on steps 3, 4, and 5: Searching for Themes, Reviewing Themes, and Defining and naming themes.

Step 6: Writing the report.

Motivations and early steps in academia

The motivations for entering academia varied among the interviewees. Some, like RT and LM, were drawn to academia early in their careers due to a passion for teaching, learning, and the variety of tasks that the academic environment offers. Others, such as LS and ML, entered academia after pursuing other career paths. These motivations included personal and family influences, such as having relatives in academia, as well as a deep curiosity and passion for research, teaching, and leadership. Many interviewees felt a calling or strong personal drive from an early age, benefited from good access to education (SDG 4, Target 4.3), and were motivated by a desire to make societal impacts through research and education. As ML stated, "The university could be a good place to enact dreams to transform society, I tried to make the world a better place in my previous and present occupations."

Professional/academic trajectory and experience

Their paths often involve a transition from other fields into academia, or maintaining parallel jobs, such as IT management or work with NGOs. Their experiences include changing institutions, roles, and working in different countries, reflecting their adaptation

FIGURE 8
Scheme for the thematic analysis: steps 3, Searching for themes; 4, Reviewing themes; and 5, Defining and naming themes. In step 3, initial codes (depicted in black) are organized into potential themes. Color coding is used to visualize the development of these themes as they advance from step 3 to step 5, leading to the final naming of each theme.
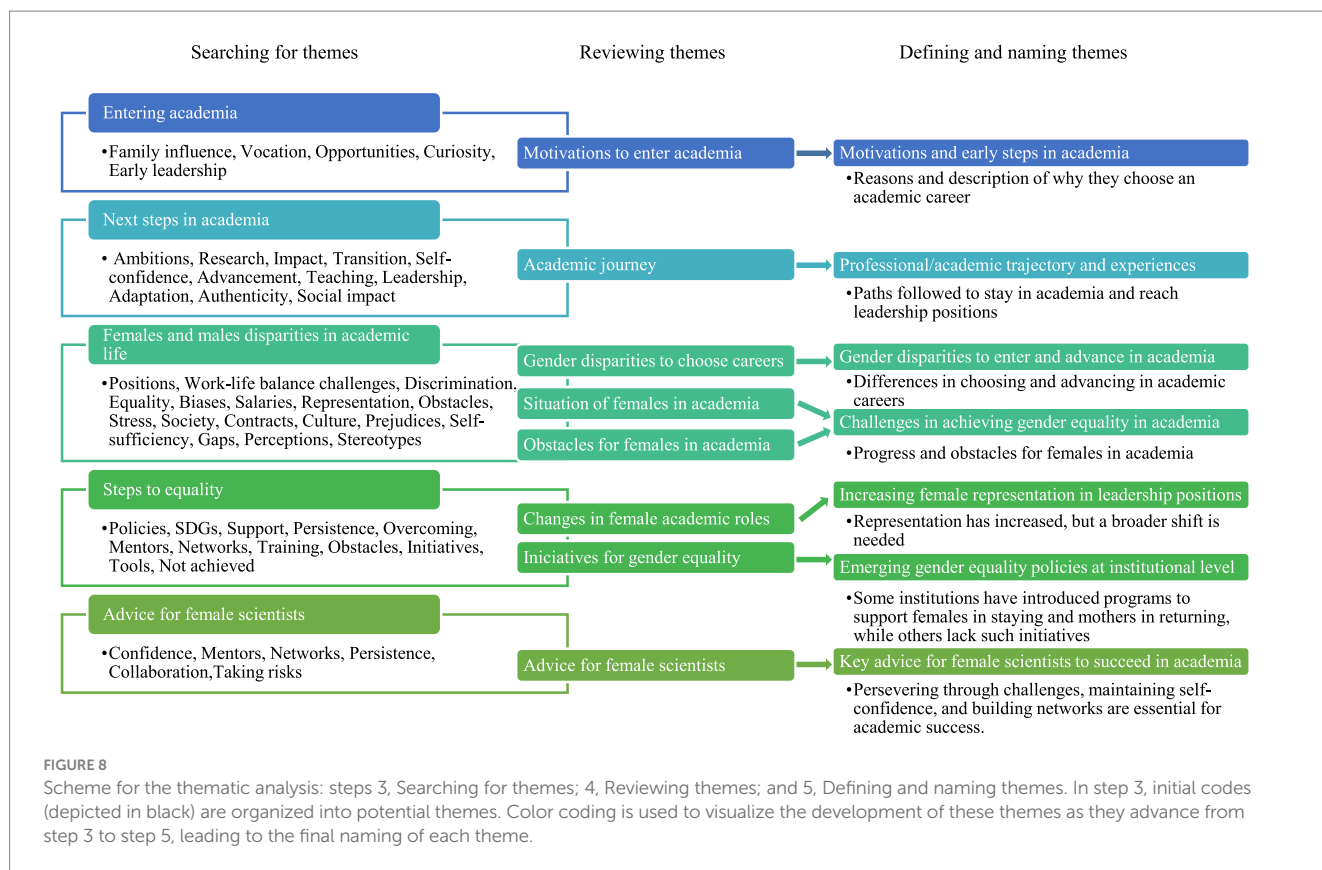
and career development. LS mentioned, "After completing my studies, I worked as an IT manager at a library. I then received a scholarship to pursue a PhD in Belgium, and in the middle of my PhD, a call for a Professorship position opened up. I applied and got it (…) now, I am the first-ever female dean of the Engineering Faculty at the University of Cuenca." Several interviewees highlighted pivotal moments of transition, such as balancing family responsibilities with career advancements (SDG 5, Target 5.4) or transitioning between different academic institutions and research focuses.

Gender disparities in entering and advancing in academia

Almost all interviewees agreed that both men and females are equally attracted to academia. However, staying in academia and reaching leadership positions is still more accessible for men due to historical and traditional reasons (SDG 5, Target 5.5). While men are often perceived as more drawn to academia, personal and professional motivations are similar across genders. As ML stated, "Women and men are equally attracted to academia, but females get frustrated on their path and leave, they have weaker positionsweaker positions. There are women professors, but they often have more precarious contracts, less stability, and less authority in their positions. It is still a patriarchal space in Latin America and Europe, in Germany as wel" highlighting the structural obstacles females face in reaching leadership positions. RT mentioned, "People like to hire similar people, if there are only men, they hire more men, they consider the candidate that is most similar to them" explaining that if there are only men in leadership, they tend to hire more men. In addition, females face more obstacles in advanced stages, including stereotypes about female behavior and traditional

attitudes. MR mentioned, "The main obstacle is the traditional attitude toward females. Despite the fact that officially everywhere they talk about equal rights and even priority support for women in the academic sphere, in reality men are not always ready to submit to a female leader… In addition, women themselves are often reluctant to take on leadership positions so that they can devote more time to raising children" Females encounter resistance from male colleagues and subordinates and are often perceived as leading differently, such as being more emotional. However, as RT pointed out, "there are stereotypes about how women lead, such as being more emotional, but it is not bad to lead differently."

While there were notable examples of progress in gender representation—such as MR observing increasing opportunities for females in technical fields in Uzbekistan—challenges like gender disparities in leadership positions persisted across contexts. LS's observations in Ecuador and ML's experiences in Germany and Latin America highlighted ongoing gender gaps in academia despite incremental changes.

Challenges in achieving gender equality in academia

"There are many obstacles, but not so tangible (…) and you breathe patriarchal air at university… In teaching plans and syllabi, I have noticed that not a single woman is cited in the literature. I feel like there's an inner laziness to change this, to actively look for female authors… there's also a prejudice that women's papers are of lesser quality" ML said. LM mentioned, "At the university, there are many biases and mental models of what a woman is supposed to be." Some challenges mentioned include subtle discrimination, precarious contracts, and prejudice that women's research is of lesser quality (SDG

5, Target 5.1). All interviewees pointed out the reduced number of female colleagues in the advanced stages of academic careers. Nearly all interviewees highlighted that raising children and having a family is the major challenge for women in academia. It is embedded in society to see women as the main caregivers (SDG 5, Target 5.4). LS mentioned, "People who hire assume that men can work later hours than women and do not need time off for children." During recruitment, some interviewees mentioned being asked about plans for having and caring for children. GD stated, "As an academic, you travel a lot, but as a mother, you do not want to go when your children are ill." RT expressed however that a change in the perspective on mothers is also important, "You can be very good even if you do not attend every meeting and conference, it os ok to leave early… I have felt more relaxed working full-time in Denmark than part-time in Germany. However, I have noticed that there are slowly changes in Germany as well, with more flexibility for mothers depending on the leader of the working group."

Increasing female representation in leadership postions

There is an overall positive perception among the interviewees regarding the progress in the representation of women in leadership roles in higher education (SDG 5, Target 5.5). LM stated, "I see that there are many gaps to be filled, but many leadership positions have now been taken by women. I feel that this is a good sign for change. If you dream big, maybe the institution will support you." Institutions are appointing Rectors, Presidents, and Deans in STEM fields for the first time. However, while a transformation process has begun, having women in such positions does not necessarily indicate a successful transformation in gender equality. It is a gradual process that still faces significant challenges. What was once a dream is now seen as a positive sign and a step towards gender equality. ML mentioned, "There are female professors, but they often have more precarious contracts, less stability, and less authority in their positions (…) it is still a patriarchal space." MR noted, "Everywhere we talk about equal rights and even priority support for women in the academic sphere, in reality, men are not always ready to submit to a female leader." Despite this, LS pointed out that there has been an improvement in the acceptance of women in leadership roles, regardless of initial cultural beliefs and structural attitudes against it. Women's empowerment movements have contributed to these changes. Some interviewees also highlighted differences between public and private institutions and their political commitment to either advancing or restricting the path for women to leadership positions. GD remarked, "It is easy to choose female leaders in private universities."

Emerging gender equality policies at the institutional level

The interviewees expressed that gender equality initiatives are in the early stages or emerging as mainstream concerns to create a more inclusive and fair environment (SDG 5, Target 5.5). Some institutions are introducing grants, establishing equal opportunities offices, and implementing policies to address sexual harassment and gender violence in the academic context (SDG 4, Target 4.a[9] and SDG 5, Target 5.2). MR

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9 Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all.

mentioned, "Grant places for girls are allocated in universities, and free education for women in master's degree programs is provided," and RT agreed with the creation of a "gender equality office" but not a "women's office." RT also noted that initiatives such as gender equality concepts and recruitment groups focused on equal opportunities are being established at JLU. Additionally, there are movements and networks for women in research, including mentoring programs for women in science, as stated by LS and MR. However, even with these structures in place, some interviewees indicated that an unwelcoming environment from colleagues persists for women of childbearing age or those with caregiving responsibilities (SDG 5, Targets 5.1 and 5.4). Unfortunately, other institutions lack policies or programs to support females (ML), mothers returning to academia, and those with family caregiving duties.

Key advice for female scientists to succeed in academia

The interviewees offered advice for women starting careers in science, highlighting the importance of perseverance, self-belief, and networking. They encouraged women to trust their abilities, manage stress, and persist through challenges. GD emphasized the importance of deep specialization: "Be very specific and deep in one area to ensure you give something valuable to the world." RT encouraged women to overcome fear and pursue their path: "Do not think too much about what could go wrong. If you want to go this way, you will find a way." MR advised "It is not a good idea to start this career for those who are not ready for difficulties. You need to be prepared for stiff competition, bureaucratic procedures, huge problems with finding information, lack of funding and laboratory equipment. If you want to do science, you have to rely only on yourself…" LS advised women to overcome their doubts and have confidence in their abilities: "We can do it!" ML highlighted the value of networking and collaboration: "Do not try to do it alone! Team up with former students and teachers. It's time-consuming but enriching."

The mapping of specific SDG 4 and 5 targets in our results shows that not all targets are closely related to our research, but several have been highlighted in key aspects in our quantitative and qualitative results. For SDG 4, the focus includes targets: 4.3, 4.4, 4.5, and 4.a. For SDG 5, the relevant targets include 5.1, 5.2, 5.4, 5.5, and 5.c. Overall the most frequently related targets are linked to SDG 5, particularly 5.5 'Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life', 5.1 'End all forms of discrimination against all women and girls everywhere', and 5.4 'Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate'.

Discussion

The analysis of female representation in higher education from 1992 to 2022 shows steady progress toward gender parity in Europe, partly driven by initiatives such as gender equality policies and the implementation of GEPs in higher education institutions (European Commission: Directorate-General for Research and Innovation, 2021; Rosa and Clavero, 2022). In Germany, the progress has been slower but consistent. While enrollment parity has been achieved, parity

among higher education teachers is projected for 2051, with longer timelines likely for other academic positions including researchers, and leadership roles. In line with our findings, the European Commission: Directorate-General for Research and Innovation (2021), reports that Germany ranks 28th among EU countries for females in top research positions and 19th for female heads of higher education institutions. Despite the widespread adoption of frameworks like Germany's Excellence Initiative (Riegraf and Weber, 2017) and GEPs, noteworthy institutional and cultural shifts in universities have been limited (Rosa et al., 2020). Critics argue that the effectiveness of GEPs is hindered by the dynamic and complex academic landscape, influenced by emerging social movements (Gilligan and Richards, 2018; Grosser and McCarthy, 2019; Subašić et al., 2018) and increased focus on intersectional perspectives on gender inequality and discrimination (Woods et al., 2022).

As previously mentioned, detailed studies on gender equality initiatives and policies primarily come from developed countries (Klenk et al., 2022). However, major efforts have also been made in developing countries in Latin America & Caribbean. Although there is no unified regional plan, individual policies are being implemented. Our findings on female student enrollment in this region reveal a positive increasing trend, consistent with Mella San Martin (2021). This trend exceeds those observed in Europe. Countries like Colombia and Ecuador have shown a constant upward trend, outperforming Germany. In Colombia, this trend can be driven by the Law of Gender Equality (Franco-Orozco and Franco-Orozco, 2018) and in Ecuador by the Organic Law on Higher Education (LOES) (Salazar et al., 2019). Gender parity among teachers in Latin America & Caribbean remains below European trends, with projections indicating parity might be reached by 2080, Colombia by 2063, and Ecuador by 2036. A similar situation is observed for female researchers, where gender equality in academia and science remains elusive in this region. Other studies aligns with our findings showing persistent gender disparities in Latin American countries (Franco-Orozco and Franco-Orozco, 2018; Maheshwari et al., 2023).

Central Asia presents a mixed picture regarding gender equality in student enrollment. While this region shows a positive trend, it is lower than in Latin America & Caribbean and Europe, and achieving parity in enrollment remains challenging (UNESCO, 2021). The gender issues in Central Asian countries are strikingly different from those in other parts of the world, with societal resistance to gender equality ideology (Zharkynbayeva et al., 2020). Kyrgyzstan has consistently surpassed gender parity, contrasting sharply with Tajikistan and Uzbekistan, where female students are underrepresented in higher education institutions, aligning with findings of Zharkynbayeva et al. (2020). This disparity within the region can be attributed to differences in national policies and economic conditions. Notably, Kyrgyzstan became the first post-Soviet country to adopt the Law on the Basics of Social Perspectives: Gender Equality in Central Asia in 2003.

Regarding teachers, Central Asia surpasses Europe and Latin America, influenced by the high female participation in Kyrgyzstan, while other countries in the region lag significantly (UNESCO, 2021). Similarly, Kyrgyzstan leads in research participation, tripling the rates of Tajikistan and Uzbekistan. Historically, in the Soviet Union, Central Asian women had broad access to education and made up a significant part of the workforce. However, they were largely excluded from leadership roles (Zharkynbayeva et al., 2020), which may still affect the region today.

In discussing the female-to-male ratio of female researchers across all research sectors and in higher education, most countries show similar ratios. However, Kyrgyzstan stands out with lower ratios in the business enterprise and government sectors, which explains the reduction in the total relative to higher education ratios. Similarly, Germany also shows a notably lower ratio in the business enterprise sector.

A major limitation in assessing institutional-level information is the scarcity of publicly available data on the gender composition of students, academic positions, and leadership roles within higher education institutions. This challenge reflects systemic issues in data transparency and accessibility in some regions, which can result in an incomplete representation of gender realities. In addition, this highlights the disparities in information-sharing practices among institutions and regions, and underscores the need for governments to implement policies that improve the implementation of standardized data reporting practices to ensure more accurate and comprehensive records, facilitating better analysis and policy development to address gender disparities.

Although at JLU female students are in the majority and gender parity has been achieved in Postdoctoral research positions and Junior Professor roles, progress to faculty roles, particularly Full Professorships, remains slow reflecting the glass ceiling and sticky floor definitions. Women have consistently earned the majority of academic degrees, but men are primarily filling the top academic positions. This suggests that while targeted initiatives at JLU and within the national framework may be effectively addressing some barriers to gender balance in academia, noteworthy challenges persist. This observation is consistent with a substantial body of literature that highlights the mechanisms affecting women's advancement in academia (Diehl and Dzubinski, 2017; Lerchenmueller and Sorenson, 2018; Yousaf and Schmiede, 2017) and leadership in higher education (Klenk et al., 2022).

Overall, the study cases have shown a steady or positive trend in female student enrollment and in the number of academic staff, although gender disparities become pronounced with advancement in the academic career (Franco-Orozco and Franco-Orozco, 2018). Therefore, our findings reflect the *leaky pipeline* effect (Pandit and Paul, 2023; Yousaf and Schmiede, 2017). Our results also align with studies showing that the participation of female students in higher education in developing countries is lower compared to developed countries (CohenMiller et al., 2022). Particularly in developing countries, where socioeconomic factors like low per capita income and systemic inequities severely restrict higher education and career advancement opportunities. Regional variations in progress toward gender equality indicate that local initiatives and institutional structures may be crucial in this process. However, individual institutions usually lack the resources to track and measures impact of such initiatives (Bothwell et al., 2022). It is important to recognize that national or regional frameworks could unify and standardize these dispersed initiatives, consolidating policies and creating cohesive action plans. Thus, such policies could be understood as tools for shaping progress in gender equality in higher education (Klenk et al., 2022) enabling monitoring and comparison as in the case of the GEPs in the European Union. Moreover, there needs to be a shift in approach from merely monitoring females' enrollment in higher education to actively tracking their progress and success throughout their academic careers.

The predominance of families of origin from urban areas with high levels of parental education influences participants' access to higher education. This is supported with the fact that parental aspirations and support play a crucial role in shaping academic trajectories and educational decision-making (Castro et al., 2016; Jung and Lee, 2019; Rughoobur-Seetah, 2019). An add-on from the interviews results highlights once again the crucial role of family influence in entering and succeeding in academic careers (Castro et al., 2016).

Female respondents to the survey widely perceive that they develop their careers in male-dominated academic environments. Although they have achieved significant milestones and some have taken on leadership roles, they remain underrepresented in research leadership and decision-making positions. They clearly aspire to reach higher academic ranks, such as Full Professors, research group leaders, Presidents and Rectors, and improve their institutions. This aligns with existing literature, which suggests that to succeed, women often need to perform within a masculine context and conform to pre-established masculine behaviors deemed characteristic of successful leadership (Cañas et al., 2019; Haveman and Beresford, 2012). While interviewed participants do not view their gender as a barrier to developing leadership identities, the masculine academic culture resists accepting leadership styles typically associated with women (Bhatti and Ali, 2021). The adaptation to masculine standards can limit their ability to develop an authentic leadership identity and to be recognized as effective and genuine leaders in academia (Madsen and Longman, 2020). Additionally, the interviews shed light on the demystification of leadership styles, indicating that leading differently is not only acceptable but also beneficial. This aligns with the increasing recognition of the added value that gender-balanced leadership and diversity bring to leading higher education institutions (David, 2021; Rosa et al., 2020). Therefore, it is crucial to continue implementing gender-sensitive policies at universities to avoid perpetuating masculine academic discourse and to celebrate diverse forms of leadership.

While progress has been made towards gender equality in academia, the survey results show that it seems inadequate, as many other studies. It highlight that gaps persist. A considerable number of respondents reported experiencing gender-based disadvantages, resulting in lower recognition of their scientific contributions. Similar outcomes were evidenced from the interviews, where participants emphasize no so tangible obstacles but for example prejudice that women's research is of lesser quality. Moreover, institutions, have not effectively achieved gender equality nor actively promoted the retention of women in academia, both with and without children. These findings align with broader research indicating that higher education institutions often manage gender diversity challenges reactively, rather than proactively addressing them (Pandit and Paul, 2023).

The outputs reveal that major obstacles to advancing to leadership positions are closely related to the time-based conflicts between family and career duties, and disproportionate responsibilities of maternity and caregiving activities traditionally assigned to women. This output aligns with existing literature highlighting deeply ingrained cultural expectations about gender roles—not merely a matter of choice, but one where choices are constrained by culture—as a fundamental cause of observed differences in educational attainment and job preferences (Haveman

and Beresford, 2012). Deeply ingrained cultural norms and oral traditions in some regions perpetuate caregiving responsibilities as predominantly female roles, further hindering women's career progression. Additionally, concerns about fairness in selection processes, sexism in academia, and economic disparities affecting career choices were noted by respondents, consistent with prior studies that emphasize structural barriers, such as those in hiring processes (Reuben et al., 2014; Sheltzer and Smith, 2014). The tendency to hire and promote individuals who are similar to oneself perpetuates this imbalance, further hinder women's academic careers as mentioned on one interview. In neoliberal universities, gender equality policies are often undermined by a merit-based system that is claimed to be gender-neutral but, in practice, favors men. This system exacerbates the challenges of balancing paid work and personal life, negatively impacting women in academia (Ivancheva et al., 2019). Nonetheless, advances in gender equality have shown an inverse trend in hiring processes in a study conducted in the USA (Williams and Ceci, 2015).

Regarding the measures needed to achieve gender equality in academic institutions, the results indicate that although emerging efforts, such as new gender equality policies and support networks, represent promising steps forward, these initiatives are still in their early stages and require sustained effort for significant change. The majority of respondent's view emphasizes that increasing the visibility of women's work and implementing mentoring programs as crucial steps to work on. Visibility is closely linked to power (Lewis and Simpson, 2012) and systems of recognition and reward within organizations, where favorable visibility increases the likelihood of employees' successes being recognized and rewarded (Turner et al., 2008). Furthermore, other studies have identified a common obstacle as the lack of mentors during the ascent to higher leadership positions, underscoring the need for both formal and informal mentoring programs as opportunities to support women in academia (Ballenger, 2010; Cañas et al., 2019; Searby et al., 2015). From the interviews, results emphasized the importance of support networks and persistence and resilience as key elements to succeed.

Despite ongoing efforts to align policies with the 2030 Agenda, significant challenges persist for SDGs 4 and 5. Our study indicates that many targets are hindered by ineffective contexts, limiting their impact. Insufficient progress in areas such as women's equal participation and leadership, elimination of discrimination, and the valuation of unpaid care work further complicates achieving these goals. Current trends suggest that gender parity and related objectives might be further off than 2030. This calls for a reassessment of the UN's targets and a re-evaluation of strategies to ensure progress towards gender equality in education and leadership in the near future.

As a final piece, a comprehensive conceptual model (Figure 9) has been developed based on our study. It will help identify the factors influencing female participation in higher education and leadership. This model illustrates the trends in enrollment and faculty representation, highlights gaps in senior roles, and addresses the impact of gender biases and institutional lag. It also outlines key challenges such as balancing family and career, and the need for structural and cultural transformation. By presenting strategies for improvement, aligning with SDG targets, and reviewing relevant laws and policies, the model provides a holistic view of the current landscape and opportunities for advancing gender equality in academia.
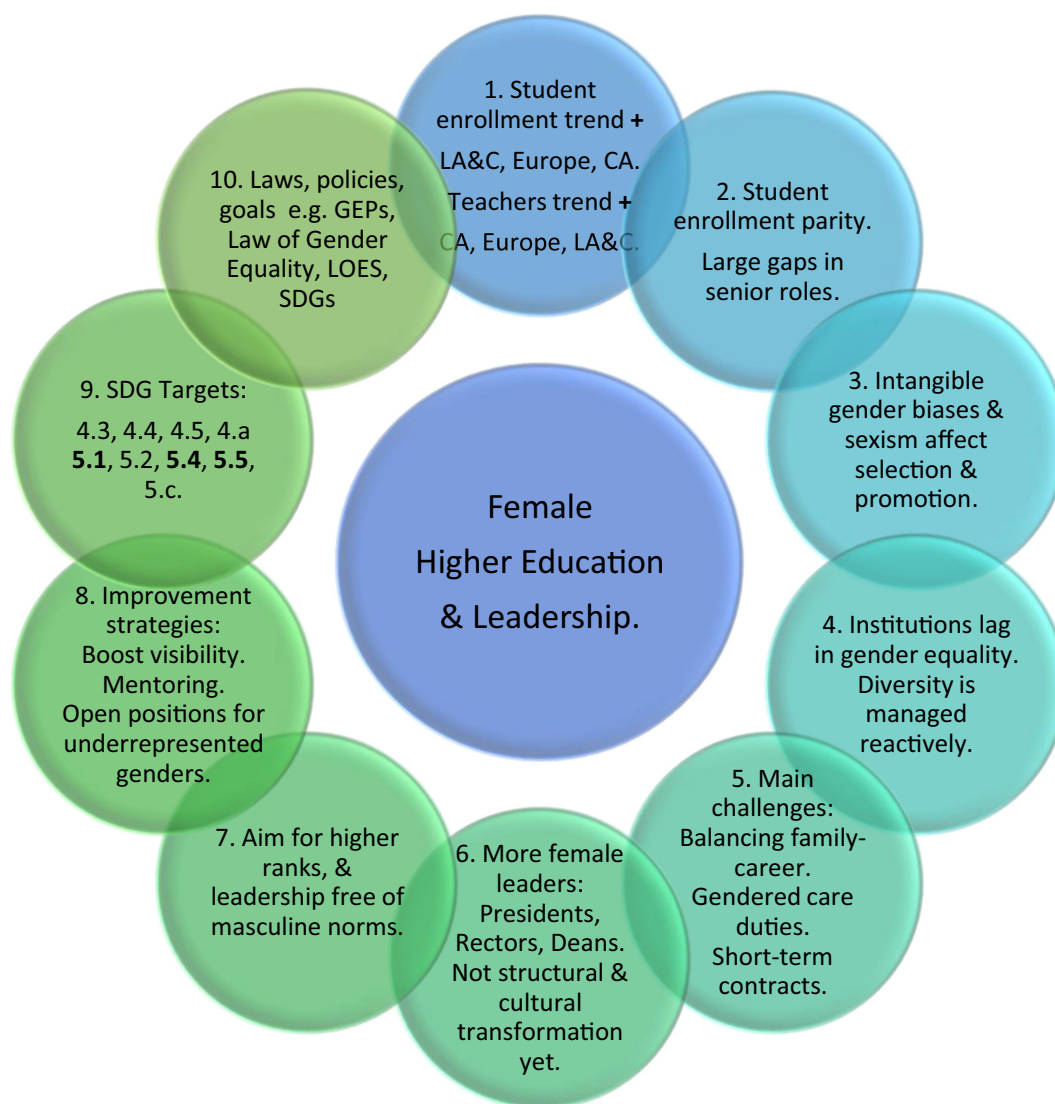
Conceptual model of factors influencing female participation and leadership in higher education. LA&C refers to Latin America & Caribbean, and CA to central Asia.

Conclusion

Although there is observable progress in female participation in higher education globally, this advancement is slow. The policies implemented have not significantly accelerated gender parity, and the projected years to achieve this equality extend beyond 2030. Internal variations within regions may be greater than the differences between regions, highlighting the need to analyze realities at smaller scales for a more accurate understanding.

The increase in the proportion of women in higher education teaching roles is evident in many regions. However, gender equality in academic leadership positions remains a significant challenge. Despite advances at junior levels, parity at the professor level is still far from being achieved in most institutions.

Perceptions of the obstacles faced by women in the academic environment are surprisingly similar across institutions, regardless of regional and cultural differences. Key barriers include work-life balance, lack of role models, and perceived disadvantages due to gender.

Senior academics emphasize the importance of perseverance, networking, and specialization to overcome ongoing challenges related to gender stereotypes and traditional attitudes. While there have been advancements, women continue to face significant difficulties in achieving and maintaining leadership positions without male standards.

Several SDG targets appear to be related to ineffective contexts, limiting their impact. Insufficient progress is evident in areas such as equal female participation and leadership in higher education, the elimination of discrimination, and the valuation of unpaid care work, further complicating the achievement of these goals. Current trends suggest that gender parity and related objectives will not be achieved by 2030, necessitating a review of strategies and policies to ensure significant progress towards gender equality in education and leadership in the near future.

Limitations

We acknowledge the limitations of this study. Due to the limited number of participants, we cannot express results as representative of the institutions themselves, but only of the participants affiliated with those institutions. Nevertheless, this study has helped us outline similarities and differences in trends and perceptions across various cultural and regional contexts, as well as issues related to public information accessibility. The mapping methodology used outlines the relationship between findings and SDG targets, but it also highlights the need for careful interpretation and potential additional review to ensure comprehensive coverage of relevant objectives. Regarding gender parity projections, numerous external variables could potentially affect these predictions; however, they are beyond the scope of this study.

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.

Ethics statement

Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

Author contributions

AC: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Visualization, Writing – original draft. MG: Methodology, Writing – review & editing. JO: Data curation, Formal analysis, Methodology, Visualization, Writing – review & editing.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/feduc.2024.1485395/full#supplementary-material

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Students with disabilities in higher education call for personal empowerment, equitable inclusive systems, and individualized accommodations

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Introduction: The number of students with disabilities in higher education is increasing, but research shows that they continue to face significant challenges for equitable participation. This study aims to deepen our understanding of these challenges through the perceptions of students with disabilities themselves.

Methods: Participants were students with disabilities enrolled at the University of Malta. Data was collected through a student survey with quantitative and open-ended questions and semi-structured interviews with students on their aspirations, on how far they felt enabled to participate in the university academic and social environments, and on how useful were the individual accommodations provided for their equitable participation. The online questionnaire was completed by 51 students constituting 21% of the total relevant population, while four semi-structured interviews were held with autistic students.

Results: The findings firstly showed that these students considered the university as mainly an opportunity for self-development but experienced significant difficulties during their transition to and at the university for developing a healthy self-identity in the ableist university environment. Secondly, students called for the teaching system to be more pedagogically effective and sensitive to diverse student needs and for their involvement in the development of appropriate facilities for students. Thirdly, they reported that individual accommodations were necessary for their equitable participation and called for less bureaucratic processing of applications, individual negotiation of accommodations, and a system for informing lecturers of students' needs.

Discussion: The study suggests that higher education institutions should listen to the concerns of students with disabilities and involve them in curricular and environmental planning. They need to create a diversity respectful ethos and socio-emotional support that promotes everyone's membership in the university community, while adopting a universal design for learning mindset

that is open to the diverse needs of students and providing a smooth system of accommodations for other individual needs.

1 Introduction

An increasing number of students with disabilities are enrolled in higher education (HE) across the world [UNESCO and The Right to Education Initiative (RTE), 2022]. In Malta too, following the implementation of inclusive education in compulsory schooling, the number of students registered as having a disability at the University of Malta has been increasing, rising from 98 (0.83% of all students in 2016) to 383 (3.1% of all students in 2023). However, such students may often feel unwelcome in the ableist HE environment which is still seen as "the space for society's most able, physically, mentally, and otherwise—not a place to admit to any weakness or challenge" (Dolmage, 2017, p. 96). This study aims "to ensure that persons with disabilities are able to access general tertiary education… on an equal basis with others" [UN General Assembly, 2006, art. 24(5)].

This study was undertaken by the ACCESS-Disability Support Unit of the University of Malta to understand better the challenges and needs of students with disabilities and medical and mental health conditions for their equitable participation.

While the Unit is mainly concerned with providing students with individual accommodations, this study adopts an inclusive education lens that calls for a rethinking of the design of curricula and instruction, the physical and social environment and activities and services to make them accessible to the needs of the diversity of students (Zorec et al., 2024). This implies the application of Universal Design in HE (Burgstahler, 2021) which has been widely used as an appeal for systemic access to learning termed Universal Design for Instruction (Scott et al., 2003), or Universal Design for Learning (UDL). UDL has become a prominent feature of the policies of HE globally as they respond to the requirements of the UN Convention on the Rights of Persons with Disabilities (UN General Assembly, 2006), or to national legislations such as the Higher Education Opportunity Act (Madaus et al., 2012) in the US, and similarly in Canada, Europe, and Australia as part of the required efforts to enhance accessibility and inclusivity in education. This call has greater importance because it addresses the needs of both students with recognized disabilities as well as those of many others with unrecognized needs (Jansen et al., 2017). Inclusive systems, rather than individual accommodations, ensure equal valuing of all when "differences are valued as resources, and customs emerge through the co-creation of inclusive conditions under which all can thrive" (Cook-Sather and Cook-Sather, 2023, p. 1). However, there is currently more literature on its desirability than its implementation. The recently updated UDL guidelines detail three principles, namely (1) *Engagement*, such as by "centering, affirming, and sustaining learners' interests and identities"; (2) *Representation*, such as by "valuing multiple ways of knowing and making meaning"; and (3) *Action and Expression*,

such as by "honoring and valuing a wide variety of forms of communication" (CAST, 2024). It may be most effective to use UDL, not as a checklist, but rather as a mindset for enabling the participation of all students: "Universal Design is not a tailoring of the environment to marginal groups; it is a form of hope, a manner of trying" (Dolmage, 2017, p. 116). The aim of this study is therefore to highlight the need for such a mindset.

At the same time, while working toward UDL, the way in which many students with disabilities have been enabled to follow HE successfully has been through the provision of individual accommodations, even if this falls within a deficit model of disability (Zohri and Bogotch, 2023). The process of obtaining needed accommodations is also worth studying because for students it is "complex, uncomfortable, and riddled with barriers" (Ristad et al., 2024).

The focus of this study is on how the students themselves perceive their HE experience. There is an increasing amount of literature on student voices. A search of the major international databases at the University of Malta identified 10 systematic reviews published between 2017 and 2022 that reported relevant studies. These addressed four major relevant student concerns: general reviews of the provision of accommodations for students with disabilities (Brown et al., 2021; Lindsay et al., 2018; Moriña and Biagiotti, 2021); the experiences of students with mental health conditions in HE (Elharake et al., 2022; Reis et al., 2022; Sanderson et al., 2020; Sheldon et al., 2021); the use of Assistive Technology (AT; McNicholl et al., 2021) and online learning (Reyes et al., 2021); and post-secondary education transition programs (Lindsay et al., 2018). While all the reviews touched on relevant issues, they were limited in focus or in the range of studies and only Moriña and Biagiotti's (2021) review addressed more widely the two issues relevant to our purpose, namely what they termed "internal" and "external success factors" for students with disabilities in HE. They identified six internal factors, namely "Self-Determination, Self-Advocacy, Self-Awareness, Self-Discipline, Self-esteem, and Executive Function," and eight external factors, namely "Family support, Moral support, Financial support, Social support, University support, Disability services, Staff and faculty support, and Peer social support" (p. 5). Even in this review, however, there was limited consideration of students' perception of how the university system facilitated or created barriers to learning and belongingness; no reference was made to issues of stigma.

We therefore carried out a systematic scoping review of issues related to student equitable participation in HE through a search of three relevant databases (PsycINFO, ERIC, and Web of Science), using the following terms (disab* OR "mental health" OR inclus* OR access* OR accommod* OR adjust* OR transition; in title); AND ("higher education" OR tertiary OR university OR college OR "post-secondary education" OR undergraduate; in title); AND

student* (in abstract). This led to a review of 133 studies, published from January 2017 to February 2022, reporting the experiences of students with disabilities from HE institutions in countries across the world, comprising a total of 12,202 student participants (Bartolo et al., 2023). Over half of the studies included students with various disabilities with the rest focused on a single disability: physical disability (7), visual impairment (12), hearing impairment (1), Attention Deficit Hyperactivity Disorder (ADHD; 3), Autism Spectrum Condition (ASC; 13), Learning Disabilities (LD) or Specific Learning Difficulties (SpLD; 8), medical conditions (2), and mental health conditions (9).

A qualitative thematic analysis of the studies led to the identification of three main concerns of students with disabilities in HE. Firstly, we found that a crucial component of the student higher education experience was the development of their own self-identity. Students underlined the importance of self-development, their struggle with stigma and disclosure of their disability, and their trajectory into and through higher education toward autonomy and career prospects (Abes and Wallace, 2018; Vaccaro et al., 2018). The development of self-determination and self-advocacy skills was regarded as an essential element of success as had been reported in Moriña and Biagiotti's (2021) review.

Secondly, the studies described how students struggled for full membership in the university community, calling for a transformation of university physical, social and teaching environments for them to access and participate in academic and social activities—all issues related to UDL. Indeed, UDL was mentioned in 51 of the reviewed studies and was a main focus of five of them (Griful-Freixenet et al., 2017; Ndlovu, 2021; Nieminen and Pesonen, 2019; Wilkens et al., 2021; Yusof et al., 2020). The first and third of these examined whether student needs were addressed through UDL. One important finding was that "several elements perceived as effective to some students were perceived at the same time as barriers to others" (Griful-Freixenet et al., 2017, p. 1634). What all the students agreed was important was "a positive instructional climate open for communication, formative feedback provided in a frequent, timely and specific manner, and feeling engaged in cooperative learning exercises and group discussions" (p. 1642).

The third main finding of the scoping review was that, while calling for systemic accessibility, students with disabilities still perceived individual accommodations as necessary and helpful for their equitable participation. "Accommod*" was mentioned 3,087 times in 113 of the studies. However, students also reported that they were frequently hesitant to request accommodations because of stigma. They were trying to balance their need to develop autonomy, also in preparation for employment, with their sorely needed individual course and test access arrangements to create a fair playing field for them (Sarrett, 2018). There were some difficulties and accommodations that were common to all categories, such as the processing of tasks being more time-consuming and laborious for various reasons, necessitating extra time during assessments or extended deadlines for assignments (Gelbar and Madaus, 2021). Students also suggested that accommodations should be based on the individual's needs rather than diagnostic categories (e.g., Fox and McNally, 2018), and best negotiated with themselves (e.g., Accardo

et al., 2019). The services of an efficient disability support office that ensured information and implementation were also highlighted (Moriña and Perera, 2020).

The findings of this systematic scoping review were very relevant to the University of Malta's (UoM) attempts to meet the needs of students with disabilities. The UoM is a middle-sized university serving as the only public university of the Maltese Islands. It has a 400-year history and hosted 12,354 students across 14 Faculties in 2022–23, including over 1,000 foreign students. The UoM has an Equity, diversity and inclusion policy (University of Malta, 2023) and has for the past three decades been developing services for students with disabilities in the form of accommodations, termed "Access Arrangements" (University of Malta, 2018). It has an administrative unit that is dedicated to the provision of such arrangements—the ACCESS Disability Support Unit (ADSU; University of Malta, n.d.). There is also a Student Health and Wellness Unit which offers mainly counseling services. While initially ADSU served students with developmental and other disabilities, in recent years it started serving also an increasing number of students with mental health difficulties in line with the UN Convention definition of disability (UN General Assembly, 2006, art. 1). However, even for these students, it is mainly focused on providing them with accommodations. The findings from the systematic scoping review about students' concerns about their personal and social development in HE provided a new insight. This issue was highlighted also in another systematic review that found that university services for students with ADHD were "disproportionately weighted toward academic support considering their emotional challenges and potential difficulties to access the labor market" (Álvarez-Godos et al., 2023, p. 11).

Thus, the present study adopted the review's three-themed framework for equitable access to higher education by students with disabilities, namely, the provision of opportunities for healthy personal identity development, the universal design of physical, social and learning environments, and the provision of accommodations for individual student needs. These were formulated into the following research questions: (1) How do students perceive their personal experience and trajectory at the university? (2) How inclusive do students consider the University teaching and campus environment? (3) How helpful do students consider the accommodations provided for students with disabilities?

2 Method

A mixed method approach was adopted to provide a more complete and valid account of the students' perceptions of their university experience. It uses the strength of the generalizability of the quantitative approach with the strength of the meaningfulness of the qualitative approach (Venkatesh et al., 2013). Thus, we aimed to achieve both a representative account of the general student perceptions of the level of inclusivity and supportiveness of the university structures and processes, as well as deeper explanations of those perceptions. Given the findings from the systematic scoping review, it was decided to carry out the quantitative (survey)

and qualitative (interviews) investigations concurrently. The study was approved by the University Research Ethics Committee.

2.1 Data collection tools

The survey comprised four question categories with likert-scale or multiple-option lists of items: demographics including student gender, faculty, age, level of study, and disability, medical or mental health condition (5 questions); aspirations and transitional processes from compulsory education to higher education and to future life (5 questions); inclusiveness of social and academic systems at University (3 questions); the experience of accommodations provided for coursework, for examinations and for remote learning (4 questions). Each question allowed for a final open-ended comment.

The interviews covered the same issues. They were offered only to autistic students who tend to have a variety of access and support needs (Sarrett, 2018) and their challenges were raised in Malta's autism strategy (Autism Advisory Council, 2021).

2.2 Participants

An invitation to complete the survey online was sent to all students whose request for accommodations had been processed during the first semester of 2022–23. It was sent through the University Registrar and only to those who had consented to receive such communications. Thus, it was emailed to 243 students, including 15 autistic students who were also invited to participate in an individual interview.

Survey respondents totaled 51, representing a "modest" response rate of 21% (Fleming et al., 2017). A higher rate could have been achieved if the invitation had been sent by the ADSU but such a path was not used due to ethical considerations, particularly as in the small Maltese community there are more challenges to confidentiality. However, though the sample was limited, it was regarded as being typical of the relevant student population with whom half the project team was actively engaged. Table 1 shows how the sample included students with a range of gender identities, from various faculties, institutes, and centers. Respondents also represent the major student groups who receive accommodations, namely those with ADHD, SpLD, and Autism, and various medical and mental health conditions. There were 20 (39%) students who reported more than one condition, such as ADHD and depression, SpLD and anxiety as also reported in other studies (e.g., Sarrett, 2018).

Four interviews of about an hour each were carried out with volunteering autistic students coming from different genders, different years, levels, and areas of study.

2.3 Data analysis

Content validity of the survey questionnaire was ensured through an expert panel review made up of the multidisciplinary project team who are all engaged in the field. In addition, a

TABLE 1 Main characteristics of respondents.

Characteristics	Frequency	
	N	%
Gender		
Male	14	27.45
Female	33	64.71
Other	3	5.88
Prefer not to say	1	1.96
Total	51	100
Faculty/Institute/Center		
Faculty for social well-being	15	29.41
Faculty of Arts	11	21.57
Science faculties	11	5.88
Law and Economics	7	7.84
Other (Education and ICT)	7	13.72
Age		
18–25 years	33	64.71
26 and over	18	35.29
Level of study		
Undergraduate degree	43	84.31
Postgraduate degree	8	15.69
Condition*		
Attention Deficit Hyperactivity Disorder (ADHD)	21	41.18
Anxiety and/or depression	21	25.49
Autism Spectrum Condition	10	19.61
Specific Learning Difficulties (SpLD/Dyslexia/Dyscalculia)	11	21.57
Other (mainly medical conditions)	27	25.49

*The total by condition (90) exceeds the actual number of respondents (51) because 20 ticked two or more conditions (up to 4).

cognitive interview was held with two students with disabilities to ensure proper formulation of the survey questions and statements. Cronbach's Alpha results of all sections of the questionnaire ranged from 0.883 to 0.771, thus exceeding the 0.7 threshold value indicating good internal consistency between the items. Moreover, the vast majority of inter-item correlations were positive.

The quantitative results are mainly in terms of mean ratings of statements on a 5-point Likert scale, where 1 corresponds to "not at all satisfied," "not at all helpful," "strongly disagree," and 5 corresponds to "extremely satisfied," "extremely helpful," "strongly agree." Some included a "not-applicable" choice. Other results are in terms of the percentage of students who ticked items out of a list.

We used the Kruskal Wallis test to compare mean rating scores obtained for the different groups by gender, age, faculty, level of study, and disability for Likert scale questions. For instance, we compared the scores obtained by undergraduate

TABLE 2 General feeling as a university student, clustered by study level.

General feeling as a university student	Study level	N	Mean	Std. dev.	P-value
I like being at university	Undergraduate	43	3.74	1.136	0.990
	Postgraduate	8	3.75	1.282	
I feel very anxious when I come to university	Undergraduate	43	3.05	1.327	0.891
	Postgraduate	8	3.00	0.756	
I am concerned about others knowing I have a disability/medical/mental health condition	Undergraduate	43	2.74	1.311	< 0.001
	Postgraduate	8	1.50	0.535	
I feel that the university experience helps me to understand myself and the world around me	Undergraduate	43	3.49	1.077	0.114
	Postgraduate	8	4.13	0.641	
I find it easy to ask myself for the access arrangements I need	Undergraduate	43	2.81	1.350	0.044
	Postgraduate	8	3.63	0.916	
I feel welcomed by my peers	Undergraduate	43	3.58	1.006	0.149
	Postgraduate	8	4.13	0.641	
I feel welcomed by my lecturers	Undergraduate	43	3.56	1.053	0.149
	Postgraduate	8	4.13	0.641	
I feel enabled to participate in class processes	Undergraduate	43	3.60	0.955	0.958
	Postgraduate	8	3.63	1.188	
I feel that other students do not recognize my abilities	Undergraduate	43	2.65	0.897	0.272
	Postgraduate	8	2.00	1.512	
I feel that lecturers do not recognize my abilities	Undergraduate	43	2.77	0.996	0.030
	Postgraduate	8	1.88	1.246	
I feel alone at university	Undergraduate	43	3.00	1.309	0.043
	Postgraduate	8	2.00	1.309	
I feel very different from other students	Undergraduate	43	3.28	1.260	0.004
	Postgraduate	8	1.88	0.835	
I feel that my disability/medical/mental condition puts me at a great disadvantage at university	Undergraduate	43	3.28	1.241	0.032
	Postgraduate	8	2.25	1.035	

and postgraduate students on their feelings about their university experience (Table 2). The mean rating scores range from 1 to 5, where 1 corresponds to "strongly disagree" and 5 corresponds to "strongly agree," where a larger mean rating score implies a higher agreement. The null hypothesis specifies that the mean rating scores provided to the statement vary marginally between the groups and is accepted if the p-value exceeds the 0.05 level of significance. The alternative hypothesis specifies that the mean rating scores provided to the statement vary significantly between the groups and is accepted if the p-value is less than the 0.05 criterion. Thus, with a difference of $p < 0.001$, it was concluded that undergraduate students were significantly more concerned than postgraduate students about others knowing they had a disability/medical/mental health condition. Similarly, we looked at percentage differences among the different groups in the choices

they made from multiple-options lists (Chi Square test). The few significant discrepancies between the mean ratings of the different groups are reported below.

We used the Friedman test to look for any discrepancies in mean rating scores of different items within a question. For instance, we looked at discrepancies between the mean scores for the several statements related to challenges encountered by students (Table 3). The null hypothesis specifies that the mean rating scores provided to the statements are similar and is accepted if the p-value is larger than the 0.05 level of significance. The alternative hypothesis specifies that the mean rating scores provided to the statements differ significantly and is accepted if the p-value is less than the 0.05 criterion. Thus, with a difference of $p < 0.001$, it was concluded that problems handling stress were experienced as significantly more challenging than problems for

TABLE 3 Considerable variation in mean rating scores on items related to different challenges encountered.

Challenges encountered	Mean	Std. deviation
Sustaining and focusing attention	4.18	1.173
Planning and organizing	3.63	1.371
Completing coursework	3.65	1.339
Impulsive behavior and internal restlessness	3.72	1.310
Following deadlines	3.39	1.537
Building friendships	3.27	1.484
Sitting for a long time	3.82	1.307
Problems handling stress	4.31	0.969
Too much sensory stimulation during lectures	3.54	1.460
Following lectures in class	3.54	1.232
Following online lectures	3.45	1.542
Physical inaccessible classroom environment	1.87	1.239
Lecturers refusing to recognize/make arrangements for your individual needs	2.54	1.398
Accessing administrative members of staff for general queries	2.56	1.473
Joining student organizations	2.32	1.416

$X^2_{(14)} = 93.423$, $p < 0.001$.

getting lecturers to make arrangements for their individual needs. These measures were applied to all survey results and significant differences are reported below.

The survey's open-ended responses and the four transcribed interviews were thematically analyzed by the first two authors through the use of NVivo software. All data was coded into numerous categories that were aggregated into eight topic clusters, namely: aspirations, identity development, overarching inclusion issues, supportive arrangements, transitions, individual difficulties, accommodations, and ACCESS -Disability Support Unit. These were then used to provide a deeper understanding of the quantitative results.

3 Findings

The combined quantitative and qualitative findings are organized around the three research questions, namely, (3.1) students' search for personal development; (3.2) students' reflections on and calls for making the university systems more inclusive and accessible; and (3.3) students' reflections on and calls for improvement in accommodations (which at the University are termed Access Arrangements—AAs; see Table 4). Citations are indexed as Survey comments (Sc) or Interviews (I.1–I.4).

TABLE 4 Overview of findings for the three research questions.

(1) How do students perceive their personal experience and trajectory at the university?	• In search for personal development and better career prospects • Ambivalent feelings about the HE experience • Struggle with self-identity and stigma • Challenges of emotional regulation and social interaction
(2) How inclusive do students consider the University teaching and campus environment?	• Need for staff training in effective, inclusive teaching • Helpful and unhelpful experience of emergency remote learning • Lecturers generally helpful but not knowledgeable about needs • Physically accessible environments need to be safe, dignified, and usable
(3) How helpful do students consider the accommodations provided for students with disabilities?	• Coursework Access Arrangements (AAs) regarded as very helpful • Test AAs regarded as very important for student success • Differing views on the procedure for getting AAs

3.1 Promoting student self-development

In relation to the first question regarding student self-development, students indeed reported that they were motivated to seek higher education in their search for personal development, but that they experienced great challenges during their transition to university, and that they struggled to develop a healthy self-identity in the ableist university environment.

3.1.1 Need for a smoother transition to university

Most of the 51 respondents attributed their motivation to attend university to the desire to enhance their own personal development: for career (70.6%), knowledge and skills (66.7%), and independence (47.1%; see Figure 1):

> I felt I can realise my full potential by pursuing higher education. (Sc)

Some students aspired to improve the lives of others:

> To have the tools and qualifications to create positive change. (Sc)

At the same time, around half the respondents indicated that transitioning to university presented them with challenges from the new assessment systems - in Malta multiple choice tests are only used at university (51%), and lack of information about university procedures (49%; see Figure 2). The need for more information and "transition courses" was highlighted by one interviewee (I.2).

When asked what they found helpful to transition to university, more than half of the respondents (56.9%) indicated the support received through Access Arrangements, the use of online communication and other assistive technologies (49%), as
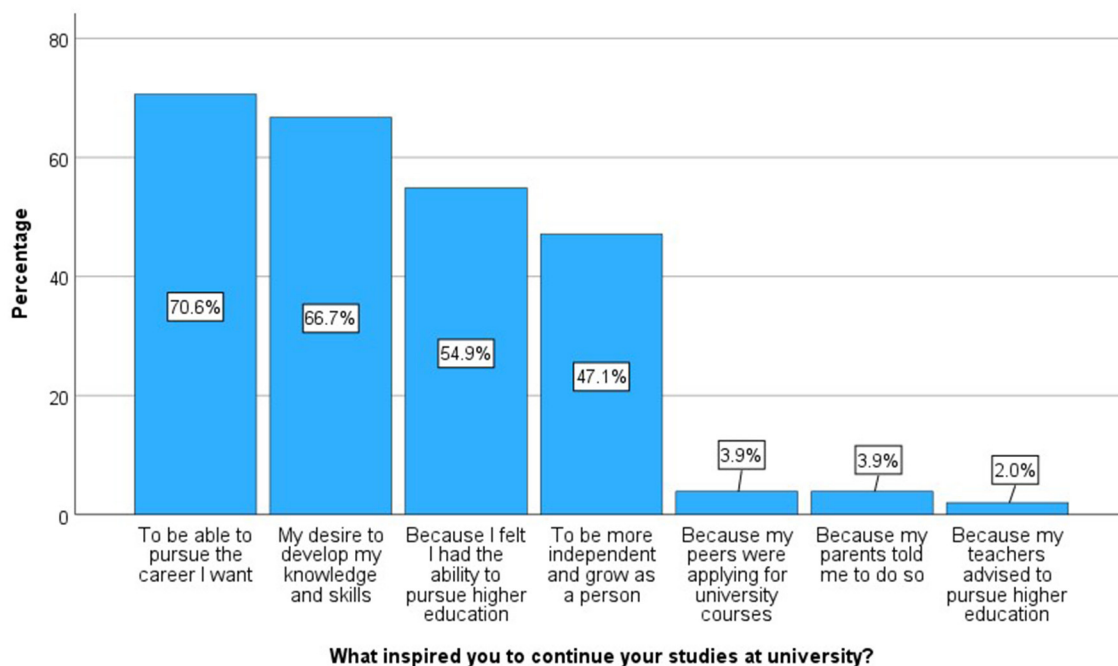
FIGURE 1
Inspiration to attend university.
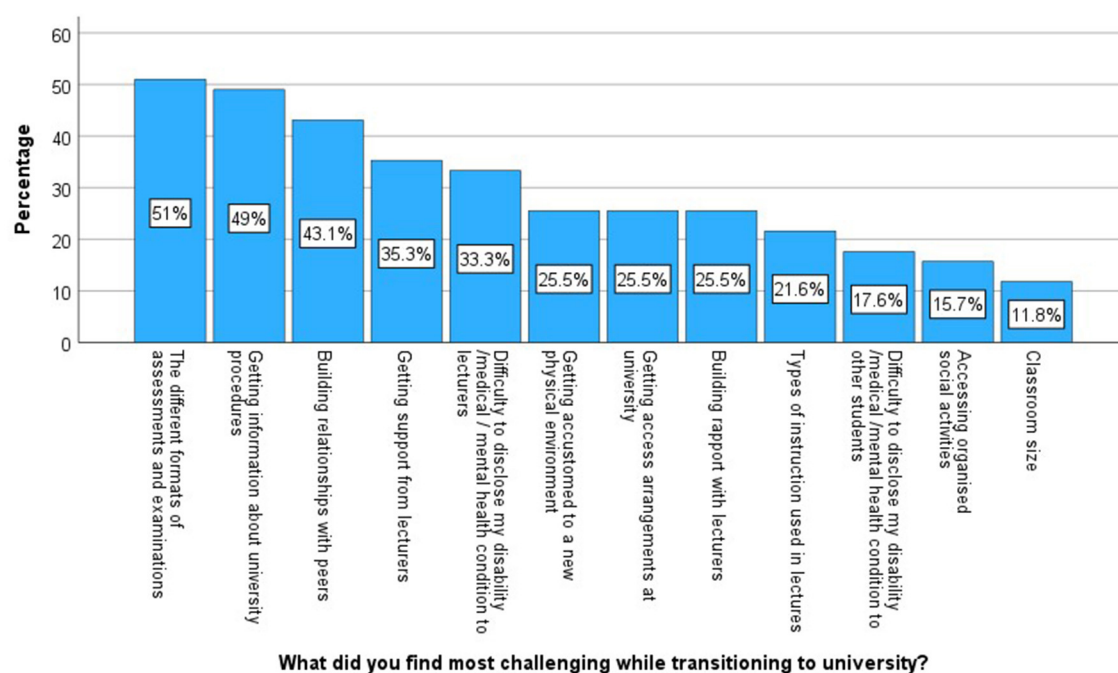
FIGURE 2
Challenges while transitioning to university.

well as support from family (43%), and close friendships (41%; see Figure 3). One postgraduate interviewee (I.4) who looked back at her experience of getting the accommodations she needed to access and progress in her studies, highlighted the importance of having self-advocacy skills.

3.1.2 Ambivalent feelings about the university experience

Students reported being more satisfied than dissatisfied with their academic and social experiences at university, with five out of seven statements receiving a mean rating above 3.00 (see Figure 4).
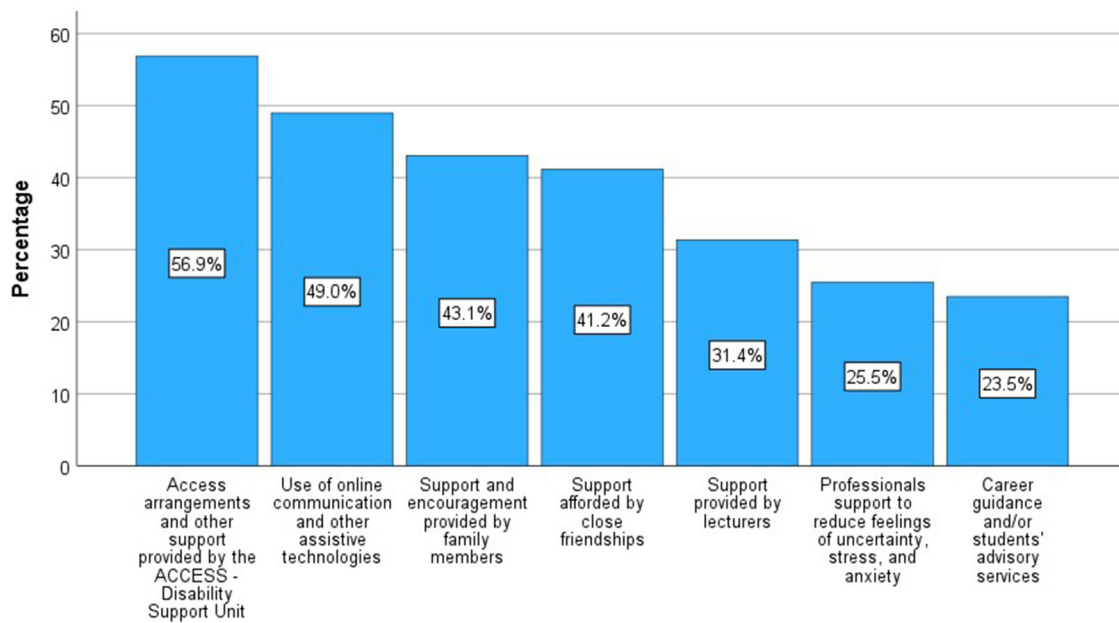
FIGURE 3
Most helpful for transition to university.
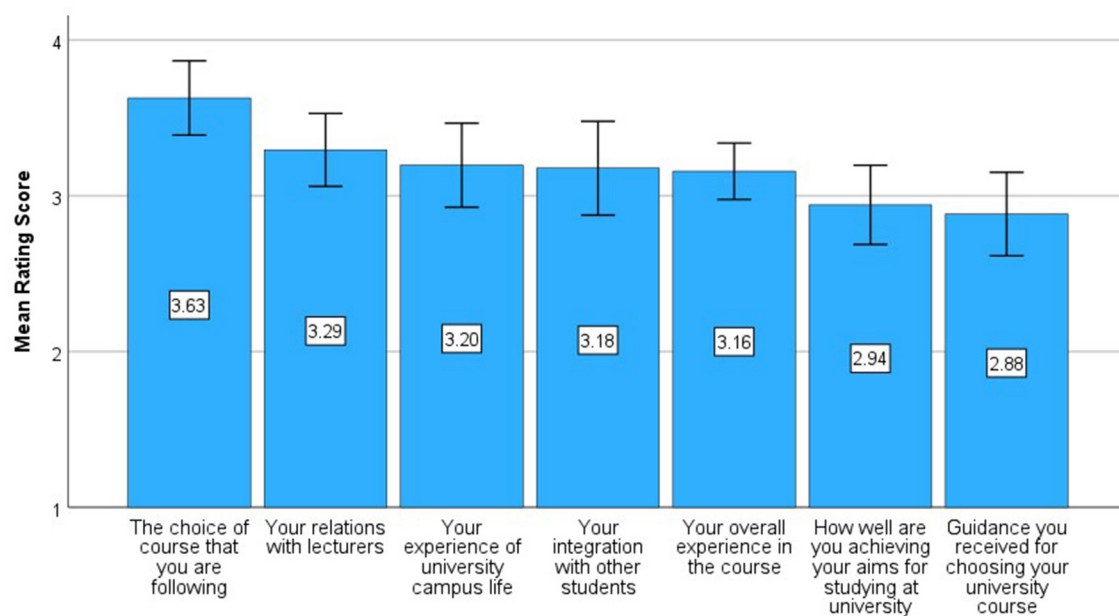
FIGURE 4
Level of satisfaction with university experience.

However, there was a significant difference ($p = 0.001$) between their rating of satisfaction with their choice of course (3.6) vs. how far they are achieving their aims (2.9). Female students were significantly more satisfied than males in achieving their aims ($p < 0.042$)

Students also reported significantly more positive than negative feelings about the university ($p = 0.001$, see Figure 5), with high mean rating scores for feeling welcomed by peers (3.67) and lecturers (3.65), and feeling enabled to participate (3.61), and to explore their self-identity (3.59).
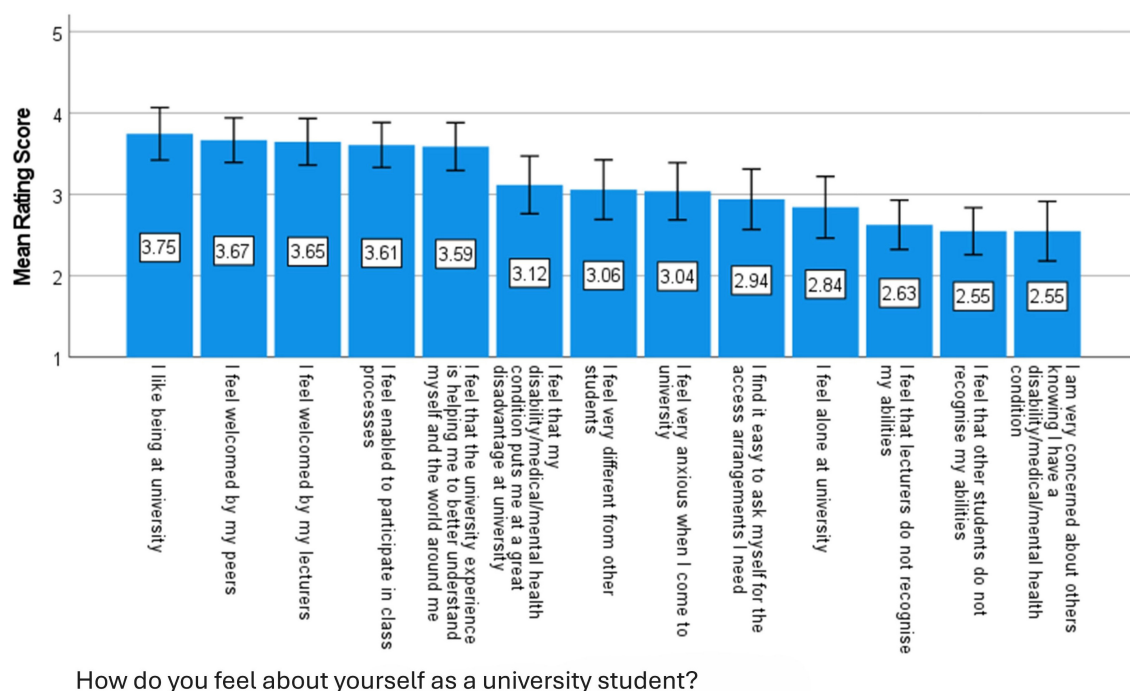
FIGURE 5
Positive and negative feelings at university.

The four autistic students interviewed had a hard time in secondary education and so reported feeling better at university, aided by understanding and accepting their condition—three were diagnosed as adults—and developing a gradual sense of safety in the tertiary environment: "At university is when I started to be more outgoing because I found that I can do it and it's fine. I don't need to be scared" (I.4); "I don't feel ashamed or shy.... when I feel the need to speak during lectures" (I.1). This was also helped by finding that they could share their autism journey with fellow students: "There are actually quite a few autistic people in my department … So we seemed to all be quite connected in that sense" (I.2).

3.1.3 Struggling with self-identity and stigma

Feelings of stigma, however, were also evident in the survey responses. Despite high mean ratings for positive mental states, there were substantial concerns with negative feelings and perceptions: feeling very anxious (3.04), feeling alone (2.84), thinking lecturers and peers did not recognize their abilities (2.63 and 2.55), and concerned about others knowing about their condition (2.55; see Figure 5). Students following postgraduate degrees scored a higher mean satisfaction rating than undergraduate students for all statements, and undergraduates scored significantly higher on most of these negative feelings and perceptions ($p < 0.001$; see Table 2).

Students also reported significant internal struggles. One survey respondent internalized inferiority feelings to a serious level: "I view myself, broadly, as an academic failure."

One interviewee described his concern about denigration of his abilities: "Unfortunately, a lot of people assume that if you have autism than you also have intellectual disability" (I.1). Two

other interviewees reported struggling to stop masking their autism because they were concerned that they might "be perceived as a burden" (I.4; I.3).

3.1.4 Challenges of emotional regulation and social interaction

Despite the stigmatizing ableist context, with regards to both academic and social engagement, students rated as most challenging their own internal struggles: particularly handling stress (4.31), sustaining attention (during lectures; 4.18), as well as "Building friendships" (3.27; see Figure 6).

There was indeed a significant discrepancy ($p < 0.001$ on Friedman test) between the mean ratings for personal challenges at >4.0 and those arising from the social and physical environment at <3.0 (see Figure 6).

On the other hand, students' experiences differed widely across individuals: the standard deviation in rating scores was almost always >1.0, and >1.5 for two statements ("Following online lectures" and "Following deadlines"—see Table 3).

Survey comments highlighted how "Having problems socializing and developing relationships" affected their academic engagement. Some reported only attended lectures and avoided socializing because of lack of social skills. Others reported that social activities were not accessible to them because of their condition: one because of her visual impairment, and autistic students because of the noisiness and chaotic nature of the events.

On the other hand, two autistic students reported being more able to participate when there were more structured collaborative academic activities like talks or workshops (I.3), or informal fellow student meetings for sharing of course tasks (I.4).
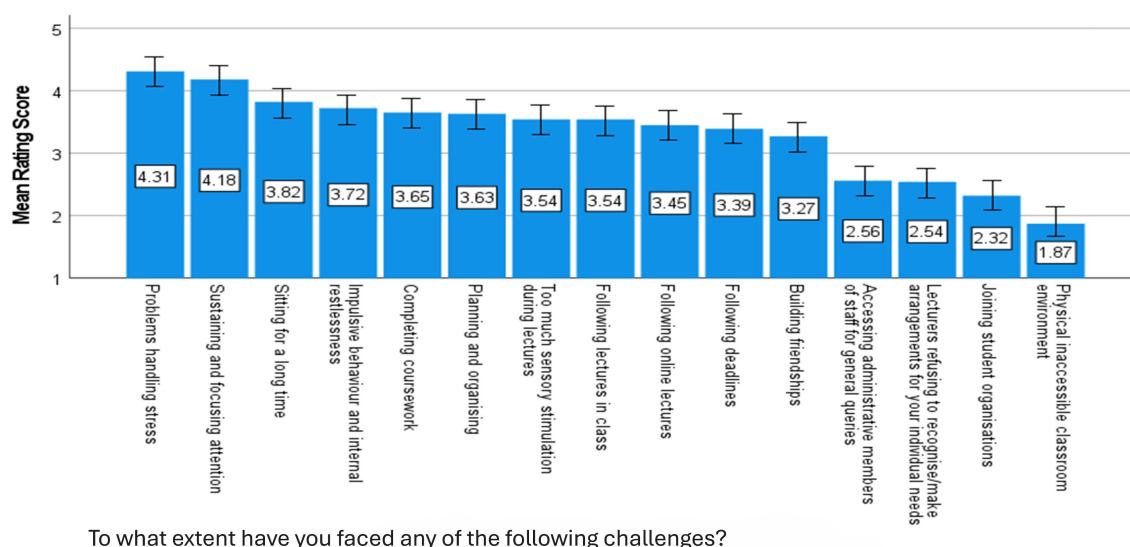
FIGURE 6
Challenges faced at university.
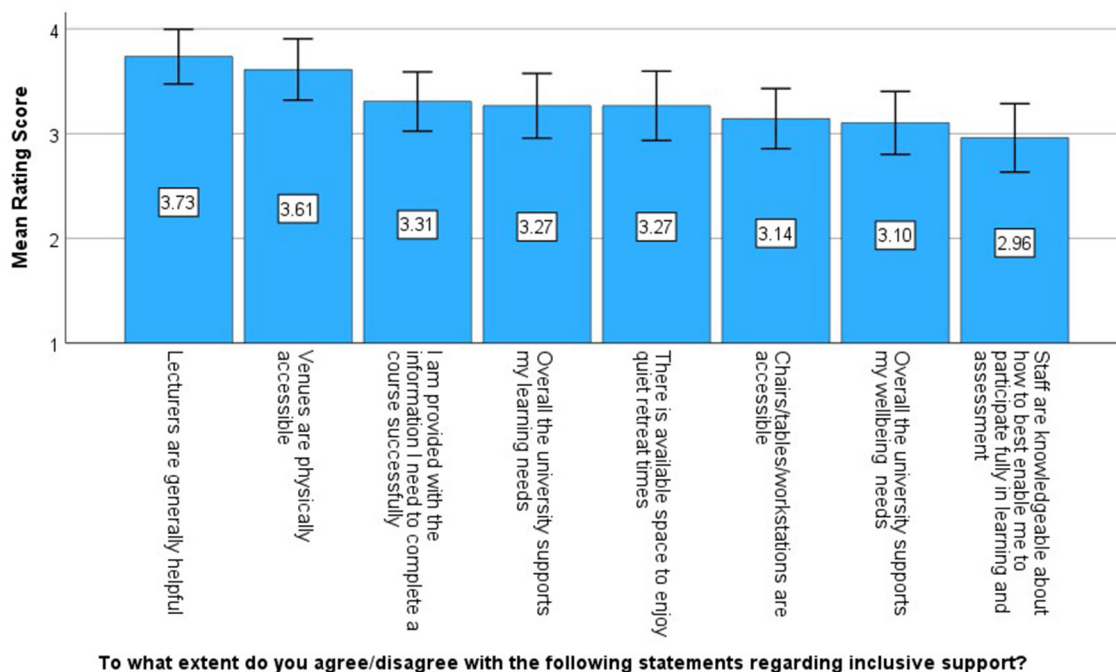
FIGURE 7
Inclusive support at university.

3.2 A generally inclusive system in need of improvement

Students rated the university academic and social environment as generally inclusive, with a rating >3.0 for 7 out of the 8 statements (see Figure 7).

3.2.1 Call for more inclusive teaching

However, there was an unexpected significant discrepancy ($p < 0.001$) in the mean rating of two related statements: "Lecturers are generally helpful" (3.73) vs. "Staff are knowledgeable about how to best enable me to participate fully in learning and assessment" (2.96; see Figure 7).
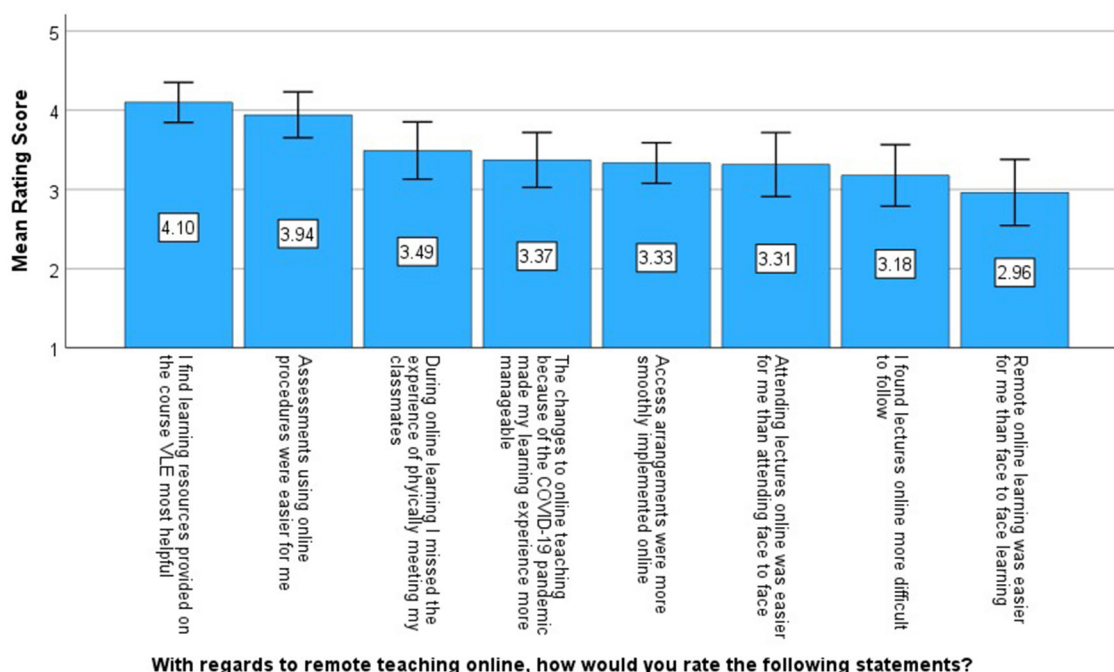
FIGURE 8
Use of remote online learning.

Many commented about the need for staff training in inclusive teaching. In the first place this required basic qualities of good teaching as is implied in UDL. Lecturers have to "capture the attention and interest of their students, something essential not just for those with attention deficits but for practically anyone" (Sc); they had to be respectful and avoid "negative/condescending attitudes" (Sc); they had to be aware of individual needs, whether with a diagnosis or not (Sc; I.1); they need to clarify their expectations of student work and provide regular feedback (Sc); all lecturers should put slides and materials on the virtual learning environment platform (Sc; I.1). There were calls for both more structured teaching and expectations (I.1), as well as for as well as for use of open discussions (I.3) and personal research choices (I.4).

Students also highlighted the need for more ordered organization of lecture timetables and task requirements. They were particularly harassed by last minute changes in timetables and by lack of staggering of deadlines for completion of work (I.2).

3.2.2 Helpful and unhelpful aspects of online and hybrid learning

The University of Malta shifted completely to emergency remote teaching during the second semester of 2019–20. In 2020–21, many students experienced hybrid learning situations, as the need for physical distancing limited space for larger groups. This 'emergency remote learning' merely shifted face-to-face instruction to an online format and did not reflect systems of properly designed online learning (Hodges et al., 2020). However, it also provided an opportunity to assess the university's sensitivity to the needs of students with disabilities. Consequently, the study asked participants about their experiences with and participation in such remote learning. Findings were varied. Positive and negative statements about online learning were given equal ratings: online learning experience more manageable (3.37), but online more difficult to follow (3.18). There was a significant discrepancy ($p < 0.001$) between finding the use of resources on the specific courses' VLE (Virtual Learning Environment) and the online assessments most helpful (4.10 and 3.94), vs. finding online learning easier (2.96; see Figure 8). Moreover, there was considerable variation among students' individual rating scores with standard deviations ranging from $sd = 0.9$ to 1.48. There were also significant group differences: Undergraduate students found it significantly more difficult than those in postgraduate degrees to follow lectures online; students in Faculties of Law and Economics found lectures in class more difficult to follow than Science students; on the other hand, Science students found assessments online significantly more difficult; autistic students and students with ADHD, anxiety and/or depression, found online learning significantly easier to attend and to follow than those with other conditions.

Open comments reflected this variation. The usefulness of the VLE was explained succinctly: "With the VLE I will have everything sorted/organised. It is available and organised" (I.1). One student suggested that the university website too could better serve as a store of information about all university requirements (I.2).

Some students with limited mobility or with autism found online attendance much more convenient:

> I don't really understand why lectures are not still delivered online. … I had to suspend my studies for a year because I could not physically attend university due to mobility impairments. (Sc)

> At home I could concentrate a lot better, because I can control my sensory environment. … You don't have the sensory aspect of the classroom. You don't have the interpersonal experience interfering in the classroom. (I.3)

Working on exams at home like working on an assignment with access to the internet was clearly seen as an improvement.

On the other hand, one student pointed out the inadequacy of the emergency remote learning, saying that "online classes should be taught differently (short, recorded videos and interactive quizzes)" (Sc).

Survey participants were concerned that remote learning made relations with lecturers and their peers more difficult (3.49), with male students (3.94) significantly more than females (3.24). Comments clarified the issues:

> Lecturers are always available via email but you still cannot build a good relationship. (Sc)
> I did talk to them [friends] on the phone but, it's not the same as if you are talking face-to-face. (I.4)
> I prefer face-to-face … the fact that the lecture ended and you spoke to the lecturer… sometimes I will have doubts, and if I ask I will be sure that I understood what has been said during the lecture. (I.1)

3.2.3 Many students felt supported by their lecturers

As noted above students rated lecturers as generally helpful (3.73) while also indicating they were not so able to support their learning (2.96), and not recognizing individual needs (2.54; see Figure 7).

These ratings were also reflected in Scs:

> Lecturers are very understanding of my condition and also helpful. (Sc)
> I had some question in a subject, and he [the lecturer] stayed there after hours… When I told the lecturers that I'm autistic, there were lecturers where they paid attention to my needs. (I.1)

Some students mentioned the support provided by their department:

> I am so grateful for my faculty that they listened to me and arranged the papers according to what was best for me. (Sc)

But students felt cautious about giving direct negative feedback to lecturers:

> Sometimes it's like they [lecturers] are very encouraging and if I have a problem I can go up to them and say look, you know, I have this problem, I need to talk it out … and sometimes if I had to do that, I kind of become the problem, and so it's kind of you have to assess beforehand, how it's gonna go. (I.2)

There were also many comments on lack of lecturer understanding:

> One lecturer made me non-verbal, which is very rare for me. She really pushed me and didn't consider my feelings. (Sc)
> Lecturers should be made more aware of how much of an impact their words can have on students. (Sc)

3.2.4 Physically accessible environments need to be safe, dignified, and usable

There was a very low rating of the challenge of "Physical inaccessible classroom environment" (1.87—Figure 6). But this gives a wrong impression because, while only three participants had physical disability, this item was rated by 76% of respondents. Students with physical disability pointed out significant barriers in the campus and classroom environments:

> The ring road is very unsafe especially for people with mobility problems like myself. (Sc)
> Some lecture halls do not have a desk; thus, it is very uncomfortable to write. (Sc)

Moreover, students pointed out the need for physical accessibility arrangements that allow students to enjoy equal dignity:

> Priority Seating: Helpful but not enough. This system too often separates me from my peers. Stairs in theatres should be replaced with ramps and seats at each end of the theatre should be removable. Thus, a wheelchair user would be able to position themselves anywhere, not forced to sit at the front or the back of the lecture hall. (Sc)

It is also important to consider accessibility in terms of "usable spaces" (Biggeri et al., 2020):

> I've gone to the library, but the drawback is that you are not allowed to bring your bag which I found a little disconcerting. To carry all your things, your laptop, your papers, your pencil case, whatever, and you have to put your bag in a locker downstairs. (I.4)

Autistic students also called for better organization and navigational information:

> There are places at university that were built in a certain way that are not quite accessible… There are some places that do not match the campus map… The way it is organised is confusing. (I.4)

The highest environmental concern was about excessive sensory stimulation (3.54—Figure 6), even during examinations:

> We get a lot of noise from the lights in Lecture Theatre, and as well as the speaker, they always have like a humming. But, Gateway [building] is horrible to be in. … The chairs squeak a lot. So, a 160 people chatting, bags plopping, the chairs doing that. I always had to wear my headphones before class. (I.3)
> The quiet room [one of the exam AAs] had a few issues because, well, some invigilators were quiet, but I know a couple

who tried to strike a conversation with me while I was taking the exam… (I.4)

> I wish there were more quiet areas on campus' cause it seems that every day there is an activity going on in the quad, in places where they could be quiet are not quiet. (I.4)

The setting up of a "calm room" at the university was mainly intended for autistic students, but its location and equipment were not appropriate:

> The calm room. … Its right next to the bathroom, there's no sound proofing, you can hear everything that's going on in the bathrooms. If you switch on the lights, they are the brightest lights I've ever seen. (I.3)

Interestingly, the bad "calm room" design led to calls for the involvement of people with disability themselves in such facilities:

> Please hire more people with actual disabilities. I'm done with abled people speaking for us when they keep getting things wrong. Only we know what we need. (Sc)

3.3 Access arrangements (AAs) needed and very helpful

The University of Malta has specific guidelines for accommodations (termed Access Arrangements—AAs) to address individual needs during coursework and examinations (University of Malta, 2018). The most commonly requested AAs are extended deadlines for assignments during coursework and extra time during examinations. While students appreciated the inclusive aspects of the teaching and social assessment systems that promoted everyone's participation, they still highly valued most of the AAs listed in the questionnaire for both coursework and examinations.

3.3.1 Coursework AAs found very helpful

For coursework (see Figure 9), all the 17 listed AAs except one received a helpfulness rating >3.00, with one-third rated >4.00: "Use of personal equipment" (4.45), and "Extended deadlines" (4.45).

At the same time, students differed widely in their individual ratings. Firstly, for all 17 AAs listed, the number of students that ticked the column "not applicable" ranged from 87% for "Sign language interpreter" to 34% for "Extended deadlines." Then the variation in the rating scores is evidenced by the high standard deviation scores rising to $sd = 1.83$ for "Peer mentor."

There were concerns that lecturers sometimes refused to make the AAs granted to the student such as the provision of lecture notes before the lecture—though one student succeeded in getting the Disability Unit to persuade the lecturer. One student reported that lecture slides were not even given after the lecture:

> Most concerning I find the fact that lecturers are allowed to choose not to put their PowerPoints on VLE. This has caused major problems for me and resulted in me doing worse in my exams. (Sc)

One student also complained that the ACCESS Unit denied the request for access to lectures online (I.3).

3.3.2 Test AAs regarded as very important for student success

Students with disabilities are very concerned about equitability of the assessment system given their access difficulties. Thus, many assessments require time-restricted written examinations which present great challenges, for instance, for students with dyslexia who process written language at a slower pace, for students with dyspraxia who have difficulty with handwriting and need to be granted the use of a word processor (not part of the system at the time), and to blind persons needing to make use of assistive technology for both reading and writing.

The helpfulness rating for exam AAs (see Figure 10) was thus even higher than for coursework AAs. All except one of the 20 listed AAs received a mean rating > 4.0, the highest being for seating options in the examination room (4.71), and "Alternative exam format" (4.70). Interestingly, 59% rated "Extra time" as "Extremely helpful."

Again, students differed greatly in their individual ratings. Firstly, many respondents marked specific AAs as "Not applicable": from 16% for "Extra time" to 91% for "Use of sign language interpreter." Moreover, when applicable, students also gave varied individual ratings as is evident by the high level of standard deviation scores: for example, "Use of a reader" ($sd = 1.5$) and "Permission to utilize personal equipment" ($sd = 1.4$; see Table 5). Interestingly, one student rejected the "permission" statement: "Personal equipment is often an extension of one's body. I don't agree with needing permission to use it."

There were several comments on the helpfulness of AAs. Some felt that just being granted AAs was a needed reassurance for their success, even if they did not use it. Some reported that they would have applied for some of the AAs listed if these were offered at the university.

It is also important to note that students do not seek AAs to have an advantage over others. One of the interviewees (I.2) felt "guilty" about using extra time, which she actually needed, but she only used it after great persuasion by the ACCESS coordinator that she had a right to it.

3.3.3 Differing views on the procedure for getting AAs

One issue picked from the scoping review were the hurdles students experienced in the recognition of their needs and the implementation of AAs. While similar challenges were highlighted as described below, students were generally satisfied with the process of applying for and receiving AAs. This was perhaps the
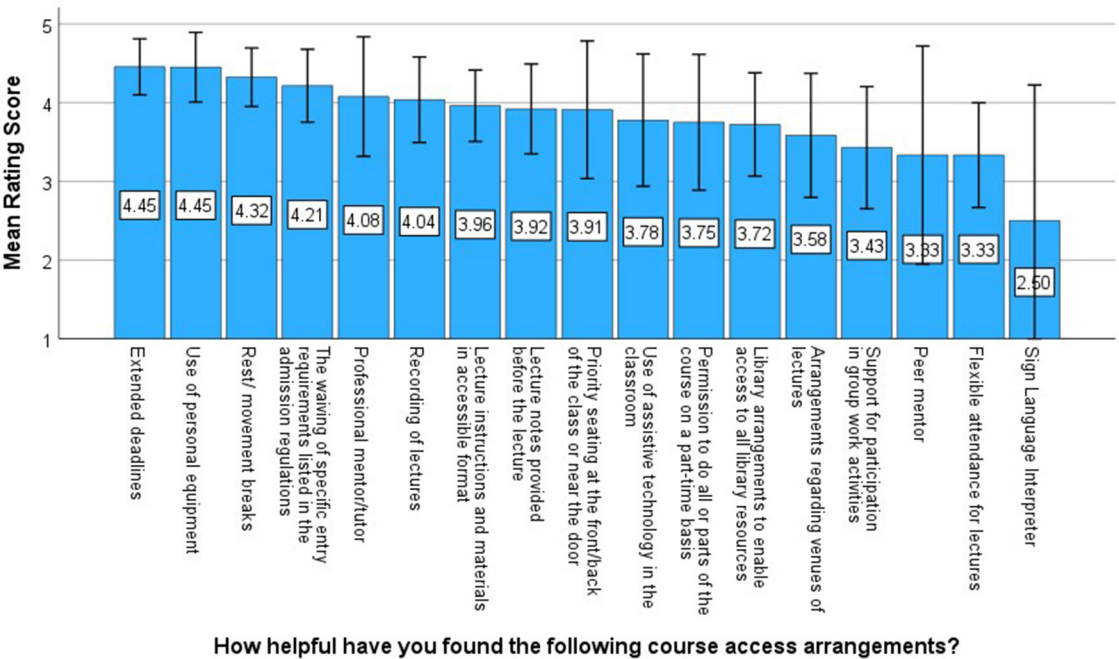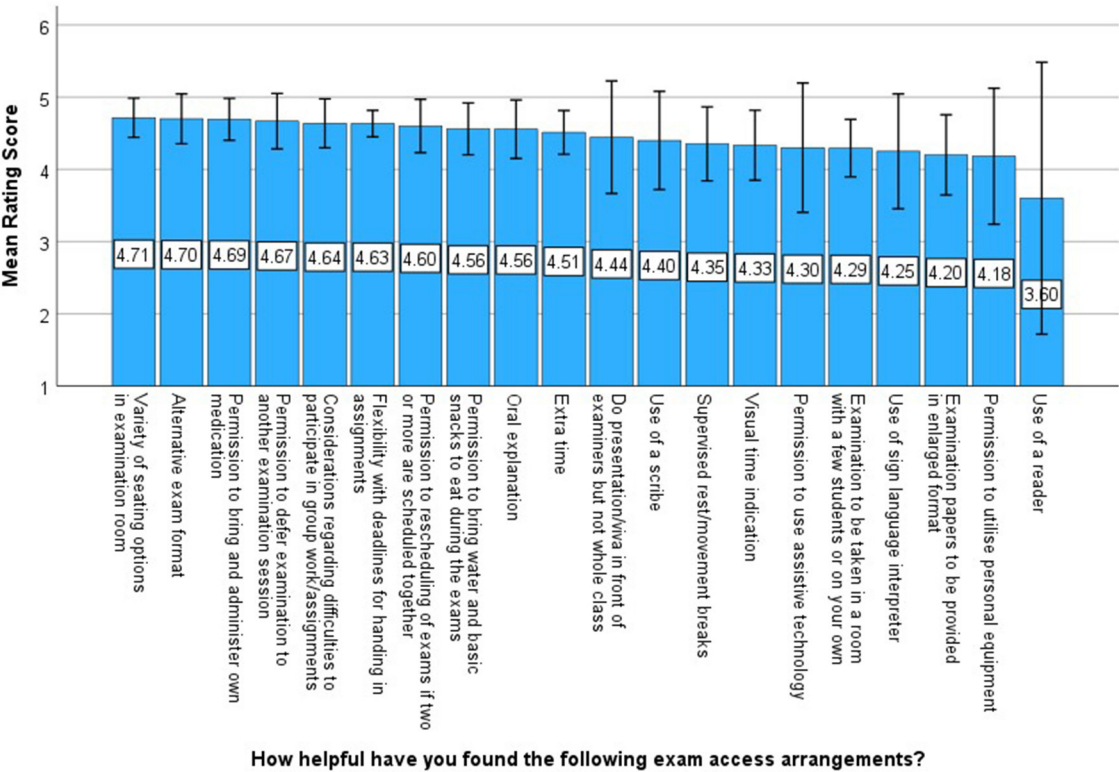
FIGURE 9
Helpful coursework access arrangements.

FIGURE 10
Helpful exam access arrangements.

TABLE 5 Considerable variation in rating scores on the helpfulness of exam access arrangements.

Exam access arrangements	Mean	Std. deviation
Extra time	4.51	0.985
Flexibility with deadlines for handing in assignments	4.63	0.490
Permission to use assistive technology	4.30	1.252
Permission to utilize personal equipment	4.18	1.401
Visual time indication	4.33	1.065
Permission to defer examination to another examination session	4.67	0.500
Supervised rest/movement breaks	4.35	0.996
Variety of seating options in examination room	4.71	0.469
Examination to be taken in a room with a few students or on your own	4.29	1.142
Permission to rescheduling of exams if two or more are scheduled together	4.60	0.516
Examination papers to be provided in enlarged format	4.20	0.447
Use of a scribe	4.40	0.548
Use of a reader	3.60	1.517
Oral explanation	4.56	0.527
Permission to bring and administer own medication	4.69	0.480
Permission to bring water and basic snacks to eat during the exams	4.56	0.870
Use of sign language interpreter	4.25	0.500
Considerations regarding difficulties to participate in group work/assignments	4.64	0.505
Do presentation/viva in front of examiners but not whole class	4.44	1.014
Alternative exam format	4.70	0.483

$X^2_{(19)} = 87.157$, $p < 0.001$.

result of the availability for meeting individually the ACCESS coordinator as some students reported:

> I had different meetings with her [the ACCESS Coordinator] and because of the disability access arrangements, I got to know about the course of action, the path. (I.1)

The mean ratings of the service thus ranged from 3.51 for ease of contacting the ADSU to 2.98 for "Getting lecturers to implement my access arrangements" (see Figure 11). Male students found it significantly easier than females to get information about AAs at university. Students in postgraduate degrees also found it easier to ask for AAs.

On the other hand, some saw the application procedures as too bureaucratic:

> I was told that the report I had was not valid and would have to see another specialist to get a new report if I wanted aid; this was something I could not afford to do and as such I have remained without aid. (Sc)

There were also several calls for more information about available AAs:

> As a dyslexic and ADD student, access arrangements are very helpful, but it can be hard to know what is available. (Sc)

Students also commented about the onerous process of getting the formal diagnosis prior to applying for AAs.

> When I started my journey at university … I needed to start all my reports from the beginning as the ones I had were outdated – as if this changes anything. (Sc)

Several students also commented about the difficulties they had in communicating the AAs to their lecturers:

> Lecturers should be immediately told about the conditions of the student after asking for permission instead of forcing the student to tell them. (Sc)
> I've always been anxious that leveraging my condition and access arrangements with lecturers would be seen as "making excuses". (Sc)

One student with physical disability spoke of needs not addressed by AAs:

> Packing and unpacking my belongings takes me slightly longer due to more limited mobility. More concretely, I would have to allocate at least 15 minutes for travelling to and setting up for the next lecture. (Sc)

There were suggestions for the provision of an individual mentor:

> It would be nice to be provided with an in-person appointment that can provide a connection with the advisor and check-ins if needed. (Sc)
> Offering an ADHD life coach would be very helpful, but I understand it might be financially impossible. (Sc)

As challenges differed, students underlined the importance of "Flexibility and tailor-made accommodations" (Sc):

> I think uni needs to work on listening more and understanding the different needs of each individual and perhaps be a bit more lenient. (Sc)
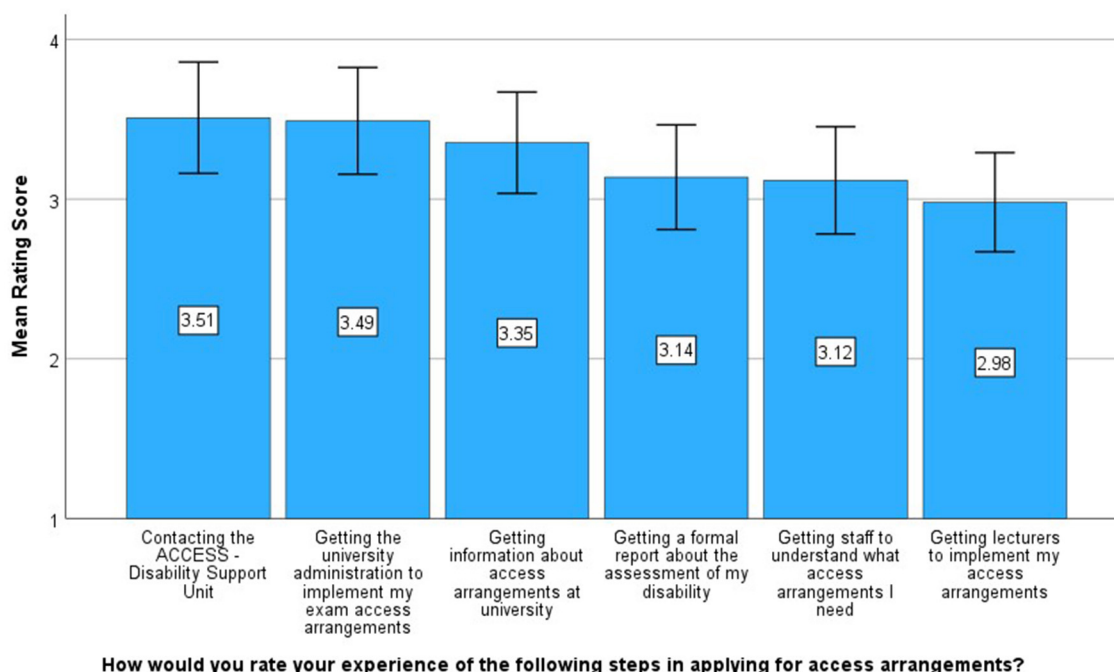
FIGURE 11
Ease to apply for access arrangement.

4 Discussion

This study represents the perceptions of the higher education experience of students with disabilities at a medium-sized university. While the students rated the university as generally meeting their needs, survey comments and interviews highlighted several challenges regarding their personal development, inclusiveness of teaching and learning and community activities, and necessary accommodations to ensure students' equitable access that are generally in line with similar studies (Bartolo et al., 2023).

Firstly, these students saw the university experience as a more open forum than secondary education for the development of a more confident and healthy social identity (Dangoisse et al., 2020; O'Shea and Kaplan, 2018; Squires et al., 2018). This may be an indication of the more severe struggles with stigma they experienced in secondary education (Zohri and Bogotch, 2023). It may also be a sign of a developmental process as those following post-graduate degree reported higher satisfaction and positive feelings than undergraduates. For students diagnosed on the autism spectrum in adulthood, the diagnosis was seen as a relief as they felt validated (Francis et al., 2019) though they were still concerned about how peers regarded their disability and were struggling with masking or not masking their condition (see also Mamo, 2023). Our participants included only those who had disclosed their disability, but they still expressed concerns about peer and faculty attitudes (McKinney and Swartz, 2022). Stigma appears to be a widely felt experience in higher education where normalcy is highly valued (Bartolo et al., 2023).

At the same time, it is worth noting that some students with disabilities reported strengthening their determination and self-advocacy skills through their university experience (Russak and Hellwing, 2019). They were studying to "have the tools and qualifications to create positive change" (Sc), as also reported in other studies (Vaccaro et al., 2018).

It was also striking to find that respondents rated personal issues as the most challenging aspects for participation. Jansen et al. (2017) too found that such difficulties were experienced significantly more by students with ADHD than those without a disability, while at the same time highlighting that such difficulties are experienced more widely: for instance, "Difficulty with completing task" was experienced by most students with ADHD (71.2%), but it was also reported by 38.8% of the non-disabled group. Autistic students required assistance in reducing their heightened anxiety and social inadequacy (Bell et al., 2017), suggesting the provision of transition preparation programmes for navigating the new environment and developing relationships (Accardo et al., 2019; Lei et al., 2020; Kim et al., 2021). There was also a call for mentors to whom they could turn for information and guidance on any aspect of university life during the first months (Russak and Hellwing, 2019; Mays and Brevetti, 2020). These findings suggest that, while at the University of Malta the ACCESS Unit is dedicated to providing accommodations, it needs to link more strongly to the Wellness services to provide personal development and counseling support at individual and group levels (Álvarez-Godos et al., 2023).

In this regard, we also came across a new dimension of self-advocacy that we had not found in our systematic review (Bartolo et al., 2023) along the slogan of "Nothing about us without us." This arose from students' disappointment that a "calm room"

supposedly designed for individuals with sensory processing issues was, in reality, inadequately set up and surrounded by noise and other stimuli, making it counterproductive. Consequently there was a strong call for the involvement of students with disabilities themselves in the design and organization of facilities for them. Thus, the university can support students not only through training in self-advocacy but also through encouragement of advocacy groups and their involvement in the design of curricula and environments as well as in seeking student feedback on facilities and processes (Luthuli and Wood, 2022).

The second important issue raised by respondents was the need for institutional systems to take their needs into consideration. Though students did not use the term "Universal Design" (Burgstahler, 2021), this was implied in the call for "a system that meets everyone's needs" by providing systemic structural accessibility in the three main inclusion dimensions: accessible physical, teaching, and social environments (Bartolo et al., 2023). Thus, for physical accessibility, there were calls for regular dignified physical accessibility to buildings and classroom furniture and to pathways (see also Moriña and Perera, 2020). For instance, rather than have priority seating, a wheelchair user requested a replacement of stairs with a ramp that enabled the student to choose seating like their peers. There was also a call to make the library a "usable space" for all by allowing students to carry with them what they needed for doing their study and academic tasks (see Biggeri et al., 2020). What was highlighted strongly by respondents, and was not found in our previous systematic review, was the need for calmer surroundings, both within classrooms—and especially within examination rooms (Mamo, 2023), as well as in the wider campus environment.

Similarly, there was a call for UDL. Respondents focused particularly on the lack of staff expertise in "teaching inclusively for all." Students made several recommendations for improved teaching and assessment practices, including the use of more structured teaching, use of both visual and auditory modalities, and that lecturers should communicate their expectations and assessment criteria to students. They called for the University to step up its efforts for staff training in general pedagogical skills that benefitted all (UDL), as well as in the understanding of individual needs of students with disabilities and ways of addressing them in both face-to-face and online modalities. Such a call was also found in one third of the studies reviewed by Bartolo et al. (2023). Students appreciated lecturers who were able to adopt different styles that met different student needs: there were calls for both more structured and more open styles of teaching as was reported in other studies (Griful-Freixenet et al., 2017). Thus, participation was facilitated by lecturers who were open-minded, attentive, and truly concerned about student needs (Bê, 2019; Biggeri et al., 2020; Ehlinger and Ropers, 2020; Francis et al., 2019; Frank et al., 2020; Kain et al., 2019; Langørgen and Magnus, 2018). Staff training could also cover topics relating to disabilities generally as well as to particular conditions (Sarrett, 2018).

Students also called for wider and more flexible use of digital technology. There were varied experiences regarding online learning with suggestions for allowing it as an alternative choice for those who had difficulty or were uncomfortable attending in person (Kent et al., 2018). However, there was a unanimous call for the provision of digital resources on the Virtual Learning Environment

platform as a most useful way for organizing learning (Ndlovu, 2021; Seale et al., 2021). In line with UDL principles, it seems best to make the use of digital resources mandatory for all lecturers who should be adequately trained to use technological support to meet all students' diverse learning needs.

Social inclusiveness was lacking. Participants rated highly feeling anxious and alone and the challenge of creating positive interrelationships with peers and lecturers, though there were differences in students' individual experiences. Autistic students described how they needed time to adjust to the social challenges of university life. At the same time students who felt like they belonged, particularly two of the interviewees, reported the highest levels of satisfaction with their university experience (Fleming et al., 2017; Murphy, 2017). The university can encourage student participation by assigning group projects that focus on collaboration and that place a high value on various skills and roles, as per UDL principles (Burgstahler, 2021), while also boosting social support through mentors and a buddy system (Lambe et al., 2019).

The third important issue raised by students is to smoothen the process of obtaining individual accommodations. They rated AAs for both coursework and examination most helpful. Respondents were also generally satisfied with the system for requesting use of AAs but called mainly for better availability of information about accommodations and for a system for informing lecturers about their AAs (Mamo, 2023; Moriña, 2017; Squires et al., 2018). They felt that lecturers should not be allowed to refuse certain arrangements because they did not understand the students' needs (Langorgen et al., 2018) or because of inconvenience (Freedman et al., 2020). They were also concerned that others may wrongly assume the students were seeking advantages (Squires et al., 2018). Calls for reducing the bureaucracy and expense of updated certification of conditions and needs are also reported in the literature (Griful-Freixenet et al., 2017; Langørgen and Magnus, 2018; Moriña and Perera, 2020; Kim and Crowley, 2021). Finally, there was also a call for more flexibility and individualization of provision (Fox and McNally, 2018).

5 Conclusion

This study has confirmed the usefulness of the three-prong framework for researching and developing policy and practice to ensure equitable participation of students with disabilities in higher education (Bartolo et al., 2023). The findings strongly highlight the need to develop a welcoming community and socio-emotional and personal development support for the students' development of a healthy self-identity and social skills. The call for involvement of students with disabilities themselves in the design of relevant facilities was also a striking new finding which is being highlighted in recent research with calls for their partnership in the design of university structures and procedures (Cook-Sather and Cook-Sather, 2023; Zorec et al., 2024).

The study suggests that HE institutions should proactively seek to implement universal design in their campus environments, and teaching and learning and social activities (Burgstahler, 2021). UDL particularly requires that faculty are trained to be aware of the diverse needs of students and to develop multiple forms of

representation of knowledge and skills, multiple ways of inspiring student engagement, and multiple forms of communication and assessment which will benefit all students (CAST, 2024). At the same time, students with disabilities and mental health difficulties should have easy access to services for negotiating needed "reasonable accommodations" (UN Committee on the Rights of Persons with Disabilities, 2016) for their equitable participation.

This study had several limitations. Firstly, participants were from a middle-sized university: larger universities may experience greater constraints as well as greater possibilities for development of services and should be specifically studied. In addition, given the limited number of respondents to both the survey and interviews, more representative samples of the diversity of students with disabilities can provide more generalizable findings. Further research can either focus on the needs of specific groups or include larger samples that enable adequate group comparisons. On the other hand, the semi-structured interviews with the autistic students yielded very rich data that could not be exploited fully in this paper suggesting that qualitative research can be very useful to highlight the challenges experienced by this group in HE. The main contribution of the study is the highlighting of the voice of students with disabilities and particularly the suggestion that they should be included in the decision-making processes in HE.

Data availability statement

The raw quantitative data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving humans were approved by the University Research Ethics Committee, University of Malta. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

PB: Conceptualization, Writing – original draft, Writing – review & editing, Funding acquisition. MB: Writing – original draft, Writing – review & editing. LC: Methodology, Writing – review & editing. A-MC: Conceptualization, Project administration, Writing – review & editing. AD: Conceptualization, Funding acquisition, Writing – review & editing. MM: Conceptualization, Writing – review & editing. EM: Writing – review & editing, Conceptualization. CS: Funding acquisition, Writing – review & editing, Conceptualization. RV: Writing – review & editing, Conceptualization. JV: Writing – review & editing, Conceptualization.

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The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/feduc.2025.1432682/full#supplementary-material

DATA SHEET 1
Interview schedule for students with disability at university.

DATA SHEET 2
Survey questionnaire for students with disability at university.

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Ups and downs of expatriate health sciences students: towards an understanding of experiences, needs, and suggested recommendations in an Emirati university

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Aim: To describe the lived experiences of expatriate students enrolled in an academic institution in the UAE and explore suggested improvement strategies to address their challenges.

Background: Exploring the experiences of expatriate students is crucial for three main reasons. First, expatriate students play a key role in the UAE's sustainable socio-economic development and diversification. Second, cultural differences among expatriate students raise personal, social, and academic challenges, including pedagogical issues concerning teaching and learning styles and effectiveness. Third, given the global importance of internationalization, expatriates' experiences should be considered an issue of customer satisfaction.

Method: A descriptive, qualitative, narrative study using indirect Colaizzi content analysis of 23 expatriate students' reflections on their experiences and suggested recommendations.

Results: The consistent themes cited by participants concerning their experiences centered on dormitory-study life balance, socialization and support networks, and navigating financial challenges. They identified areas for improvement in terms of professional, social, peer, and self-support.

Conclusion: Developing an effective support system is essential to ensure a smooth expatriate student experience. The study findings propose suggestions and recommendations that may help in future planning, including maximizing professional support, providing peer tutoring, boosting academic advising and consultation, encouraging student socialization, and guiding self-development as necessary.

KEYWORDS

content analysis, healthcare education, health sciences, expatriate students, pedagogical recommendations, UAE

Highlights

- First-year expatriate students commonly suffer loneliness and homesickness.
- Educational internationalization mandates student customer satisfaction.
- Effective support systems are essential to improve student experiences.

1 Introduction

UAE exhibits a rising trend of internationalization in its universities, which attract students and staff from across the globe. In recent years, it has been attracting an increasing number of expatriate students, aided by Emirati universities actively establishing partnerships and collaborations with higher educational institutions worldwide (Qiqieh and Regan, 2023; Tahir, 2023). Expatriate students can remain in UAE after graduation, and their expertise plays an important role in the growth of a competent workforce and being retained in the pool of local labor, increasing the attractiveness of the local economy for domestic and foreign investors (De Bel-Air, 2018). In this regard, exploring the experiences of expatriate students is crucial as a key dimension of academic/educational sector performance *per se*, and as an indicator of the macroeconomic performance of UAE in achieving economic diversification and sustainable development. Furthermore, exploring expatriate students' experiences and recommendations offers direct insights into how educational services can be improved, pedagogically and in terms of the holistic personal and social experience offered by UAE institutions of learning (Qiqieh and Regan, 2023).

The experiences of expatriate students in Saudi Arabia often include blessings and challenges, functioning in a different educational system and cultural setting at a great distance from their families and current social support links (Alasmari, 2023; Horne et al., 2018). The UAE is a federal union of the eponymous "Emirates," and it should be noted that students living in UAE moving from one constituent Emirate to another to study in a university share the same challenges as those from outside the UAE. Albeit these students are in a relatively more familiar environment (i.e., UAE), they still experience challenges in adapting to the university environment, missing their families and experiencing "considerable cultural dissonance" (Allan, 2003). Thus, for the purposes of this study, students who have moved to Sharjah specifically to study in a university, whether from other Emirates within UAE or from outside UAE, are considered to be expatriate students.

The transition to new academic and living environments, social networks and an increased amount of independence can be very stressful. The first year in university is especially crucial, as those who struggle with the transition may fail in their studies and drop out. Similar common challenges are typically encountered and must be addressed by university service providers (including technology integration, in addition to student engagement into the academic and social experience). Universities have traditionally focused on academic challenges, and unfamiliar learning contexts and teaching styles, curriculum design, teacher characteristics (e.g., language or accent barriers), and the natural, inherent demands of tertiary education all contribute challenges for academic performance among first-year students (Deuchar, 2023). Aside from the academic dimension, students can encounter profound sorrow, as they have to depart from their family and friends to study remotely. Homesickness and loneliness are among the earliest emotional issues that are common especially among these students due to a lack of social support, which have been widely reported worldwide (Hack-Polay and Mahmoud, 2021; Platanitis, 2018). Social support networks can assist in managing such emotional issues. Perceived social support refers to the belief that the surrounding environment offers assistance. This support can manifest in several forms: the availability of help when required, offering services as substitutes for traditional ones that expatriates may lack, or facilitating adaption to new life circumstances (King et al., 2006; Leach, 2014).

According to Bronfenbrenner's ecological systems theory, an individual's development is influenced by a series of interconnected environmental systems, ranging from immediate surroundings (e.g., family) to broad societal structures (e.g., culture). The theory has significant implications for educational practice and for understanding diverse developmental contexts. This emphasizes the importance of paying attention to expatriate students worldwide (Guy-Evans, 2024). Although some recent studies have tentatively begun to explore students' transition experiences during studying in UAE (Mikecz Munday, 2021; Qiqieh and Regan, 2023), there is a paucity of analyses exploring their particular experiences regarding learning, accommodations, and cultural settings. The roles of the experiences of students with support services, health, and safety services are missing in the current literature. With this study, we hope to fill this void. This study provides valuable insights into the experiences and challenges of expatriate health sciences students at an Emirati university, contributing to expatriate studies by highlighting specific social, cultural, and academic adjustments. It underscores the need for tailored institutional support and informs policy decisions to enhance the global student experience. By identifying relevant patterns, the study contributes to discussions on student mobility and educational equity, advocating for inclusive educational environments that support diversity. Ultimately, it aims to shape international strategies for improving the academic and overall wellbeing of expatriate students, establishing a model for future research in diverse contexts. Therefore, this study aims to address these issues in the literature and poses two research questions: (RQ1) What are the experiences students have in adapting to the educational and socio-cultural environment at the university? and (RQ2) What type of support could be provided to facilitate students' adjustment process to the educational and socio-cultural environment of the university?

2 Materials and methods

2.1 Aim and objectives

The objective of this study is to describe the lived experiences of students enrolled in an academic institution in UAE. Specifically, we seek to explore suggested improvement strategies in dealing with students' challenges.

2.2 Study design, setting, and participants

A qualitative approach is recommended to gather comprehensive details of an event. This study used a descriptive qualitative

phenomenological design (Colaizzi, 1978), which allowed us to obtain a deep understanding of the experiences of students at the University of Sharjah's College of Health Sciences. We also sought their suggestions for effective adjustment and improvements. The sample included the seven departments in the College. Health sciences students typically undergo extensive training hours and work irregular shifts, which differs significantly from those in programs with more predictable schedules. As a result, they often face greater conflict between their training commitments and family obligations, and they may also experience heightened stress levels (Fitzgibbon and Murphy, 2023). Similarly, expatriates relocating from other Emirates often struggle to organize their weekend schedules to spend time with their families, often leading them to remain in dormitories for extended periods throughout the semester.

The participants in this study consisted of first-to-fourth-year students, aged 18–23, encompassing both genders and a diverse range of majors in health sciences and nationalities. These students are the children of expats (i.e., non-Emiratis who finished high school in UAE and then went to university there or from outside UAE). Selection criteria for the study involved purposive sampling methods (Campbell et al., 2020). This strategy allowed the inclusion of a sample that was diverse in terms of age, gender, and different backgrounds.

A list of students was prepared, and recruitment was managed via emails that were sent to the students. All responses were collected by the research team. Data saturation occurred after analyzing information gathered from 23 students, as their responses consistently yielded similar findings. Consequently, it became clear that including more participants would not yield novel insights, data and new themes.

2.3 Data collection

In-depth interviews were used to collect participants' experiences. Data were collected during the Spring semester for the academic year 2023/2024. Participants completed semi-structured individual interviews that were developed by the authors and conducted by trained data collectors. The interviews lasted around 30 min and were held face-to-face, in English (the medium of instruction and an academic requirement for all healthcare programs in UAE). Table 1 presents the sequence of interview questions. All interviewers received training (12 h) on how to interpret and deliver the interview guide to elicit consistent information across all interviews. We used individual interviews to provide privacy and ensure confidentiality for participants, thereby allowing them to talk freely about their experiences, challenges, expectations and suggested recommendations to be considered in the future. All interviews were audio recorded, and important points and nonverbal cues (i.e., laughter, silence, tone of voice, eye contact, sighs) were immediately transcribed using field notes.

2.4 Data analysis

Data were analyzed using the method of Colaizzi (1978) (Table 2), which is a rigorous and robust approach that ensures the credibility and reliability of results. This method allows researchers to identify emerging themes and their relationships clearly and logically, revealing the structure of the experience under study. It has been

TABLE 1 Semi-structured interview guide.

1. Can you describe your experiences with social support during your studies as an expatriate health sciences student?
2. In what ways has perceived social support from family, friends, and significant others affected your motivation and wellbeing as a health sciences student abroad?
3. What challenges and issues did you face being far away from home/or being an expatriate health sciences student?
4. What coping mechanisms or strategies have you developed or adopted to navigate the stressors associated with expatriate student life?
5. Can you reflect on any personal growth or changes in your coping abilities, self-control and the reliance on social support during your academic life as student?
6. How have perceived social support and coping measures contributed to your resilience in facing challenges as an expatriate health sciences student?
7. What advice would you give to other expatriate health sciences students who are seeking to improve their self-control abilities and social support for a successful academic and personal experience abroad?
8. What recommendations/intervention would you suggest to the top management like a peer support consultations or groups? Do you think it would be beneficial?

All questions were developed in the English language by the authors and were answered by expatriate health sciences students who are fluent in the English language as per their academic program requirements.

widely used to explore the pedagogical experiences of healthcare students (Yao et al., 2024). In this research, the experiences and recommendations of students were analyzed. Analysis began by interpreting each statement in terms of its significance to participants' experiences.

Narratives were reviewed multiple times to understand the underlying phenomenon. Horizontalization was employed to give equal weight to each statement, grouping similar statements into theme clusters. These clusters were synthesized into detailed descriptions that captured the richness of the themes. A structured description of the experience was developed through iterative analysis, ensuring authenticity through continuous review and reflection by the research team on interview transcripts and resulting themes. The categorization matrix underwent revisions through team discussions to refine descriptions and achieve consensus among authors. A draft of the findings was shared with expatriates students for validation before finalizing the report.

2.5 Rigor

To ensure the trustworthiness of the study findings, four methodological aspects were considered in this study: credibility, transferability, dependability, and confirmability (Forero et al., 2018). Credibility was ensured by involving students of all genders, with different backgrounds, academic levels and varied qualifications from different majors. In addition, piloting was done by asking a few participants to check their interview transcripts to ensure that their intended meaning had been captured and revealing how cultural norms, values, and experiences influence the researcher's interactions with participants and their interpretations. In terms of transferability, the research was fully explained in the study report and all study stages, including study context, sampling method, and data collection,

TABLE 2 Data analysis was conducted following Colaizzi's (1978) method.

Step	Description
1	All authors independently read transcribed interviews of expatriate students three times for thorough immersion in the data.
2	(a) Individual statements of participants' experiences were extracted. (b) Statements of participants' recommendations were also extracted.
3	Statements with similar terms were grouped and coded, resulting in the generation of themes. Data triangulation was achieved by including perspectives from different participant groups and involving several authors in the analysis.
4	Initial textured descriptions were sent to participants for their approval or feedback, with three out of 23 expatriate students providing minor amendments.
5	A pre-final structured description for each participant was generated by repeating the analysis method.
6	All authors consistently reflected on recordings, transcripts, and resulting themes to ensure originality.
7	Several debates among all authors led to modifications in the categorization template, removal of redundant descriptions, and agreement on the final draft.

were recorded to enable scrutiny by readers. We developed a detailed track record of the data collection process and implemented reflexive journals and weekly investigators meetings to dependability and confirmability. To ensure reflexivity, the research team, who were familiar with qualitative research methodology, was engaged during the research process to discuss the methodology and findings and identify any potential biases that might have been overlooked.

2.6 Ethical considerations

The Research Ethics Committee (REC-23-12-10-01-S) of the University of Sharjah gave its approval prior to the study's execution. All interviews were anonymized, and a code number was assigned to each participant. The principal investigator encoded the identities of the participants as "S" with the number assigned to interviewed students. All recorded interviews were downloaded onto a private password-protected computer at the main researcher's office. The content of all interviews (e.g., audios and transcriptions) were only accessible to the researchers. Participants were free to join or leave the study at any time without any consequences to avoid the effect of power imbalance that might exist between researchers and students. They got the chance to ask questions and were provided with confidentiality assurances to avoid any misunderstandings resulted from culture differences. Before participating, each student was asked to sign a consent form. The researchers ensured that ethical issues including plagiarism, uninformed consent, misconduct, data manipulation, and redundancy were handled appropriately.

3 Results

In total, 23 expatriate health sciences students (8 males, 15 females) aged 18–23 years participated in this study from different

nationalities. Verbatim transcripts of the interviews provided the data from which the essence of the experience emerged. Themes were constructed by highlighting words and statements that were common to the interviews and essential in their meaning. This essence is encompassed in two main themes: "experiences of expatriate health sciences students" and "recommendations from students' perspectives to improve their experiences." Understanding these dynamics is crucial for enhancing student wellbeing and academic success in similar educational environments.

3.1 Experiences of expatriate health sciences students

The vivid nature of the experiences and the mix of feelings became apparent in the students' stories of being independent and in a new culture and university setting. The most persistent theme which students imparted was the challenges they faced initially and how they could overcome them. These experiences mainly focused on university dormitory-study life balance, socialization and support network, financial challenges, and looking to fit in, as described below.

3.1.1 Dormitory-study life balance

Living in university dormitory s can be an adventure filled with new experiences and opportunities for personal growth, but it also comes with its fair share of challenges. From navigating communal living to their managing academic responsibilities amidst distractions, university dormitory life presents a unique set of challenges. Living in university dormitory requires students to manage responsibilities independently, for example, academics, chores, and other household burdens.

> "The study here is a little bit expensive, and it feels very creepy to be alone all the time". (S1)

This newfound autonomy fosters personal growth but presents challenges like time conflicts and balancing personal life with studies.

> "Cooking wasn't that easy; when you come back, you're tired and hungry, which also adds some mental stress". (S5)

The interconnected commitments and roles of being a university student and living alone required significant time and energy from the students, and some complained about being tired and confused.

> "I feel tired… the tasks are really many, I get lost among my new role". (S2)

There was further pressure reported during the initial transition into university, when students described the difficulty as they found gaps in their academic skills. This would hinder their academic progress. S9 reflected upon the moments of uncertainty related to their academic requirements. Examples include writing papers, gaining sufficient computer skills, and meeting faculty expectations. Students felt they were not ready for the demanding pace and extensive reading requirements.

> "Since the intensity is constant, I believe the initial year is likely the most challenging, as one adjusts to everything". (S9)

"I was challenged with the academic requirements… they are completely different from the school experience". (S1)

"The multiple roles encountered, make me feel overwhelmed… despite being a senior student, I am still struggling with how to balance the dorms-study life". (S3)

"I am satisfied with services provided by the dormitory s, for example, satisfactory serving of quality food, students' club center, gym, library, high-speed internet and medical care. However, we have self-responsibility towards personal and academic matters that overwhelm our daily life". (S18)

An Arabic student (S11) commented on the challenge of language barriers that can exacerbate the already existing academic pressure:

"We usually face some problems with the language in personal and academic life … in fact, the issue is that they might use a different English pronunciation".

3.1.2 Socialization and support network

For some students, interacting with people coming from different backgrounds/cultures and adjusting to a new language while navigating communal living was considered overwhelming. Miscommunication due to language and cultural differences m exacerbate social isolation.

"Sometimes, I have conflicts with people who hold different opinions because they feel that the meaning or value of what we're arguing about is more important to them than it is to me". (S3)

Additionally, the intense academic environment of universities can heighten the pressure to excel academically, adding to the stress of adapting to dormitory life. Participants experienced studying in a new place, knowing nobody when they initially arrived, and in some cases not trusting strangers. While facing a myriad of academic issues, this time period was clouded with personal concerns and difficulties.

"Maybe I didn't joke because I didn't know them… trusting people and finding real friends". (S11)

On the other hand, more experienced (senior) students recalled happier memories of good times.

"We created a myriad of memories with our classmates, however, at time of study and exam, it was hard to have entertainments". (S4)

Most of students experienced depression, stress, nostalgia, loneliness, felt homesick and missed their families at various times during their first-year study. However, those who had a family member living with them or who had close friends experienced the symptoms less intense and fewer negative emotions.

"I initially struggled, due to being in an unfamiliar environment without friends or acquaintances from my previous circle". (S1)

"When you don't have anyone to say anything to, you just feel lost, because there's no one to either guide you or to listen to you". (S6)

"I faced challenges in initiating social interactions and forming connections with my classmates. This struggle affected my ability to find a support network and contributed to feelings of loneliness and alienation during the early years in the program". (S2)

A male student (non-Arab) raised an important issue in terms of social network and cultural background posing socialization challenges, especially in interactions with females.

"Cultural differences and social barriers within the university environment added some challenges to me, particularly in interacting with female peers and maintaining boundaries". (S3)

3.1.3 Navigating financial challenges

Given that most of students had to rely on their parents or other family members for financial support, they could be predisposed to feel financial stress in regard to their financial requirements. Many students were worried about their financial situation.

"Sometimes I want to buy something, but because I usually have limited amount of money for living expenses, I couldn't". (S8)

"I get embarrassed every time I ask my father for extra money… I prefer to forego my needs rather than burden him with extra expenses". (S7)

3.1.4 Looking to fit in

The consistent theme which students imparted was the challenges they experienced initially as they began their journey of loneliness, homesickness, and crossing cultures. However, these experiences were interwoven with feelings of independency and self-control. In this regard, senior students stated:

"Aside from the hard moments, I feel stronger right now than before". (S18)

"I can face any other challenges that I might face… I feel like this has made me more independent and self-controlled". (S20)

"I can deal with any potential fears and frustrations after I lived these experiences… I am ready to graduate, join a new working environment, travel abroad, and so on". (S17)

3.2 Recommendations from students' perspectives to improve their experiences

The content analysis revealed that students' recommendations encompassed three dimensions: university (i.e., the professional sphere), peers, and self, capturing messages to facilitate students' adjustment process. As the students lived a rich experience of expatriation, those fitting in offered suggestions for other expatriates. These messages enclosed advice, recommendations, and suggestions that might help in managing students' stress or difficult emotions, maintaining their mental wellbeing, and enabling them to navigate challenges with resilience and adaptability.

3.2.1 Professional support

Participants recommended that future students should get benefit from the services provided by the deanship of student affairs for both co-curricular and extra-curricular activities.

> "The orientation sessions were crucial to lessen the confusion I was felt… There are lots of useful activities on campus, for example, sports activities, events, and competitions in different fields". (S21)

Another student drew attention to the language lab and recommended its services.

> "When I struggled in language…. my academic advisor advised me to visit the language lab and check its services… I really got benefits that time". (S12)

In addition to these recommendations, lot of students also emphasized the value of one-to-one consultation sessions with professionals in their respective fields. These consultations were regarded as essential opportunities to gain specialized insights, expert advice, and career guidance tailored to individual aspirations and academic pursuits. Students highlighted the unique advantage of interacting directly with professionals who could offer firsthand knowledge, industry-specific advice, and practical strategies for success.

> "We need a person that can debrief and advise students that are going through different academic issues". (S2)

The personalized nature of these consultations allowed students to address specific concerns, explore career pathways, and receive mentorship from professionals. Similarly, other students asked for personal consultations with professionals to enhance their adjustment process, either as expatriates or newly transferred undergraduates entering tertiary education. They expressed the strong need for initiating a students' office and promoting continuous student-professional communications.

> "Sometimes I need to talk with a consultant… I mean… talking to someone who is professional and able to guide me". (S11)

> "Lots of issues, like self-esteem, self-control, social support, self-efficacy… need to be strengthened… Of course, I need someone to give me a hand". (S15)

> "My parents are available all the time, we communicate regularly; however, there are some issues I prefer not to disclose, therefore, the presence of a special office that could meet our needs as expatriates is essential" (S13).

3.2.2 Social support

Students added that there are other ways to cope with challenges of expatriation, i.e., socialization and creating support network. Most of the students faced problems with their friendships due to miscommunication and cultural differences. In addition, existing in a new and unfamiliar place alone (i.e., separated from their original friends and family) pushed them to avoid steps toward socialization with their peers in the new environment. However, some senior students reflected that they made active efforts to form new friendships during the fresher period.

> "Despite the negative feelings encountered by most of us initially (e.g., depression, loneliness, etc.) plus the fear of getting friend with bad people, we made efforts to find good colleagues and form friendships with trusted people". (S23)

> "When I started developing more friendships, I felt like they [friends] were at the same level of me, we shared similar thoughts and opinions. So, it was much better, as if there were physical friends around me". (S22)

One of the strategies that helped the students to form good friends and get socialized were trips and events. Students underscored the significance of such informal bonding activities as avenues for fostering meaningful connections with fellow students. Engaging in group activities and outings provided opportunities for students to bond with their peers outside the academic setting, nurturing friendships and support networks that extended beyond the confines of the classroom.

> "For me, I would request to do more activities in the university, such as doing more trips, playing more sports and so on". (S9)

These activities ranged from outdoor excursions to cultural events and team-building exercises, allowing participants to unwind, socialize, and cultivate a sense of belonging within their academic community. Moreover, participants emphasized the importance of stepping out of their social circles and comfort zones to meet new people from diverse backgrounds and disciplines. By embracing opportunities for cross-disciplinary interaction and networking, participants expanded their perspectives, enriched their social experiences, and developed valuable interpersonal skills essential for their personal and professional growth.

Another message derived from the content analysis concerned the importance of communication. Students emphasized that communication plays a pivotal role in their experiences, facilitating their integration into new environments and fostering a sense of belonging. For them, effective communication with family, friends and colleagues is essential for building relationships, both within academic settings and the broader community.

> "Communication with my colleagues and my classmates in major helps me to enlarge my social circle, and as a university student this has helped me a lot later on in my practical courses, to be involved with other professionals and healthcare providers". (S4)

These proficient communication skills are vital for academic success, as they facilitate collaboration with peers, participation in class discussions, and understanding of course materials. On the other hand, many of students articulated that they did not get the chance to communicate with their families often during their early transition, because of numerous reasons, including time differences and the academic pressures they encountered.

> "There're time differences between my sister and I, time zone disparities create scheduling conflicts. Frequently, I lose motivation, and grapple with difficulties throughout the day, and

there's no one for me to tell. So, it kind of brings me down a bit… and it did affect my grades at some points". (S8)

3.2.3 Peer support

Most students enrolled in health science programs, expressed a strong preference for one-to-one consultation sessions (peer tutoring) with older or senior peers as a valuable resource.

"If we have someone older to give us advice, it will improve our academic progress, and all of these things… they could understand us easily". (S1)

Additionally, students noted the benefit of receiving tailored guidance that resonated with their individual goals and circumstances, which they believed was best facilitated through these personalized interactions. In addition to one-to-one consultation session, group consultation sessions with peers from the same college emerged as another favored approach among students.

"So, I think it would be very nice to have like a peer group of people who they can relate to". (S5)

These sessions provided a dynamic forum for collective problem-solving, knowledge-sharing, and mutual support within a collaborative setting. Students valued the diversity of perspectives and experiences that group sessions offered, allowing for the exploration of different strategies and solutions to common challenges.

3.2.4 Self-support

Students reflected on the strategies they themselves had and continued to utilize in order to overcome the challenges they experienced. For example, some revealed the importance of time management, and how it was difficult to apply it in their first years. They mentioned how efficient time management allows students to balance their academic responsibilities with opportunities for cultural exploration and social integration. By prioritizing tasks, setting realistic goals, and establishing a structured schedule, students can maximize productivity and minimize stress. They attended related workshops in this regard to be able to effectively manage their time. They tried to allocate sufficient time for language learning, networking, and engaging in extracurricular activities, which are essential for personal growth and integration into the host community.

"One of my coping mechanisms I've used is the time management, I really struggled to imply it in my first few months of university, but it was beneficial where I always set a strict daily routine for myself, which helped me stay busy most of the time and to keep everything in check". (S9)

In addition to attending workshops, seminars and seeking advice, students watched motivational videos to improve their resilience, self-efficacy, and self-control. They believed that these strategies might empower them to make the most of their overseas experience and achieve both academic and personal success.

"I watched many videos, went a hundred times to my academic advisors, attended self-development workshops, and sought advice from seniors to be able to overcome this stage". (S19)

4 Discussion

4.1 Main outcomes

UAE is among the leading global countries experiencing an increasing trend of internationalizing its universities, attracting students and staff from diverse nationalities worldwide. Consistent with this trend, the present study explored suggested improvement strategies in dealing with expatriate students' challenges, deriving from the analysis of their lived experiences in UAE. This study used a qualitative phenomenological approach; 22 in-depth interviews were held with expatriate students. This approach allowed a deep understanding of their experiences, revealing strategies that can enhance future students' experiences.

Our main findings were related to the "experiences of expatriate health sciences students," specifically relating to university dormitory-study life balance, socialization and support network, financial challenges and looking to fit. These were "must-hear" messages from experienced students' perspectives to ensure smooth experiences for future students. Despite the students providing satisfactory feedback toward the dormitory s themselves, missing the home environment, meals, and comfort remained vital to those who lived in the dormitory. Therefore, in addition to the academic challenges they faced as new transferring students, they were challenged with keeping the balance between their dormitories and academic life. This experience was similar to findings reported from previous studied in the Gulf region (Alasmari, 2023; Qiqieh and Regan, 2023) and other expatriate learning contexts (Deuchar, 2022; Qadeer et al., 2021; Tajvar et al., 2024).

In this regard, students recommended that their future colleagues should commit to the attendance of orientation sessions held by the university, join the language lab to improve their language skills, and interact with professionals (i.e., attending advising sessions held by academic advisors, and asking for peer tutoring). These consultations are crucial chances to receive specialized insights, expert guidance, and career advice customized to students' personal aspirations and academic goals. Through establishing stability in their academic lives, students can manage their new personal lives more efficiently (Alasmari, 2023; DeLuca, 2005; Pološki Vokić et al., 2021).

This experience of imbalance could be an important contributor to students' emotional challenges, which were triggered by their feelings of homesickness and loneliness, as reported in previous studies (Li et al., 2021; Zheng et al., 2023). However, to overcome these challenges, Alasmari (2023) suggested that students might form friendships with local residents, possibly due to the encouraging demeanor of colleagues, and university administrators.

In the present study, students agreed that social support offers opportunities for perspective-taking and problem-solving, as friends and loved ones may offer insights or solutions that individuals might not have considered on their own. By participating in various trips and events, they were able to manage feelings of loneliness. These nurturing social connections and fostering a supportive network can enhance coping abilities and contribute to overall wellbeing of the students. This finding supports previous studies in this regard (Li et al., 2021; Khawaja and Stallman, 2011). Moreover, communication with peers was revealed in the present study to be a way of empowering students to adapt successfully to new environments and thrive academically and socially, consistent with Oktavianti et al. (2024).

In terms of financial matters, besides the tuition fees, there are expenses incurred by students. Despite, the services offered by the department of student affairs, i.e., good quality food, high-speed internet, library, medical care, and transportation services, students were still in need to some other expenses that might cause some financial stress, which is commonly reported worldwide (Mikecz Munday, 2021).

In terms of peer support, students showed a preference toward having regular peer tutoring sessions. These sessions were highlighted as instrumental in providing a personalized and supportive environment for discussing academic challenges, navigating career aspirations, and seeking advice on personal development (Arthur, 2017; Chantaraphat and Jaturapitakkul, 2023). The intimate nature of these consultations fostered a sense of trust and comfort, allowing for open dialogue and the exchange of valuable insights. The University of Sharjah has initiated a peer tutoring system as one of the forms of academic support it offers to all students. The sense of camaraderie and solidarity fostered within peer support groups created a supportive community where students felt empowered to engage in meaningful discussions and receive feedback from their peers. Furthermore, group sessions also could facilitate the exchange of resources and practical tips, enhancing students' learning experiences beyond the confines of traditional classroom settings (Page et al., 2019). Students considered that group consultation sessions would provide a rich and interactive platform for mutual learning and growth among peers. However, students preferred having private academic advisors meeting sessions. In addition to peer support, self-support played a significant role in the experience of students in higher education. Using proper measurement tools to evaluate the success of these proposed recommendations is crucial. For example, surveys, focus groups, interviews, and the utilization of existing institutional data tracking systems can help analyze trends in academic performance and student support needs. Additionally, collecting feedback from peer tutors can provide valuable insights. By combining these methods, universities can gain comprehensive insights into the effectiveness of their peer tutoring programs and support initiatives. To our knowledge, previous studies have not addressed this form of support (Alasmari, 2023; Deuchar, 2022; Zheng et al., 2023).

These recommendations are beneficial for all students, although expatriate students would particularly benefit from tailored solutions to their specific challenges. Consequently, the participants in this study expressed a strong need for the university to establish an expatriate students' office that fosters ongoing communication between expatriate students and university professionals.

4.2 Limitations

While this research study was conducted on a small scale with gender imbalance, and its findings cannot be broadly applied, they may be applicable to comparable settings within transnational universities in the region. Despite the study's limitations, it identified several issues worthy of further exploration in future studies involving larger student populations with a more balanced sample could further explore gender differences. Moreover, the data in this study were exclusively used for qualitative analysis. Subsequent research into students' adjustment to life and education in the UAE could consider employing mixed-methods or quantitative approaches. Integrating

additional data sources, such as university records, peer observations, or secondary data and including participants from other universities within UAE, would enhance the reliability of the findings and provide a more robust validation of the results.

5 Conclusion

As higher education in the Gulf region becomes more globalized, it is crucial for university communities to grasp the challenges students face when adapting academically and socially. Developing an effective support system is essential to ensure a smooth students' expatriation experiences. This study contributed to an in-depth understanding of students' experiences and recommendations in the UAE. The findings propose suggestions and recommendations that may help in future planning including maximizing professional support, providing peer tutoring, boosting academic advising and consultation, encouraging students' socialization, and guiding student self-development as necessary. This research should be replicated to include diverse universities in UAE and across the region.

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

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Cultivating change: an evaluation of departmental readiness for faculty diversification

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Despite the increasing number of racially and ethnically minoritized (REM) individuals earning PhDs and the substantial investment in diversity initiatives within higher education, the relative lack of diversity among faculty in tenure-track positions reveals a persistent systemic challenge. This study used an adaptation of the Community Readiness Tool to evaluate readiness for faculty diversification efforts in five biomedical departments. Interviews with 31 key informants were transcribed and coded manually and using NVIVO 12 in order to assign scores to each department in the six domains of readiness. The results revealed no meaningful differences in overall scores across institutional types, but did show differences within specific domains of readiness. These findings indicate that readiness is multi-faceted and academic departments can benefit by identifying priority areas in need of additional faculty buy-in and resources to enhance the success of diversification efforts.

1 Introduction

Increasing faculty diversity in the biomedical sciences holds immense promise for fostering equitable representation, enriching the STEM research environment, and driving groundbreaking discoveries. There is a persistent lack of diversity among academic faculty (Hofstra et al., 2022; Matias et al., 2022) and well-documented benefits of diversification (Llamas et al., 2021). A diverse faculty enhances students' experiences by challenging them to think critically about knowledge production and to adopt a more inclusive perspective. Faculty diversity also enriches the curriculum and faculty discussions (Gasman, 2016). Diversifying STEM faculty is not just a moral imperative; it is a strategic investment in the future of research. Diversity is a catalyst for innovation, bringing diverse minds together to ask new questions and drive groundbreaking discoveries (Hewlett et al., 2013; Hofstra et al., 2020; Jones et al., 2020).

While "diversity" can broadly be defined as representation of "various social identities, experiences, and perspectives" (American Psychological Association, 2021), we focus on racial and ethnic diversity in higher education and particularly in the biomedical sciences. This decision was informed by several considerations, including the widespread use and availability of robust demographic data and the reality that a lack of

racial and ethnic diversity serves as an indicator of broader issues that may impact other dimensions of diversity (such as differential opportunities, barriers to access, and exclusionary practices).

Institutional efforts often misdiagnose the causes behind lagging faculty diversity, perpetuating the "pipeline fallacy" that increasing the number of racially and ethnically minoritized (REM) scholars earning PhDs will automatically result in a more diverse professoriate (Boyle et al., 2020). While expanding the pool of REM postdoctoral scholars is part of the solution (Patt et al., 2022), relying solely on this approach risks perpetuating structural inequities due to systemic barriers embedded within academia. In fact, the pool of REM PhD graduates in biomedical sciences has grown, yet their transition into faculty roles has not kept pace (Gibbs et al., 2014). This disconnect underscores the limitations of focusing narrowly on numerical representation without considering broader structural transformation.

Achieving meaningful demographic change in the professoriate requires a paradigm shift underpinned by an equity mindset that prioritizes structural transformation, acknowledging that institutional factors, not individual shortcomings, are the root cause of barriers to REM scholars' advancement. We embrace the definition of equity as "an ongoing process of assessing needs, correcting historical inequalities, and creating conditions for optimal outcomes by members of all social identity groups" (American Psychological Association, 2021). Equity in this frame recognizes differences in the starting conditions and subsequent needs of some to reach success, as opposed to assuming an equal footing from the onset. From this perspective, institutions must critically examine and reform hiring practices, prioritize retention as much as recruitment, redefine exclusionary metrics of faculty "fit," and actively cultivate environments where REM scholars can thrive (Griffin, 2020; White-Lewis, 2020).

Patt et al. (2022) argue for the importance of addressing barriers at the postdoctoral stage, as demographic data on PhD graduates obscures the experiences of those employed as postdocs and the ongoing challenges of diversifying faculty, particularly at research-intensive institutions. Postdoctoral scholar-to-faculty conversion programs have emerged as a promising "grow-your-own" strategy to connect postdocs to tenure-track positions (Culpepper et al., 2021). However, the role of institutional context in the success of such programs has not been systematically evaluated.

It is crucial to assess the environments where future faculty will work. Without addressing departmental readiness to support diversity initiatives, any gains from diversification programs risk being undermined by unwelcoming or inequitable climates, perpetuating the "revolving door" phenomenon, with diverse scholars leaving due to unwelcoming, non-inclusive environments (Griffin, 2020, p. 323). We adopted the APA definition of inclusion as "an environment that offers affirmation, celebration, and appreciation of different approaches, styles, perspectives, and experiences, thus allowing all individuals to express their whole selves (and all their identities) and to demonstrate their strengths and capacity" (American Psychological Association, 2021). In this article, we provide a model for assessing departmental readiness for diversity initiatives, using it to evaluate the conditions in five biomedical departments and identifying barriers that may hinder success.

2 Existing research on faculty diversity initiatives

Institutional transformation aimed at successful faculty diversification requires changes in institutional goals, policies, support, and rewards (Campbell et al., 2009; Hrabowski et al., 2011; Newman, 2011; O'Rourke, 2008; Wunsch and Chattergy, 1991). Smith et al. (2004) emphasize the importance of strategic interventions to enhance faculty diversity, such as special-hire opportunities, diversity indicators in job descriptions, search waivers, spousal hires, expanded job descriptions, modified search requirements, shortened processes, cluster hiring, and out-of-cycle hiring. These strategies, when applied equitably and in compliance with hiring regulations, can contribute to creating a more inclusive and representative faculty.

However, Sensoy and DiAngelo (2017, p. 560) note that scholars including Ahmed (2012), Brayboy (2003), and Henry et al. (2017) identify three key challenges with university-wide diversity initiatives and policies at historically white colleges and universities (HWCUs). First, HWCUs often treat diversity as a standalone issue focused on the inclusion of students and faculty of color without addressing the institution's deeply ingrained whiteness in its policies, practices, and structures. Second, the responsibility for implementing and sustaining these initiatives disproportionately falls on junior faculty of color and the small number of senior faculty of color, burdening them with additional labor that often goes unrecognized or unrewarded. Finally, these initiatives frequently obscure the pervasive "grammar of Whiteness" (Bonilla-Silva, 2011), normalizing racialized practices and discourses that marginalize faculty of color while leaving the underlying logics of whiteness unexamined and unchallenged.

Unfortunately, when planning diversity efforts, the institutional readiness for such change is often overlooked or overestimated because diversity initiatives are implemented in individual departments rather than entire institutions. White-Lewis (2022, p. 338) argues that "Neglecting departmental contexts fails to explain how all academic units bound by the same university policies…reach such different outcomes, even when comparing disciplines with similar levels of racial diversity." Rather than institutional readiness, Lee et al. (2007) favor focusing on department readiness because the academic department is central to a university's hierarchy and bridges institutional priorities.

Community readiness describes the degree to which a community is prepared for change in order to implement an intervention focused on an issue of interest (Castañeda et al., 2012; Plested et al., 2006). Past research on community and organizational readiness for change used a number of assessment tools to evaluate readiness (Castañeda et al., 2012; Edwards et al., 2000; Weiner et al., 2008). The Community Readiness Tool (CRT), based on the Community Readiness Model (CRM) (Donnermeyer et al., 1997), is the most widely used instrument for measuring readiness to tackle an issue (Edwards et al., 2000). A review of use of the CRT (Kellner et al., 2023, p. 24) found that while most studies (55%) defined community based on geography, researchers also defined the concept to include institutions (27%), ethnicity (18%), identity (8%), and LGBTQ+ communities (9%). The CRM emphasizes the importance of aligning interventions with a community's stage of readiness to prevent misaligned efforts that may not gain traction. Communities using the CRM to holistically assess readiness experience higher levels of implementation success and

stakeholder involvement compared with other communities (Thurman et al., 2007).

A readiness assessment involves measurements in six dimensions (existing efforts, knowledge of existing efforts, leadership, community attitudes/climate, knowledge about the issue, and resources). The nine levels of readiness are no awareness, denial/resistance, vague awareness, preplanning, preparation, initiation/implementation, stabilization, confirmation/expansion, and community ownership (Edwards et al., 2000; Table 1).

Considering faculty diversification efforts, Griffin (2020) asserts that it is essential to focus on faculty recruitment and hiring processes, particularly for full-time and tenure-track positions, as well as the cultural and environmental aspects of their workplaces (p. 301). Biased practices based on idiosyncratic preferences have been observed in faculty hiring committees (White-Lewis, 2020), and even when REM scholars secure faculty positions, structural challenges can limit their ability to thrive. They may face unwelcoming or hostile academic environments; microaggressions, lack of mentorship, and the devaluation of research on race or ethnicity can create barriers to their retention, advancement, and long-term success (Culpepper et al., 2021). And according to Gasman (2016), excuses and resistance to revising or rethinking policies are common in the academy: "…faculty will bend rules, knock down walls, and build bridges to hire those they really want (often white colleagues) but when it comes to hiring faculty of color, they have to 'play by the rules' and get angry when any exceptions are made. Let me tell you a secret—exceptions are made for white people constantly in the academy; exceptions are the rule in academe" (p. 206).

Biases and structural inequities in recruiting and hiring are exacerbated for postdoctoral positions, a key step toward faculty roles in many disciplines. Patt et al. (2022) describe the postdoctoral career stage as a "closed system" akin to an "old boys network" (p. 3). Relying on limited networks exacerbates existing racial and gender disparities (Herschberg et al., 2018; Patt et al., 2022). Searches for postdoc positions are often based on personal networks with little institutional oversight, and many openings are never publicly advertised (Herschberg et al., 2018; McGlynn, 2019; Patt et al., 2022). This informal process makes it difficult for REM candidates to learn about opportunities, let alone secure them. Principal investigators, who hold considerable power in hiring postdocs, are predominantly white and male (Yosso et al., 2009) and often have racialized

professional networks. The resulting recruitment process favors candidates within these networks, effectively sidelining qualified REM scholars who lack network connections. The lack of transparency in postdoctoral researcher hiring makes it difficult to pinpoint where interventions are needed to promote equitable practices and the diversification of the STEM workforce (Herschberg et al., 2018; Heirwegh et al., 2024; McGlynn, 2019; Culpepper et al., 2021). Disrupting existing processes will require introducing alternative pathways into the professoriate (Boyle et al., 2020; Gutiérrez y Muhs et al., 2012; Harris et al., 2023; Sensoy and DiAngelo, 2017).

2.1 The key role of academic departments

Academic departments are a type of community characterized by a collective of individuals who, despite diverse perspectives, share mutual interests, interact regularly, and cultivate a sense of belonging and group identity, particularly during the hiring season. During searches, faculty collaboratively navigate decisions that shape the department's future, reflecting shared values and priorities. Moreover, academic departments are where hiring decisions actually occur. As Boyle et al. (2020) explain, "The general lack of intentionality in the recruitment of historically underrepresented minorities speaks to the rift that exists between the communication of underrepresentation as a national problem and its treatment at the department, where actual progress needs to be made" (p. 20). Departments can play a crucial role in reshaping hiring processes to foster—or obstruct—faculty diversity (White-Lewis, 2021). Using the campus as a broad unit of analysis may overlook differences in readiness between departments. Some departments may be ready to implement diversity initiatives, while others may not, making campus-wide readiness assessments an ineffective measure. Academic departments hold the reins of change, exerting a profound influence on the composition of the faculty body (Edwards, 1999; Hobbs and Anderson, 1971; Ryan, 1972).

Diversity initiatives aimed at influencing faculty hiring, including postdoc conversion programs, can be complex and challenging to implement. A department may have to modify its hiring procedures, which some members may perceive as a threat to departmental autonomy. Given these dynamics, we argue for shifting focus from applicants to the actions, willingness, and commitment of

TABLE 1 The table presents the six dimensions of readiness and how they were applied to departmental readiness to support a diversity initiative aimed at faculty.

Dimension	Departmental readiness application
1. Existing efforts	To what extent are there efforts, programs, & policies that address recruiting and retaining faculty from diverse backgrounds?
2. Knowledge of efforts	To what extent do department members know about any of the department's efforts to recruit and retain faculty from diverse backgrounds and how it impacts the department?
3. Leadership	To what extent are appointed leaders and influential departmental members supportive of efforts to recruit and retain faculty from diverse backgrounds?
4. Climate	What is the prevailing attitude of the department toward the recruitment and retention of faculty from diverse backgrounds?
5. Knowledge of the issue	To what extent do department members know about the causes of the lack of diversity, the need for recruitment and retention of faculty from diverse backgrounds, and the consequences for the department?
6. Resources allocated to the issue	To what extent are people, time, money, space, etc. available to support the implementation effort?

Adapted from Edwards et al. (2000).

departments to drive meaningful change. Assessing readiness to make those changes is an essential step that can assist leaders in designing effective strategies. This study presents the results of one such departmental assessment; while the specific diversity initiative in question was a postdoc conversion program (Culpepper et al., 2021), our findings have implications for successful diversification efforts more broadly.

2.2 Motivation for the study

The AGEP PROMISE Academy Alliance (APAA) is an NSF-funded initiative to develop and study a model for leveraging a state university system structure to diversify faculty. Five public institutions began collaborating in 2018 to implement a faculty diversity effort centered on postdoctoral conversion to tenure-track faculty positions. In 2020, the APAA leadership team and its external advisory board discussed the important but unexamined role of the departmental environment into which REM postdocs would be hired and developed for potential conversion into faculty roles. Given the research demonstrating how bias, climate, and microaggressions–both personal and structural–discourage REM scholars from remaining in the academy (Allen and Stewart, 2022; Rodrıguez et al., 2014; Turner et al., 1999), we wanted to determine whether departments were safe and supportive environments for REM candidates.

This study builds on an exploratory case study of a single biomedical department's readiness to adopt a faculty diversity initiative (Carter-Veale et al., 2024). We extend the prior work to examine the readiness of biomedical departments at four additional institutions in the same mid-Atlantic state higher education system. The departments are located in different types of institutions: two research-intensive universities, one mid-size doctoral university with high research activity, and two primarily undergraduate, regional comprehensive institutions. We address two key questions: What is the level of readiness in each department to recruit and retain faculty from diverse backgrounds? And does the level of readiness differ depending on the type of university?

3 Methods

We conducted a cross-sectional study with a mixed-methods design. We adapted the Community Readiness Model and modified the second edition of the CRT (Oetting et al., 2014; Michaels, 1983; Slater et al., 2005) to create a Departmental Readiness Tool. While previous applications of the CRM to higher education defined the university campus as the community (Edwards et al., 2015; Edwards et al., 2016; Kelly and Stanley, 2014; Wasco and Zadnik, 2013; Wichmann et al., 2020), we defined a community (our unit of analysis) as a biomedical department taking part in the APAA project and our issue as "the recruitment and retention of faculty from diverse backgrounds." Readiness was defined as a department's willingness and commitment to change in order to recruit and retain faculty from diverse backgrounds.

The study was approved by the University of Maryland, Baltimore County Institutional Review Board. Interviewees provided their written informed consent to participate.

3.1 Setting and participants

The setting was five biomedical departments in the Mid-Atlantic University State System, which serves over 150,000 students at more than 10 institutions, multiple regional centers, and a system office. Each institution operates independently under a president and provost, while a chancellor guides system-wide strategies. Table 2 presents key institutional data.

Mid-Atlantic R1 (MAUR1), the flagship institution in the system, is a top public research university. Among a student body of over 40,000, 20.1% are from REM groups, while only 10.9% of the 4,000+ faculty members identify as REM individuals. Its six key informants consisted of one lecturer, three full professors (including the department chair), and two assistant professors, with a gender composition of five women and one man.

Mid-Atlantic Professional School R1 (MAUPSR1), specializing in public health, law, and human services, operates as an academic health center with a strong emphasis on biomedical research and clinical care. It enrolls over 7,000 students and employs over 3,000 faculty. REM students are 26.0% of the population, while REM faculty are 13.6% of the professoriate. Participants included one associate professor and five full professors (the department chair and co-chair among them), with a gender composition of four men and two women.

Mid-Atlantic R2 (MAUR2) is a mid-sized research university. It enrolls over 13,000 students (27.3% REM) and has over 1,000 faculty members (11.8% REM). Participants included two associate professors and four full professors (including the department chair and co-chair), consisting of five women and one man.

Mid-Atlantic Primarily Undergraduate Institution 1 (MAPUI1) is a comprehensive regional university enrolling over 8,000 students and employing 600+ faculty. REM students are 19.3% of the population, while REM individuals make up 7.4% of faculty. Participants were two associate professors and four full professors, including the department chair and co-chair; the gender breakdown was two women and four men.

Mid-Atlantic Primarily Undergraduate Institution 2 (MAPUI2) is also a regional comprehensive institution, specializing in health professions and aspiring to achieve R-2 Carnegie status. It enrolls over 21,000 students (32.8% REM) and has over 1,500 faculty (13.2% REM). Participants included one associate professor and six full professors (including the department chair and co-chair), consisting of six women and one man.

The second edition of the CRT (Oetting et al., 2014) recommends interviewing six to eight key informants per community. We completed six or seven interviews in each department, resulting in 31 total interviews. Key informants were recommended by APAA leadership team representatives from each campus, as they were familiar with the departments where the initiative had been implemented. They identified members of their institution's biomedical department who had significant knowledge of the department's dynamics and a history of departmental service. We used a combination of purposive and convenience sampling methods, considering factors such as faculty rank and service roles (e.g., previous service on search committees), gender, and leadership positions. We attempted to capture a comprehensive range of perspectives on the department's readiness for recruiting and retaining faculty from diverse backgrounds. We prioritized participant autonomy, confidentiality, and anonymity.

TABLE 2 The table presents key data on the institutions that are the locations of the five biomedical departments in the study.

Institution	Type	Carnegie classification	REM enrollment (graduate and undergraduate)	Student body	Faculty (#)	White non-Hispanic	REM	Other minority	Foreign	Unknown
MAUR1	Flagship Research University	Doctoral Universities: Very High Research Activity	20.1%	40,709	4,264	56.0%	10.9%	13.2%	11.0%	9.0%
MAUPSR1	Academic Health Center	Special Focus Four-year: Research Institution	26.0%	7,137	3,363	59.9%	13.6%	17.9%	8.5%	0.1%
MAUR2	Leading Research Institution	Doctoral Universities: Very High Research Activity	27.3%	13,497	1,103	65.4%	11.8%	15.5%	7.4%	
MAPU1	Affordable and Inclusive Institution	Master's Colleges & Universities: Larger Programs	19.3%	8,124	633	82.3%	7.4%	8.1%	1.4%	0.8%
MAPU2	Top Public University with Health Focus	Master's Colleges & Universities: Larger Programs	32.8%	21,917	1,697	69.7%	13.2%	10.8%	4.7%	5.9%

Racial diversity across departments was minimal, with each department represented by primarily white faculty and one or two members who identified as racially/ethnically marginalized. This pattern allowed us to look closely at how mostly non-REM individuals interpret and react to departmental diversity initiatives.

3.2 Interview tool and data collection

We used the 40 questions in the Community Readiness Tool (CRT) handbook (Oetting et al., 2014; Plested et al., 2016) to assess readiness in six dimensions: existing efforts, knowledge of efforts, leadership, climate, knowledge of the issue, and resources allocated to the issue (Supplementary Appendix). Kelly and Stanley (2014) provide details and specific steps for conducting a readiness assessment. Two APAA leadership team members independently adapted the questions to make them relevant to the research topic and then worked together to arrive at a consensus. The modified questions were pretested with an APAA leadership team member who gave feedback on wording and clarity.

Scholars studying race and ethnicity concur that racial issues are typically "hot button" topics in the United States, causing people of color to become vocally angry and white people to become silent, defiant, or disconnected (Singleton and Hays, 2008). Kaplowitz et al. (2019) suggest that "an important part of the role of the facilitator in dialogues is to ensure that societal inequality is not re-enacted within the dialogue space" (p. 47). Our internal evaluator, an expert in race and ethnicity, recognized the complex power dynamics and racialized social structures inherent in interviewing predominantly non-REM key informants about faculty diversification and recommended employing an external interviewer to mitigate potential biases linked to institutional affiliation and perceived insider-outsider status. This approach aligns with the assertion by Merriam (2009) that external interviewers can enhance data reliability by creating the social distance necessary for authentic participant engagement. To foster rapport and facilitate candid, unguarded responses, we recruited an experienced interviewer whose racial and gender identity aligned with the majority of our participants. Virtual video interviews occurred in July and August 2021 and were recorded, with handwritten notes taken by a consultant, a middle-aged white man who was a former academic. Participants were instructed to answer based on their perception of what department members think and know, not their own personal beliefs. A professional transcription firm transcribed the interviews, and the transcriptions were verified by the research team.

3.3 Data analysis

The internal evaluator and two graduate assistants independently reviewed all transcripts and followed the standard CRT scoring protocol and procedures (Oetting et al., 2014). Each of the six dimensions was rated numerically, with one indicating "no awareness" and nine indicating "high level of departmental ownership." According to the CRT handbook, when scores fall between two whole numbers, the prescribed procedure is to round down to the lower stage of readiness.

The exploratory data analysis involved two rounds of thematic analysis of the 31 interview transcripts. The first round consisted of manual analysis. We read the transcripts and listened to the interviews to check for transcription accuracy. The internal evaluator and a graduate assistant repeatedly read and coded each interview using a deductive approach, with predefined categories derived from the six dimensions of readiness. For the second round, we used NVIVO 12 software for coding. The internal evaluator and a second graduate assistant revisited the text multiple times to ensure consistent application of the coding scheme and to refine identification of relevant data segments. Table 3 summarizes the scoring rubric.

4 Results

In this section, we present quantitative readiness scores for each department and comments from key informant interviews that highlight important themes. This approach contextualizes the numerical scores (Figure 1).

Table 4 shows the overall mean readiness scores and standard deviations for each department and their scores for each dimension of readiness. The assessment revealed little variation in overall readiness across the five departments, indicating that institutional type, by itself, is not a primary factor determining readiness for faculty diversity initiatives. The highest overall mean readiness score

TABLE 3 The table presents the nine stages of readiness, a description of each readiness stage, and examples used for scoring interviews.

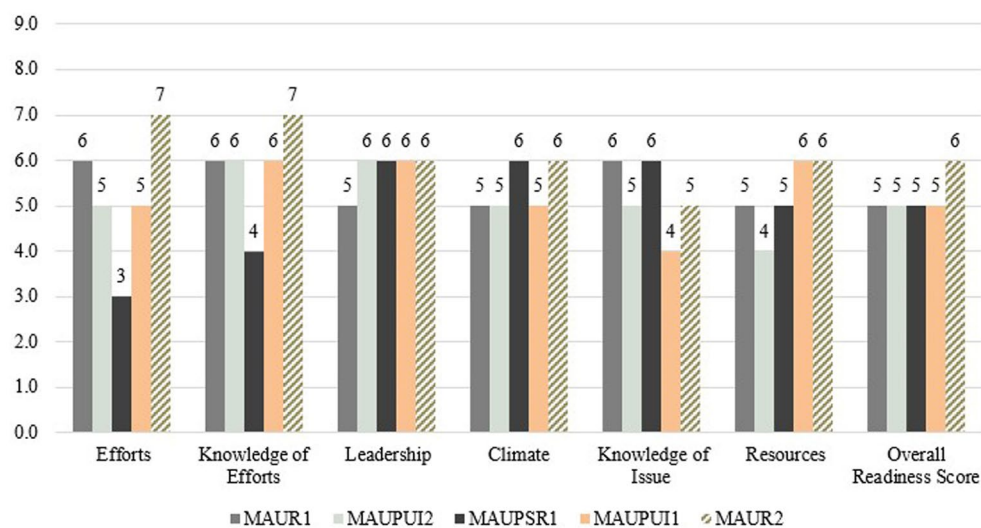| Readiness stage	Readiness assessment	Examples applied to "recruitment and retention of faculty from diverse backgrounds"
1. No awareness	Issue generally not recognized as a problem.	The department is unaware of the lack of diversity among its faculty, potentially attributing it to external factors like applicant pools, overlooking unconscious biases in hiring practices, or not prioritizing diversity as a departmental value.
2. Denial/Resistance	At least some members of the department recognize the issue as a concern, but there is little recognition that it might be occurring locally in the department.	Some faculty or staff acknowledge the lack of diversity but deny its impact on the department's academic mission, ranking, or student experience, minimizing it by blaming external factors, ignoring concerns as "political correctness" or just ignoring the issue altogether.
3. Vague awareness	Most feel there may be a local concern, but there is no immediate motivation or willingness to do anything about it.	The department believes it could benefit from increased faculty diversity, but there is no clear understanding of the challenges or strategies involved, a lack of direction in discussions, the potential perpetuation of stereotypes about diverse candidates and no clear leadership
4. Preplanning	Clear recognition that something must be done and there may even be a group addressing it. However, efforts are not yet focused or detailed.	The department recognizes the need for diversity and initiates discussions to explore potential solutions. However, concrete actions and budget allocations are still lacking despite the formation of committees or specific efforts for data collection and strategy development.
5. Preparation	Active leaders begin planning in earnest. Department has modest interest in efforts.	The department has developed comprehensive plans, including recruitment strategies, outreach initiatives, and microaggression and bias mitigation. Adequate resources have been allocated with active involvement from leadership to foster a welcoming and inclusive department climate that supports the retention of faculty members from diverse backgrounds, thus embracing diversity as a core value.
6. Initiation/ Implementation	Enough information is available to justify efforts. Activities are underway.	The department is currently implementing pilot programs aimed at recruitment and retention efforts. The program includes mentorship initiatives, diversity postdoctoral fellowships, and inclusive faculty search procedures. Additionally, staff members are undergoing training on unconscious bias and inclusive practices. The department is actively seeking feedback and utilizing evaluation data to make necessary adjustments to their strategies.
7. Stabilization	Activities are supported by administrators or department decision-makers. Staff are trained and experienced.	The department's leadership and resources are dedicated to implementing initiatives, protocols, and strategies for recruiting and retaining faculty from diverse backgrounds. Regular assessment of hiring practices is conducted to identify and mitigate potential bias. The department also fosters an inclusive environment, emphasizing mentoring and professional development and actively celebrates the valuable contributions of diverse faculty members.
8. Confirmation/ Expansion	Efforts are in place. Department members feel comfortable using services and they support expansion. Local data regularly obtained.	Once efforts are stabilized, the task is to expand and enhance them. The department prioritizes diversity and inclusiveness in its mission and strategic plan, recruitment strategies, and evaluation process, aiming to create an inclusive environment for diverse faculty to contribute to the discipline. Regular data collection and analysis ensure continuous improvement and accountability for initiatives designed to bring about change.
9. High level of ownership	Detailed and sophisticated knowledge exists about prevalence, causes, and consequences. Effective evaluation guides new directions. Model applied to other issues.	The department establishes effective funding mechanisms and incorporates them into regular business practices to maintain sustainability, as relying solely on grant funds may lead to diminished efforts when the funds run out. At the highest level, active and continuous support from the department is essential.

was M = 6.69 (SD 0.59) for MAUR2, placing it in the Initiation/Implementation stage. The other departments scored in the Preparation stage.

In an academic community, there may be a tendency to interpret readiness scores as passing or failing "grades" rather than as a baseline level of readiness for an intervention. Instead of fixating on overall scores, it is more productive to focus on dimension scores to identify areas that warrant improvement. Our assessment found notable differences in readiness within dimensions, whether comparing departments on a dimension or looking at a single department across all dimensions.

4.1 Dimension: existing diversity efforts

Diversity efforts were broadly interpreted to include any program, workshop, policy, or training that directly or indirectly affects recruitment and retention of REM faculty, including the postdoctoral conversion initiative. This dimension evaluates how much department members know about programs already underway. ANOVA results (Table 5) indicate a statistically significant difference between departments ($p < 0.001$). MAUR2 (M = 7.21, SD 0.19) and MAUPSR1 (M = 3.25, SD 1.57) had the highest and lowest average scores, respectively, corresponding to the Stabilization and Vague Awareness stages. The two primarily undergraduate institutions, MAPUI2 (M = 5.71, SD 0.97) and MAPUI2 (M = 5.33, SD 0.75), had mean scores of 5 (Preparation stage), while MAUR1 (M = 6.17, SD 0.49) fell into the Implementation stage.

MAUPSR1 department members, at the Vague Awareness stage, showed limited recognition of existing faculty diversity efforts, with few respondents able to identify any initiatives. A faculty member mentioned that the department has "considerable efforts in pipeline programs for younger—for undergraduates, for high school students, even middle school students and getting them into science" but "there are no specific efforts in the department to recruit diverse faculty members." In contrast, key informants at MAUR2, which fell into the

Stabilization stage, could name and describe multiple, sustained diversity initiatives for students and faculty that had been in place for over 4 years, including "a Pre-professoriate program, APAA postdoctoral conversion program, implicit bias training, and an ADVANCE grant addressing gender diversity" mentioned by one person. Another key informant expressed commitment to diversity and STEM education "as indicated by our undergraduate and graduate programs and our faculty recruitment. We are just very aware of it and go out of our way to make sure that women and minorities are part of the shorter long list [of candidates]." MAUR2 did not reach the next stage of readiness because there was no evidence that they were developing new efforts based on evaluation data.

MAUR1 is at the Initiation/Implementation stage, indicating that efforts are underway but have been in place fewer than 4 years. Respondents describe some diversity efforts, such as "the presidential postdoctoral fellowship program, the McNair program, and a Diversity of Science Initiative." MAUR1 is part of the President's Postdoctoral Fellowship Program, but this program focuses on placing postdocs in tenure-track positions at other institutions rather than diversifying their own faculty.

In some departments, the APAA postdoctoral conversion program was the sole effort identified by key informants as a faculty diversification initiative. Informants from other departments mentioned additional activities, such as anti-bias training and microaggression workshops, aimed at fostering a more inclusive environment. Members of MAUR1, MAPUI1, and MAPUI2 described various initiatives that, while not directly focused on recruiting diverse faculty, help create a more welcoming environment for both faculty and students. For example, a respondent at MAPUI2 mentioned their "Howard Hughes Medical Institute, in their Inclusive Excellence program, which is in science education, focused on cultural change, so creating more welcoming and inclusive STEM culture at the university level." In that grant-funded project, "We also train faculty in cohorts, and those faculty go through implicit bias training. They learn about inclusive teaching practices. And as part of that training, they are talking about and thinking about diversity issues." Initiatives

TABLE 4 The table presents the mean scores and standard deviations for each department on each dimension of readiness, as well as department overall scores.

Dimension	MAUR1	MAPUI2	MAUPSR1	MAPUI1	MAUR2	Dimension mean	Range of readiness levels
Efforts	6.17	5.71	3.25	5.33	7.21	5.53	*Vague awareness—*
	(0.49)	(0.97)	(1.57)	(0.75)	(0.19)	(1.46)	*Stabilization*
Knowledge of efforts	6.71	6.14	4.83	6.00	7.46	6.23	*Preplanning—*
	(0.98)	(1.02)	(1.28)	(0.85)	(0.58)	(0.97)	*Stabilization*
Leadership	5.88	6.32	6.71	6.50	6.92	6.46	*Preparation—*
	(2.05)	(0.45)	(0.25)	(0.65)	(1.13)	(0.40)	*Implementation*
Climate	5.25	5.21	6.08	5.63	6.42	5.72	*Preparation—*
	(1.30)	(1.33)	(0.66)	(1.20)	(1.03)	(0.53)	*Implementation*
Knowledge of issue	6.38	5.43	6.04	4.04	5.96	5.57	*Preplanning—*
	(0.59)	(1.13)	(0.51)	(1.98)	(1.95)	(0.92)	*Implementation*
Resources	5.00	4.50	5.83	6.29	6.21	5.57	*Preplanning—*
	(0.94)	(1.53)	(1.76)	(0.53)	(0.46)	(0.79)	*Implementation*
Overall readiness score	5.90	5.55	5.46	5.63	6.69	5.85	*Preparation—*
							Implementation
Standard deviation	(0.66)	(0.66)	(1.24)	(0.89)	(0.59)	(0.50)	

*Scale ranges from 1 to 9, with 1 indicating the lowest level of readiness.

with less formal structures targeting the departmental climate or extending social networks for hiring diverse candidates complement more structured efforts.

One MAPUI2 respondent pointed to specific actions such as recruitment and retention activities that the department actively engaged in:

> We make a concerted effort to contact, for example, HBCUs and other minority-type institutions and networks in order to advertise these positions, don't know if the department itself is aware of many of the other offices on campus that could help. But being somebody who is very involved in that on a personal level, I know who to reach out to, but I'm not sure how much of a departmental awareness of that there is. …. Prior to DEI discussion it has just been talk, action has occurred in the last 3 years. We have had initiated conversations with our diversity, equity, and inclusion offices [at MAPUI2] to simply ask what else we can do to improve not just recruitment, because I think recruitment, we're actually pretty decent. It's the retention and promotion part, I think that's more difficult.

A key informant at MAUR1 described an additional strategy to make REM faculty more comfortable in the department:

> Well, at our regular faculty meetings, because of concern that some faculty of color may feel uncomfortable speaking up publicly, we now have a middle person…So they could send a private chat to this spokesperson who is, I think the chair assigned, who is viewed as a neutral party and who pledges anonymity. And so, anyone at all who wants to make a comment to the group, instead of raising their hand, they could just send an anonymous chat to that person. And the spokesperson would say, I received…a comment in the anonymous text, someone wonders whether such and such.

The analysis of MAUPSR1's diversity efforts indicates limited awareness of and action on faculty recruitment and retention, reflecting the Vague Awareness stage. Although no informants mentioned the department's existing postdoc conversion program, two highlighted upcoming diversity initiatives, including a collaborative NIH FIRST grant application with their peer institution, MAUR2, which has the highest readiness score in this study. One MAUPSR1 respondent described the FIRST grant as "designed to help recruit individuals from diverse backgrounds. It is NIH FIRST program, which is the Faculty Institutional Recruitment for Sustainable Transformation, or something like that, which is a program designed to provide funding for recruitment at an institutional level, recruitment of multiple positions for individuals from diverse backgrounds who have made a commitment to improving diversity in environmental sciences." Despite this initiative, several informants suggested that departmental efforts remain focused largely on student pipeline programs spanning middle school to graduate levels, with limited immediate strategies to recruit and retain diverse faculty in the department. One individual described current efforts:

> Again, these are all to get underrepresented minority students into that graduate student pipeline, bring them onto campus, give them those exposures. And I think…the long-term goal is to get them into faculty positions, and I've had around eight, nine students go through …in…14 years. Three of them have been part of [MAUR2's nationally prestigious] program or these other programs. And two of them have gone on to, one is [a] postdoc… [in] Vermont, and one is now a faculty member at Spelman College in Atlanta. So she is faculty. So I think the pipeline is working, I think the logic behind the pipeline is good…There really needs to be more opportunities. We're trying at that level.

The emphasis on external placements reflects a broader commitment to faculty diversity but a lack of active efforts to address

TABLE 5 ANOVA results for dimension scores and overall readiness scores between departments.

ANOVA table*							
			Sum of squares	df	Mean square	F	Sig.
Efforts * institutional type	Between groups	(Combined)	50.99	4	12.75	14.97	<0.001
	Within groups		22.15	26	0.85		
	Total		73.14	30			
Knowledge of efforts * institutional type	Between groups	(Combined)	22.50	4	5.63	5.96	0.00
	Within groups		24.55	26	0.94		
	Total		47.04	30			
Leadership * institutional type	Between groups	(Combined)	3.82	4	0.96	0.80	0.54
			31.07	26	1.20		
	Total		34.89	30			
Climate * institutional type	Between groups	(Combined)	6.86	4	1.72	1.32	0.29
	Within groups		33.81	26	1.30		
	Total		40.68	30			
Knowledge of issue * institutional type	Between groups	(Combined)	20.28	4	5.07	2.67	0.05
	Within groups		49.34	26	1.90		
	Total		69.62	30			
Resources * institutional type	Between groups	(Combined)	15.91	4	3.98	2.84	0.05
	Within groups		36.44	26	1.40		
	Total		52.34	30			
SCORE * institutional type	Between groups	(Combined)	6.02	4	1.51	2.12	0.11
	Within groups		17.78	25	0.71		
	Total		23.81	29			

*The grouping variable institutional type is a string, so the test for linearity cannot be computed.

diversity deficits in their own faculty. This limited focus contributes to the department's Vague Awareness score.

4.2 Dimension: knowledge of efforts

This dimension measures the extent to which individuals or groups understand the presence, scope, and purpose of initiatives aimed at recruiting and retaining faculty from diverse backgrounds. The interviews indicate that while some faculty are aware of diversity efforts, their understanding is often superficial or incomplete.

ANOVA results indicate a statistically significant difference across departments ($p = 0.00$). Given the lack of faculty diversity initiatives at MAUPSR1 described above, it is not surprising that it had the lowest mean score (M = 4.83, SD 1.28), falling into the Pre-planning stage. A MAUPSR1 respondent noted their lack of knowledge:

We are certainly aware of at least a small number of studies that show that increased diversity tends to lead to successful outcomes in the biomedical workforce. I think at least some of the faculty are aware of those sorts of driving forces behind the need to improve this….I would say that people are very aware that this is an important criterion. If you ask me about, are people aware of specific programs that are available, then I would say probably a few. I don't know. I haven't heard of any specific funding mechanisms or even initiatives, to be honest, for diverse faculty retention.

Another MAUPSR1 respondent attributed the department's limited awareness of diversity efforts to its "large size" and the effects of the pandemic, noting that "there is not as much discussion…and so, that could lead to a lack of dissemination of the information." However, another respondent disagreed, asserting that "there's a lot of different ways to get the information if you want to get the information." They pointed to multiple channels—new

faculty orientation, regular faculty meetings, involvement in retention and training programs, and communication with the department chair—as ample avenues for staying informed about faculty diversity issues.

Three institutions, MAPUI1 (M = 6.00, SD 0.85), MAPUI2 (M = 6.14, SD 0.85), and MAUR1 (M = 6.71, SD 0.98) were at the Initiation/Implementation stage, while MAUR2 (M = 7.46, SD 0.58) scored at the Stabilization stage. Any stage above Initiation/Implementation suggests that the faculty can both identify an initiative by name, such as the Diversity Science Initiative introduced at MAUR1, and explain the benefits of the program. Referring to the APAA program, a respondent from MAPUI1 said:

> I'm thinking that had there not been a [postdoc conversion] program, we would have just sort of continued the way that we always continued in the past. We would have – even though, like I say, I think diversity has always been something that has been on our mind, we didn't really make any sort of formal move in that process other than, prior to the program, we would advertise for a faculty member and that would have to go through our diversity office at the university in terms of any kind of hiring.

Similarly, respondents at MAPUI2 mentioned that their inclusive hiring strategies are widely known within the department, even among those who may not actively engage in diversity initiatives. By expanding social networks and updating practices for advertising faculty positions, the department has increased awareness of their diversity efforts: "Even if they are not interested, they have heard of it. And they know that we are doing these efforts. To what level they are aware of where to go, and what to do and how much they want to be involved is a whole different kind of question, but at least they are aware of it." This suggests that knowledge of these strategies has permeated departmental culture and communication channels, establishing diversity efforts as a shared knowledge base.

A common theme that emerged is that department members are generally more aware of diversity initiatives targeting REM students than those focused on faculty. Regarding searches, departments prioritize knowledge about recruiting faculty from diverse backgrounds, including through the APAA postdoc conversion program, emphasizing formal, *de jure* procedures to support equitable hiring. Although they have introduced new administrative procedures to support these goals, they still heavily rely on faculty members to publicize open positions through their personal and professional networks. Because networks often reflect existing racial patterns, *de facto* discrimination may persist without direct mitigation efforts. Department leaders typically communicate diversity initiatives through faculty meetings, emails, and specialized seminars with invited speakers. However, the effectiveness of communication depends on faculty attendance and active engagement, which can be inconsistent, limiting broader awareness and full participation in diversity-focused hiring initiatives.

Awareness of diversity efforts varied due to several factors, including misconceptions, communication practices, and faculty engagement. Some faculty may hold misunderstandings about the necessity of these initiatives, believing responsibility for recruitment

lies elsewhere. Consistent and effective communication, such as regular updates in faculty meetings, can enhance awareness. Conversely, a lack of engagement or unclear messaging can lead to a disconnect.

MAUR1, MAUPSR1, and MAPUI2 have established effective communication channels for disseminating information about diversity initiatives. MAUR1 excels in engagement, with one informant noting, "Our chair talks about [diversity recruitment efforts] at our faculty meetings on a regular basis…So, I would say that would be the reason why [the majority of faculty are aware]." According to a respondent, MAPUI2 maintains consistent awareness as well: "We discuss faculty recruitment in our faculty meetings… the majority of the faculty know about the attempts at recruiting diverse faculty."

All institutions have strengths and areas for improvement. For example, despite its effective communication channels, MAUR1 faces engagement challenges, as one informant remarked: "The pandemic wore on people's memories… some of these things have sort of dropped off people's radar." MAUPSR1, a large department, faces differences in awareness; an informant stated, "I would think a small minority of the department faculty are aware of this new initiative." At MAPUI2, a subset of faculty is informed, such that "even if they are not interested, they have heard of it… at least they are aware of it." This highlights a critical gap between the existence of initiatives and faculty knowledge about them.

In this readiness dimension, we find that the challenge in advancing diversity initiatives in universities lies in the difference between recognition and understanding. While faculty may recognize the importance of diversity and the existence of related efforts, they often lack a deep understanding of the initiatives themselves, their goals, strategies, and broader impacts. This gap can prevent faculty from fully engaging with the initiatives, supporting them effectively, or contributing meaningfully to their success. Faculty participation may remain superficial or passive, rather than proactive and transformative.

Faculty engagement in diversity initiatives can be hindered by gaps in knowledge. At MAUPSR1, faculty members recognize the importance of diversity, but the depth of these efforts is not well understood. MAUPSR1 faculty members asserted, "Faculty diversity needs to reflect the diverse student body," suggesting a shared understanding of diversity's significance. At MAUR1, faculty members understand the value of diversity but lack a comprehensive understanding of its goals and systemic changes needed for effective support. At MAUR2, many faculty members understand the value of diversity but few actively work to understand related issues. Some faculty members view diversity as a numbers game, limiting meaningful engagement and preventing effective support for these initiatives.

The CRM emphasizes that to progress in readiness, stakeholders must move from mere awareness to a substantive understanding of initiatives. Without this shift, misconceptions and passive attitudes may persist, undermining the initiatives' success. Bridging this gap requires targeted education and communication to clarify the necessity and potential benefits of diversity initiatives. By fostering a deeper, shared understanding of efforts, institutions can better align faculty support with the goals of recruitment and retention strategies, ultimately driving meaningful departmental and institutional change.

4.3 Dimension: departmental leadership

The leadership dimension assesses the level of commitment and awareness of departmental leaders, including administrators, department chairs, and senior faculty, their understanding of the problem, and their active support for meaningful and sustained efforts to address it. The scores in this dimension ranged from 5.88 to 6.92. Four out of the five mean scores round down to a 6, placing them in the Implementation stage, including MAPUI2 (M = 6.32, SD 0.45), MAUPSR1 (M = 6.71, SD 0.25), MAPUI1 (M = 6.5, SD 0.65), and MAUR2 (M = 6.96, SD 1.13). MAUR1 (M = 5.88, SD 2.05) scored at the Preparation stage. While some studies find that administrators and department chairs hold varied attitudes toward diversity, with some adopting active strategies and others taking a more passive or avoidant approach (Gasman et al., 2011), we did not find significant variation in leadership readiness.

A MAUR1 respondent's account of the chair's leadership style reveals a systematic approach to integrating diversity discussions into departmental activities: "He has this commitment to monthly focused meetings and inviting in speakers." This structured tactic aims to keep diversity efforts at the forefront of departmental priorities.

The initiatives department members mentioned, such as anti-racist summits and training on microaggressions, exemplify the leadership's commitment to fostering an inclusive environment. One MAUR1 respondent noted, "Our department has implemented training sessions on unconscious bias, and leadership has made it a point to participate, showing their commitment to these efforts."

Findings from the thematic analysis highlight significant challenges and nuances in the leadership dimension. While key informants felt that departmental leaders generally acknowledged the importance of diversifying faculty, some leaders view it as a secondary priority. As an informant at MAPUI1 explained, "We can hire extensively, but ensuring faculty workload meets contract requirements is my main priority. If I prioritized diversity, essential tasks would not get done. Diversity is an add-on—more of an awareness project." This sentiment reflects the treatment of diversity as an auxiliary concern, rather than one of a department's core priorities.

Moreover, leaders' stances on diversity were often influenced by top-down directives from higher administrative levels. A respondent from MAPUI2 noted, "Our chair, I think…he's really just following what the people higher up are kind of promoting. I think this is a consequence of the top-down thing." Reliance on external administrative support or prodding highlights sometimes limited internal ownership of diversity efforts, which can undermine the continuity and effectiveness of initiatives. As one MAPUI1 interviewee emphasized, "Leaders are the chair and associate chair who wrote the job description; the dean funded the position, and the chair forms a hiring committee to make it happen." Institutional leaders beyond the dean level did not factor into this faculty member's perception of departmental leadership.

Competing priorities—especially within resource-constrained environments—led some leaders to perceive a zero-sum situation, where diversity initiatives could detract from other essential departmental needs. As a respondent from MAUR1 explained, "Some of them have said that since they have been trying to recruit and retain people and have not been successful at recruiting and retaining

people, why dedicate time to that? 'We have been trying,' according to some senior people, so, 'and they are still not coming, so why recruit?'" This reflects a sense of resignation and a narrow perception of diversity efforts, where increasing representation is seen as hopeless and incompatible with other departmental goals or priorities. This perspective does not challenge the effectiveness of current practices or acknowledge that existing recruiting strategies might be flawed. Instead, it deflects responsibility by implicitly blaming candidates for not applying, rather than considering alternative approaches or addressing systemic barriers that may deter REM individuals from seeking positions at the institution. An unwillingness to critically evaluate existing methods limits the potential for meaningful progress.

Finally, ambiguity surrounding targeted mentoring for REM faculty reflects a lack of clarity among departmental leaders. An informant from MAUR2 noted, "I'd say they are sort of in the middle. They understand the problem. It's not something they have necessarily lived. And they have come to understand that there are people that have a lived experience that looks like this and are on board with that." This highlights a gap between recognition of the issue and implementation of concrete, supportive actions for minoritized faculty. Another MAUR2 respondent commented, "We heard, sort of, murmurs that some people did not feel like this was the right approach in terms of changing how we would do anything because they felt like the best people will be the people we hire, and it does not matter what their minority status is." This reported sentiment reveals resistance to intentional efforts to hire REM faculty; diversity-related support may be perceived as an unnecessary or even divisive strategy, rather than a necessary tool for retention and success.

4.4 Dimension: departmental climate

Three departments (MAUR1 M = 5.25, SD 1.30, MAPUI1 M = 5.63, SD 1.20, and MAPUI2 M = 5.21, SD 1.33) scored at the Preparation stage, while MAUPSR1 (M = 6.08, SD 0.66) and MAUR2 (M = 6.42, SD 1.03) scored at the Initiation/Implementation stage. In departments at the Preparation stage, key informants reported that their colleagues passively support efforts to address the issue, but only a few play an important role in developing solutions. Department members have not taken broad ownership of the problem; they do not believe it is their responsibility to handle the issue and might not actively engage in its resolution:

> What seems to be the problem is the actual work that needs to be done to actually change the department…So…we did a survey and I think 95% of the faculty said they are interested in this stuff, like changing the culture and stuff like that. But it doesn't translate. And oftentimes what they often focus on in translation is a focus on students, representation of students of color, and all that stuff and not on themselves, the things that need to be corrected on themselves to help with that change. (MAUR1 respondent)

At MAUR1, members report a sentiment of helplessness, feeling that they have tried everything they know to do but their efforts have not been successful. Key respondents agreed that the departmental

climate is not sufficiently welcoming to faculty from diverse backgrounds and were concerned because they had recently lost a REM faculty member to another institution.

MAPUI1 and MAPUI2 respondents acknowledged the demographic disconnect between their student body and faculty and suggest that it is a concern that affects all of them. A MAPUI1 faculty member explained, "I think we recognize that students need to sort of see themselves in the faculty that teach them or see a similar population....it makes me a better scientist, to have people with diverse views and experiences." But members of these departments noted the relatively passive support for faculty diversity. A MAPUI1 respondent commented, "I would say everyone is supportive of the idea. It's the effort that might be lacking."

Scoring at the Initiation/Implementation stage suggests that a department understands that they are responsible for addressing the issue but they have only made modest efforts to do so. In response to MAPUI2's efforts to discuss the results of their climate study, an interviewee noted differences in degree of involvement for this issue as opposed to other topics: "I would say, 60 to 80 faculty...attend monthly mandatory meetings. We had a meeting to talk about the climate survey when it comes to representation of faculty and all that stuff and how we are affecting pedagogy and making the environment inclusive and welcoming to students. And when we had that meeting, about 35 of the faculty showed up." A MAUPS1 respondent's comment also highlights the level of engagement:

> I know it's an issue beyond our department within our institution, especially in our location in downtown [mid-Atlantic city], and I know from discussions with colleagues at other institutions that as we said before, that they are aware of and struggle with this same issue without a huge amount of success. So it's definitely a topic that's out there and under consideration. Beyond that, I don't know a lot of details.

Participants noted how busy faculty are, potentially causing them to view diversity as an "add on" that was not a priority on the long list of items to be accomplished. However, in some cases, a key leader's efforts motivated a department to prioritize diversification. For instance, the MAUR2 department had no prior experience with a postdoc-to-faculty conversion program, but the dean encouraged them to participate in the initiative:

> Multiple departments at [MAUR2] had the option to participate. And I think the biology department was very overall enthusiastic about it. So even though it's not an effort that was necessarily spearheaded by the biology department, the biology department certainly embraced it.

4.5 Dimension: departmental knowledge of issue

The Knowledge of the Issue dimension assesses a department's understanding of broader societal factors contributing to the lack of faculty diversity in the department. This dimension reflects the department's awareness of systemic inequities, such as racism, sexism, and discrimination, that have historically limited access to

academic positions for underrepresented groups. The lack of diversity among faculty is not just a departmental issue but a reflection of larger societal patterns, as well as barriers faced by underrepresented groups in academia, such as implicit bias, unequal mentorship opportunities, and disparities in funding or research support.

ANOVA results find significant differences ($p < 0.05$) on scores for this dimension, which fell into three stages of readiness: Pre-planning (MAPUI1 M = 4.04, SD 1.98), Preparation (MAPUI2 M = 5.43, SD 1.13 and MAUR2 M = 5.96, SD 1.95), and Initiation/Implementation (MAUR1 M = 6.38, SD 0.59 and MAUPSR1 M = 6.04, SD 0.51).

Despite being the first to implement the postdoc conversion initiative, MAPUI1 scored the lowest on this dimension, at the Preplanning stage, indicating that members of the department recognize that something must be done but their efforts are not yet focused with concrete ideas to address the problem. They are not particularly aware of structural issues in society broadly or higher education specifically that create a continued need to recruit and retain REM faculty. Uncertainty in the department about what the problem is and how to solve it is reflected in this comment:

> We're afraid to offend and we're afraid to, afraid that we don't know things that we should know about. We see it, and we've got the guilt over it, I think. I think we have the white guilt over it. We look at ourselves, even on Zoom, and there's a whole picket fence going across of white people, and all talking about these issues that, you know, we don't know what percentage of Black kids make it through our program. We have anecdotal evidence from certain ones and what we kind of sense, but we don't know. We don't, I don't know.

> I still think there's some misconceptions on how we actually hire...diverse individuals, right? I mean, because there's very few of them that wanna give up our standard way of evaluating...And to realize that, in every other search, our practices may have prevented these colleagues from rising up on the list is a hard thing to believe you did...And I think most people can't even hear that, so. And if you can't hear it, then how do you acknowledge that you were part of preventing people from a diverse background?

MAPUI2 and MAUR2 are at the Preparation stage in their knowledge of the issue. Some participants noted that departments might need to share faculty demographic data to demonstrate that they are not as racially diverse as faculty imagine. Despite various faculty diversity initiatives, key informants reported that members of the department at MAUR2 have limited awareness of systemic issues that lead to unequal outcomes:

> I think a lot of people think that if you're a minority in STEM that you're golden and you'll get a job. What I would say, you might get an interview, but you won't necessarily get the job.

> I think people think that the reason we don't recruit faculty from diverse backgrounds is because there are none; no one applies. I believe this is wrong, but I think [others believe], "Well, if they

applied we would hire them. But there are none. They don't apply, so we can't hire them."

Another MAUR2 respondent suggested that knowledge of the issue is based on lived experience:

So I think that a lot of them have a general idea about this, but may have never actually seen the numbers, okay? And a lot of them come from communities where you rarely saw someone who was underrepresented, [because] they're as old as they are. So I'd say they're sort of in the middle. They understand the problem. It's not something they've necessarily lived. And they've come to understand that there are people that have a lived experience that look like this, and are on board with that. And then there are some people who are extremely well informed.

MAUR1 and MAUPSR1 are at the Initiation/Implementation stage. Some key informants felt that attention within the department was still on applicants rather than structural factors such as hiring processes:

I think it's a little bit of the case of, that we don't know what we don't know. Faculty have a good knowledge of what's needed to retain a minority faculty as opposed to attract them from the beginning. (MAUPSR1 respondent)

However, others reported that their campuses were making efforts to educate faculty and staff about racial equity, leading to greater understanding:

Well, I think there's a lot of literature with the events of the past year that just, [I'm] thinking COVID but also thinking racial equity type of stuff. So, it's a topic of conversation. And so, yeah, I think everyone is a lot more aware. And then on our campus our president has routinely [held] town halls and I guess panel discussions where he's open and that topic is routinely brought up. (MAUPSR1 respondent)

While one MAUR1 respondent mentioned cluster hiring as a possible solution, another argued that they need a more sustainable solution:

Hiring several faculty at the same time to support this initiative… the idea would be to bring, kind of a cohort-style hire. So, bringing on maybe three or four faculty or something at the same time who focus on diversity science. And ideally these would also be faculty from diverse backgrounds, although they didn't have to be. And bringing them on together so there's, again, this community amongst the faculty who are collaborating and doing this research together and also collaborating with other folks in the department. And basically, in hopes, because with retention, also that could be really powerful, having these folks come in together and kind of build this community.

It's, "Once we recruit one or two, we should be good." But I think there's just an incentive for this to be a regular process that happens all the time. It's like it should be the norm in the future, but not just cluster or incentive for a certain period of time. I think

that's the misconception that a lot of people probably have. I think there was a lot of people who think like, "If you just recruit a few," but actually, it's not enough. You need to have some work in the process on a continuous basis so people are supportive and people are supported by a bigger net instead of just an island in recruitment by themselves.

4.6 Dimension: departmental resources

Our analysis revealed statistically significant differences ($p < 0.05$), with institutions falling into three stages of readiness: Pre-planning (MAPUI2 M = 4.50, SD 1.53), Preparation (MAUR1 M = 5.00, SD 0.94, and MAUPSR1 M = 5.83, SD 1.76), and Initiation/Implementation (MAUR2 M = 6.21, SD 0.46 and MAPUI1 M = 6.29, SD 0.53).

At the time of our interviews, MAPUI2 had not implemented the postdoc conversion initiative and were in the process of committing resources to faculty diversification. They were aware of the message that it sent when and if they relied on grant funds, as one MAPUI2 respondent explained: "Sustaining these efforts through grant funds suggests that the efforts are temporary. So some efforts are funded externally and the funding will go away." Another respondent compared their lack of resources to a private research-intensive institution, saying "Of course [Johns] Hopkins, they can just go and sort of hand-pick and get the people and just offer more money because they can afford it. A state institution might have a harder time putting up that money….that actually [is] what frustrates me, that Hopkins actually is doing that, because I think that's not only unfair, I think it's really hurting academia overall." The assumption is that primarily undergraduate institutions are in competition with private research-intensive institutions for the same REM candidates, and are likely to lose the contest. This "high-demand/low supply" myth of a bidding war for REM scholars persists despite being debunked (Smith et al., 2004).

The two research-intensive institutions (MAUR1 and MAUPSR1), with operational budgets of over a billion dollars each, were at the Preparation stage:

The chair…has actually put aside $200,000 to focus on broadening participation and increasing representativeness of samples and students and trying to do a pipeline for, focus on doing a pipeline for postdocs to people of color to, that will transition to an assistant professor. This is why I feel like leadership, at least my chair, is invested because he's actually been, put away $200,000 and has encouraged both my work and my colleagues, and my work in trying to get these funds. (MAUR1 respondent)

We're not there yet but we're working on it. We've not had any specific programs, efforts identified for other, say, faculty recruitment in diversity other than the expressed wish that we need to recruit a more diverse faculty. Those resources come to the chair to use to recruit new faculty then. But again, it's not a separate pot of money that is designated for diverse [individuals]. (MAUPSR1 respondent)

The readiness scores indicate that size or institutional budget does not automatically determine the level of resources available to

support diversity efforts. MAUR2 and MAPUI1 both scored at the Initiation/Implementation stage, despite their differences in focus (research vs. teaching), size, and budget. MAUR2 had several other postdoc conversion programs on campus, and one respondent explained why no new resources were being committed: "No resources are being allocated to solve a problem that in their minds no longer exists." Another MAUR2 informant asked, "Is there really need for additional interventions?" A MAPUI1 interviewee discussed expanding their resources to address the issue, saying "we had zero before [the initiative], and now we are looking at, we used to have no policies written down at all for anything. Now, we are becoming more policy-driven, and so, we are adding a little bit, we are adding these…the diversity statement and rubric." Another MAPUI1 respondent is optimistic about future resources for this new hiring path:

> For incoming tenure-track faculty members, they are given research monies to sort of continue with and start up a research program. As far as I know, this will be the case for this postdoc position as well. So, I think if we were to continue down this way and hire any people like this, then those internal funds would continue to be provided. This comes primarily through the [school], through the dean's office is really who determines how much research money people are given to sort of support their research at the beginning of their career.

Most departments rely on external funding from offices at the provost, dean, or college level to support initiatives for recruiting and retaining diverse faculty. While some departments have diversity, equity, and inclusion (DEI) administrators or access to institutional resources, others lack designated departmental funds for faculty diversification. Despite these limitations, departments offer professional development opportunities specifically aimed at addressing diversity issues, which some faculty actively use to enhance their skills. As a MAUR2 respondent noted, "Several people in my department have taken it upon themselves to train… by acceding to positions of leadership and committees…Our people go to workshops and all kinds of extracurricular activities to try and improve their understanding and skills." This highlights a proactive effort by some individuals to take advantage of available resources that the department offers to address diversity challenges, even as systemic, long-term solutions remain underdeveloped.

5 Discussion/conclusion

This study employs a novel application of the Community Readiness Model (CRM) to evaluate the readiness of biomedical departments at five universities to recruit and retain faculty from racially and ethnically minoritized (REM) backgrounds. We used the Departmental Readiness Tool (DRT) to assess departmental readiness across the CRM's nine stages, ranging from no awareness to community ownership. This framework provided a nuanced baseline for understanding each department's capacity to implement and sustain faculty diversity initiatives.

In our analysis, overall readiness scores did not vary meaningfully by type of institution, with all five departments scoring in the middle of the readiness continuum, in the Preparation ($n = 4$) or Initiation/Implementation ($n = 1$) stage. However, there were more differences between departments when comparing scores within domains, with statistically significant differences in several areas. This affirms, that the department is an important level of community to examine for understanding the contexts where diversification efforts would take place. The DRT is successfully able to differentiate dimensions where departments are more and less prepared. It also underscores the DRT's utility, regardless of institutional type, in providing actionable departmental data to drive improvements in readiness.

None of the departments in this study received an overall score indicating the highest level of readiness. Our findings challenge the argument by White-Lewis (2021) that the success of faculty diversity strategies "greatly depends on various configurations of an *institution's* type and resources" (p. 340), as this was not an important factor in overall readiness levels. While institutional resources and configurations may facilitate diversity initiatives at a macro level, they do not ensure that departments are prepared to implement or sustain them. Departmental readiness offers a more targeted approach to understanding the factors that enable or hinder the success of diversity initiatives.

The variability in scores on different dimensions highlights the significant role of departmental actors. Key informant interviews indicated that most of the departments have relatively successfully negotiated the hurdles of attracting talented REM students, but may fail to recognize that REM faculty confront similar issues. Former University of Richmond President Ronald Crutcher summarized the need for ongoing efforts, saying "Systemic racism is a peculiar American condition. It's like a heart condition—it's not something you can get rid of. You cannot fix it. But you can manage it" (cited in Brown, 2021, p. 17). Addressing racial equity and faculty diversity requires sustained commitment and deliberate action rather than isolated, one-time efforts.

Discussing the complexities of fostering diversity within institutional contexts, Brown (2021) suggests that "Not all institutions, offices, or departments are ready to diversify. People of color who are hired often end up feeling isolated and frustrated, and leave after a couple of years" (p. 90). Her definition of readiness ("being comfortable with being uncomfortable, inviting new perspectives into decision-making, and, in some cases, giving up power" [p. 90]) provides a compelling framework for understanding the cultural and structural shifts required for sustainable diversity efforts. Our study builds on Brown's work by applying the CRM to operationalize and measure readiness as the degree to which a department is ready to take action on the recruitment and retention of faculty from diverse backgrounds.

The CRM conceptualizes readiness not as a binary state (ready or not ready) but as a continuum, with varying levels of readiness across six dimensions. Readiness is multi-faceted and dynamic. For example, one department in our study demonstrated high readiness in terms of leadership support and resource allocation but exhibited lower readiness in the departmental climate, with lingering resistance to change among members. This variability underscores Brown's argument about the discomfort and power dynamics inherent in fostering diversity. Departments must not only invite new perspectives in but must also address relational resistance and structural barriers to ensure that newly hired individuals—particularly those from

underrepresented groups—are included and valued rather than isolated and frustrated.

While this study uses data collected at a single timepoint, readiness is not static; it can change over time with targeted interventions. Departments that initially exhibit low readiness in some dimensions can make measurable progress after engaging in facilitated dialogues, training sessions, and ongoing evaluations. Departments should view readiness as a developmental process, that can be cultivated through intentional efforts.

Our findings also contribute to understanding the critical role of departmental contexts in shaping the outcomes of diversity initiatives (Boyle et al., 2020; White-Lewis, 2020). Considering these contexts can help explain why academic units within the same university—operating under uniform institutional policies such as implicit bias training and equity office interventions—may yield vastly different results (White-Lewis, 2021). Lee et al. (2007) argue that "the keys to more lasting reform may lie in the academic department….Trying to implement change too hastily in the department, however, may squander resources or at best result in a quick flush of change that quickly vanishes when the intervention is withdrawn….If the level of readiness is not sufficient, department leadership and faculty members should first create such readiness before moving forward with significant change interventions" (p. 17). Diversity initiatives confront structural issues embedded in societal inequities and university policies and practices. Departments must not only express readiness but also take proactive and sustained steps to address systemic inequities. As inequity and structural barriers are fundamentally social issues, STEM departments may benefit from the support of their social science colleagues to design and implement effective interventions. By fostering interdisciplinary collaboration, departments can develop comprehensive approaches to managing systemic inequities, ensuring that diversity initiatives translate into meaningful and lasting institutional transformation.

Gaps in departmental readiness should not delay diversity and inclusion efforts. Waiting until a department is fully ready can perpetuate existing disparities. By assessing readiness and pinpointing areas needing improvement, departments acquire crucial insights that allow them to take charge of their transformative journey, embarking on strategic planning, judicious allocation of resources, and development of appropriate policies. This approach situates departments as trailblazers in advancing faculty diversification and confers on institutions the ability to allocate resources prudently.

While initiatives like mentoring programs, cluster hiring, and target-of-opportunity hiring focus on recruiting diverse individuals, they often neglect whether departments are ready to support, retain, and value their new colleagues. This can result in patchwork solutions that maintain the status quo rather than driving transformative change. Griffin (2020, p. 282) distinguishes between a "diversity mindset," which centers on representation through numbers and quotas, and an "equity mindset," which focuses on creating systemic changes to ensure fair access, opportunities, and outcomes. Departments will have done enough when fair and equitable hiring processes are informed by the lessons of past initiatives. When departments no longer rely on external funding or temporary programs to advance faculty diversity but instead sustain these efforts through embedded practices and policies, we will know we have achieved lasting change. The goal of readiness is not to tick off items on a checklist, but to achieve a state where departments naturally prioritize equity and inclusion.

Our findings, aligned with the hiring literature, emphasize the need for a shift from a diversity mindset to an equity mindset. Progress must be iterative—addressing one dimension of readiness at a time while building a foundation for sustained change across all dimensions. This approach ensures that diversity initiatives are not isolated or temporary but become embedded in faculty hiring and retention processes. Ultimately, we will have done enough when equitable practices are institutionalized and diversity initiatives are no longer necessary because departments are prepared to foster and sustain equity and inclusion in all aspects of their operations.

Assessing departmental readiness for any initiative is valuable for administrators with limited resources, as it helps prioritize efforts and allocate resources effectively. While only some campuses may have the interest or ability (given their geopolitical context or funding source) to pursue diversity initiatives, departments will continue to be units of action for implementing other priorities and curricular changes. Institutions can foster change where it is most likely to succeed and allocate resources to departments that are ready to move forward. For departments that are struggling, the assessment can guide targeted support to help increase their readiness, ensuring that resources are used strategically.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving humans were approved by the Institutional Review Board, University of Maryland, Baltimore County. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

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Impact of scholarships on university academic performance: a comparative analysis of students with and without scholarships

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Within the framework of the European Higher Education Area (EHEA), university scholarships have become a key tool to guarantee equity and inclusion in higher education. These policies seek to reduce the socioeconomic barriers faced by students and to promote their access, permanence, and academic success. This study focuses on analyzing the impact of scholarships on the academic performance, continuity, and graduation of students at the Universitat Abat Oliba CEU in Spain during the period 2020−2024. Based on a descriptive-comparative design and using an institutional database with information on 6,295 students, the differences between the groups with and without scholarships are examined. The variables analyzed include demographic, academic and performance data, such as cumulative grade point average, credits enrolled, presented, and passed, and success and achievement rates. The analysis was performed using advanced statistical tools to identify relevant patterns and trends. The results show that students with scholarships not only access university more frequently, but also perform better on key indicators, such as success rate and achievement rate, compared to students without scholarships. These findings reinforce the role of scholarships as a determinant of academic success, although they also reveal inequalities in the performance of non- scholarship students, suggesting the need for additional interventions. This study provides relevant empirical evidence for the design and evaluation of educational policies that seek to promote more inclusive higher education and equity. It also highlights the importance of implementing complementary support strategies to ensure the academic success of all students, regardless of their socioeconomic status.

KEYWORDS

university scholarships, academic achievement, educational equity, higher education, educational policies

1 Introduction

In the international framework, university scholarships have proven to be an essential tool to promote equity in access to higher education, especially in the context of the European Higher Education Area (EHEA) (OECD, 2012). Countries such as Germany, Finland and Norway have implemented public funding systems that guarantee free or highly subsidized access to higher education, complemented by scholarships to cover living expenses. These policies have significantly reduced economic barriers for students from disadvantaged backgrounds and have contributed to maintaining high graduation and academic success rates.

The Rome Communiqué of the 2020 Ministerial Conference of the European Higher Education Area (EHEA) underlines the importance of the social dimension in higher education, stressing the need for universities to be accessible and inclusive, with a particular focus on equity (European Higher Education Area, 2020). This document sets out principles for strengthening the social dimension in the EHEA, promoting equal opportunities and encouraging diverse participation in the education system.

In Spain, the design and implementation of scholarship programs, such as the so-called salary scholarships, reflect a commitment on the part of educational institutions and government agencies to reduce inequalities in access to higher education (Berlanga et al., 2012; OECD, 2013). These scholarships not only provide financial support, but also seek to promote the permanence and academic success of students throughout their university careers (Berlanga et al., 2013; Figuera and Torrado, 2013). The introduction of this type of financial aid is part of a broader strategy of public policies aimed at improving equity and inclusion in the educational system (Alegre et al., 2017; Ariño, 2009; Cabrera et al., 2012). Spanish private universities play a complementary role to the public system in the implementation of scholarship policies.

The importance of analyzing scholarships as an instrument of equity lies in their capacity to reduce socioeconomic inequalities and improve permanence in university (Naim, 2025). Scholarships, especially the so-called salary scholarships, have proven to be an effective tool to facilitate access and improve the academic performance of students in vulnerable situations (Berlanga et al., 2013; Figuera and Torrado, 2013). However, previous studies suggest that students benefiting from scholarships face additional pressures to maintain their performances, which could negatively influence their academic performance (Berlanga et al., 2018; Grasset, 2018).

The relationship between university scholarships and equity in the educational system is also based on their capacity to mitigate the effects of structural inequalities (Naim, 2025). Several studies have shown that students from disadvantaged socioeconomic backgrounds face additional barriers that affect their access, permanence, and academic performance at university (Cabrera et al., 2012; Gairín et al., 2014). These barriers include, among other factors, the need to combine studies with employment, which limits their time commitment, and the lack of academic or social support networks. In this scenario, scholarships act as a protective factor by providing not only financial support, but also an additional incentive to remain in the educational system (Berlanga, 2014; Berlanga et al., 2022). However, the literature highlights that their effectiveness depends largely on the design and implementation of policies, stressing the importance of accompanying them with comprehensive support strategies that respond to the specific needs of the beneficiary student body (Berlanga et al., 2018; Figuera and Torrado, 2013).

In the context of the Universitat Abat Oliba CEU, scholarships play a fundamental role in promoting equity and student retention. The university offers different types of scholarships that vary in their scope and allocation criteria. Among them are:

- Academic excellence scholarships, intended for students with outstanding performance.
- Socioeconomic scholarships, awarded to students with economic difficulties, based on family income criteria.
- Family scholarships, which offer tuition discounts for siblings studying at the university.

Scholarships may cover between 20 and 100% of tuition costs, depending on the type of aid and the criteria established in each call for applications. The renewal of scholarships is subject to the achievement of a minimum academic performance, generally linked to passing 80%–90% of the credits enrolled and maintaining an average grade higher than 6.5 out of 10.

The grading system in Spain uses a scale of 0 to 10, where a grade above 5 is considered a pass, and an outstanding academic performance is reflected in grades above 9.0. At Universitat Abat Oliba CEU, as in most Spanish universities, the number of ECTS credits a student must take in an academic year is 60 credits, although the load may vary depending on the personal and academic circumstances of each student.

Previous studies, such as those by Cabrera et al. (2012), Gairín et al. (2014), and Gonzalez-Nucamendi et al. (2023), pointed out the importance of considering economic and academic variables in the analysis of university persistence. Given the crucial role that scholarships play in equity and academic performance, this study seeks to analyze the impact of these grants on the continuity and university success of students at the Universitat Abat Oliba CEU in the period 2020–2024. This analysis will provide empirical evidence for the evaluation and improvement of scholarship policies in private universities, ensuring that these programs continue to meet their objective of facilitating access and retention of students in higher education.

2 Materials and methods

This study is based on the analysis of data provided by the Universitat Abat Oliba CEU, corresponding to the academic period between 2020 and 2024. The database contains detailed information on all undergraduate students of the institution ($n = 6,295$) -both students with scholarships and students without scholarships-, and collects variables related to access, enrollment, academic performance, continuity in studies and graduation. The main objective is to evaluate the impact of scholarships on the academic trajectory of students and to determine possible differences in performance between study groups. The Universitat Abat Oliba CEU is a private university of the Catalan university system, based in Barcelona.

2.1 Study design

The research design is descriptive-comparative and quantitative, allowing the analysis of differences between groups through statistical techniques that identify patterns, correlations and variations in key variables.

2.2 Data sources

The data used come from the academic management system of the Universitat Abat Oliba CEU. The information includes variables related to:

- Demographic data: gender, country, and province of family residence.
- Academic data: year of admission, entrance grade, credits enrolled, credits presented, credits passed, credits not presented, and credits failed.
- Performance indicators: success rate (credits passed/presented), and yield rate (credits passed/enrolled).
- Data related to scholarships: type of scholarship, and duration of the scholarship.

For those students who received a scholarship in some years and not in others, a classification criterion was used based on the permanence of the scholarship:

- "Continuous Scholarship" group: students who maintained the scholarship during their entire registered academic career.
- "Discontinuous scholarship" group: students who received the scholarship for at least 1 year, but lost it at some point during the period analyzed.
- "No scholarship" group: students who never received a scholarship during the years analyzed.

Students with discontinued scholarship were analyzed separately in some cases to evaluate whether the loss of the scholarship had an impact on their performance.

2.3 Data processing

The database was preprocessed to ensure cleanliness and consistency. Processing steps included:

(1) Missing data debugging: Variables were checked for completeness and null values were treated in those where it was feasible to do so.
(2) Categorization of the study groups: Students were divided into two main groups: students with scholarships and students without scholarships.
(3) Transformation of variables: Key indicators were calculated, such as average performance, success and performance rates, and continuity of the scholarship.

2.4 Statistical analysis

Data analysis was performed using Python and SPSS, using advanced statistical techniques to ensure the robustness of the results. The following procedures were performed:

- Descriptive analysis: To characterize the students in terms of their demographic, academic and performance variables.
- Comparative analysis: To identify differences between scholarship and non- scholarship students in key variables such as grade point average, credits passed and success and achievement rates.
- Predictive models: The association between academic performance and scholarship receipt was evaluated using linear regression models and discriminant analysis.
- Normality tests (Kolmogorov-Smirnov and Shapiro-Wilk): To determine the distribution of the data.
- Hypothesis contrast tests:

  - Student's t-test to compare means in continuous variables between students with scholarship and without scholarship.
  - Mann-Whitney U tests in case of non-normal distributions.
  - One-way ANOVA to evaluate differences between multiple groups (e.g., continuous scholarship, discontinuous scholarship and no scholarship).
  - Chi-square tests to compare categorical distributions (e.g., gender differences between groups).

Different metrics were used in the study to evaluate students' academic performance based on their interaction with academic credits. The following is a breakdown of the terms used to describe different aspects of student participation in the courses that make up their degree program:

- Credits Enrolled: refers to the total number of ECTS credits in which a student has enrolled during an academic year. These credits represent the courses that the student has chosen to take and for which he/she has paid tuition.
- Credits Submitted: These are those ECTS credits that the student has taken up to the end of the academic period and for which he/she submits to the final evaluation. This includes exams, projects, and other forms of evaluation that determine whether the student has achieved the learning objectives of the course.
- Credits Passed: This term refers to the ECTS credits in which the student has obtained a passing grade according to the academic standards of the institution. Passing an ECTS credit indicates that the student has fulfilled all course requirements satisfactorily.
- Credits Not Submitted: These are those ECTS credits that, despite having enrolled, the student decides not to complete or not to submit to the final evaluation. The reasons may vary and include withdrawal from the course, personal or academic difficulties, among others.
- Suspended Credits: These represent the ECTS credits in which the student has taken the final evaluation but has not been able

to obtain a passing grade. This may occur for various reasons, including insufficient performance in the evaluations, failure to meet course requirements, among others.

The analysis conducted allowed us to identify patterns of student engagement, persistence, and success, as well as areas where interventions may be needed to improve the educational experience and student outcomes. For example, a high number of no-shows or failed credits may indicate barriers in learning or in the academic environment that require attention from the university administration.

2.5 Code availability

Scripts used for data analysis in Python and SPSS can be provided upon request to ensure transparency and replicability of the study.

2.6 Ethical considerations

Data management was carried out under strict ethical and legal standards, ensuring the confidentiality of the information and the anonymity of the students. It was guaranteed that the use of the database was exclusively for research purposes and in compliance with the applicable data protection regulations. The research was carried out with the approval of the Research Ethics Committee of the Universitat Abat Oliba CEU.

3 Results

3.1 Sample profile: autochthonous, good academic performance and low frequency of scholarships

The descriptive analysis of a database composed of 26 variables and 6,295 observations provides a comprehensive view of the profile of university students in relation to their demographic and academic characteristics and the influence of scholarships on their performance. This dataset focuses on academic information taken during different years, highlighting the relationship between credits enrolled, submitted, and passed, as well as success and performance rates.

In demographic terms, the student profile is characterized by a slight male predominance (63.2%) and an age concentration that mainly includes young people born between 1995 and 2003; 2002 being the year of birth with the highest frequency. Most students have their family residence in Spain (94.6%), with Barcelona being the province with the highest representation (82.5%). These data reflect a mostly homogeneous group in terms of nationality and geographic location, with exceptions represented by students of international origin.

Academically, the data reveal that most students accessed university between 2018 and 2023, with 2020 predominating as the most common year of entry. The average access grade is 3.96,

although the full range of grades ranges from 0 to 13.17 (out of 14), suggesting a diverse group in terms of previous performance. Among the degrees, the Psychology, Marketing and Philosophy degrees stand out, accounting for 36.1% of the enrollments.

On average, students are in the second year of their studies, with an academic duration that varies between 1 and 5 years. This data is relevant because it indicates that most are at a crucial stage of their Higher Education where they face increased academic challenges and have the opportunity to define their interests within their field of study. The structure of the degree programs at UAO CEU is aligned with the EHEA framework, which promotes a consistent and comparable education architecture across Europe. The degree programs are designed in such a way that the first year focuses on providing a solid foundation in the fundamental principles of the field of study, while the second year delves into more specific topics related to the discipline. The second year is also critical for student retention, as it is a time when a higher attrition rate can be observed if students do not feel adequately supported or if they encounter difficulties with the level of academic demand.

The analysis of academic performance shows that, on average, students apply for 60.19 credits per academic year, of which 59 are presented and 54.63 are passed, indicating a positive overall performance (see Table 1). On the other hand, the success and achievement rates, which reach averages of 92.18 and 90.43%, respectively, evidence a significant level of commitment on the part of the students. However, the figures also reflect a small percentage of credits not presented (average of 1.18) and failed (average of 4.37), which raises areas for improvement.

In relation to scholarships, 29% of the students enjoy some type of financial support, with the "Training Aid FUAO 100" and "Family Aid 15" scholarships being the most frequent. The performance of students with scholarships is slightly higher than that of those without scholarships, both in terms of success rate and performance, which reinforces the importance of financial support as a motivational factor and facilitator of academic performance.

Finally, the origin of the students in terms of their secondary education reflects a limited diversity, with a predominance of graduates from subsidized schools (39.4%). However, this variable presents a high percentage of missing values (69.3%), which limits further analysis.

In summary, the results show a student profile characterized by good academic performance, limited participation in scholarship programs and a strong demographic concentration in Spain. This descriptive analysis provides a solid basis for future research addressing the relationships between academic, demographic and economic factors and their impact on student success.

3.2 Profile of scholarship students: academic success and scholarship maintenance until graduation

The descriptive analysis of the students who received scholarships, a group composed of 1,828 observations out of a total of 6,295 students (29.0% of the total population), allows us to characterize their demographic and academic profile and the impact of scholarships on their performance. This

TABLE 1 Analysis of academic performance.

Descriptive statistics					
	N	Minimum	Maximum	Mean	Std. deviation
Credits enrolled	6295	3	144	60.19	18.196
Credits submitted	6295	0	144	59.00	18.630
Credits not submitted	6295	0	69	1.18	4.358
Credits passed	6295	0	144	54.63	20.219
Suspended credits	6295	0	77	4.37	9.358
Success rate	6295	0	1	0.92	0.167
Performance rate	6295	0	1	0.90	0.185
N valid	6295				

subgroup is distinguished by relevant particularities compared to the general group.

Demographically, scholarship students are slightly more male (68.3%). Dates of birth range from 1962 to 2006, with an average corresponding to students born around the year 2000. The majority have their family residence in Spain (91.6%), with Barcelona being the predominant province (83.5%). Although there is some international diversity, this is limited compared to the predominance of national students.

Academically, students with scholarships mostly entered university from 2020 onward. Their average entrance score of 4.21 is slightly higher than that of the general population, with values ranging from 0 to 9.88; 0.60 points higher than non-scholarship students. The most common degrees in this group include degrees in Psychology, Philosophy and Marketing, which represent a preference for disciplines related to the social sciences and humanities. The concentration of students in these areas could be attributed both to the diversity of educational offerings at the institution and to a trend in the impact of scholarships.

In terms of academic performance, scholarship students enroll an average of 64.34 credits per year, of which they submit 63.58 and exceed 60.95, while credits not submitted have a low average of 0.76. Failed credits are also lower (average of 2.63), evidencing a high level of commitment and performance. Success (95.42%) and performance (94.40%) rates are higher than the overall average, reflecting the positive impact of the scholarships on student performance (see Figure 1 and Table 2).

The type of scholarship also shows diversity, with 102 categories identified. The most frequent are the "FUAO 100 Training Aid" and the "Family Aid 15." The data suggest that students benefiting from these scholarships have an outstanding academic performance, with lower rates of credits not presented or suspended compared to students without scholarships.

Finally, the data on academic background indicate that 42.4% of the students with scholarships come from charter secondary schools, followed by public and private schools. However, this variable has a high percentage of missing values (68.5%), which limits the possibility of deepening the analysis of school background.

The results indicate that the 1,828 students with scholarships represent a subgroup distinguished by better academic performance, greater commitment to submitting and passing credits, and significant representation in certain degree programs.

These findings underscore the importance of scholarships as an instrument that favors academic success and suggest the need for additional research to evaluate their impact on different student profiles.

The analysis of scholarship students shows the following key results:

- 100% of the students with a scholarship maintained the scholarship during their entire registered academic career.
- 100% of the students with scholarships completed their studies and graduated within the period analyzed.
- The average rate of credits passed with respect to credits enrolled is 92.17%, which reflects a high level of academic performance among scholarship students.

These results underscore that the scholarships have not only facilitated these students' access to university but have also contributed significantly to their academic success and continuation of their studies until graduation.

3.3 Comparative analysis between the academic performance of students with scholarship and students without scholarship

Comparative analysis of academic performance between scholarship and non-scholarship students reveals significant differences in several key metrics (see Table 3). The Mann-Whitney U test has identified statistically significant differences in several academic performance variables between scholarship and non-scholarship students. This suggests that these two groups present distinct performance patterns.

Scholarship students, who represent 29% of the total population, stand out for better academic performance compared to their non-scholarship peers. In this sense, some reasons could contribute to the differences in performance between students with scholarships and those without, such as:

- Selection and Motivation: Students who receive scholarships often go through a rigorous selection process that not only assesses their financial need but also their academic merit
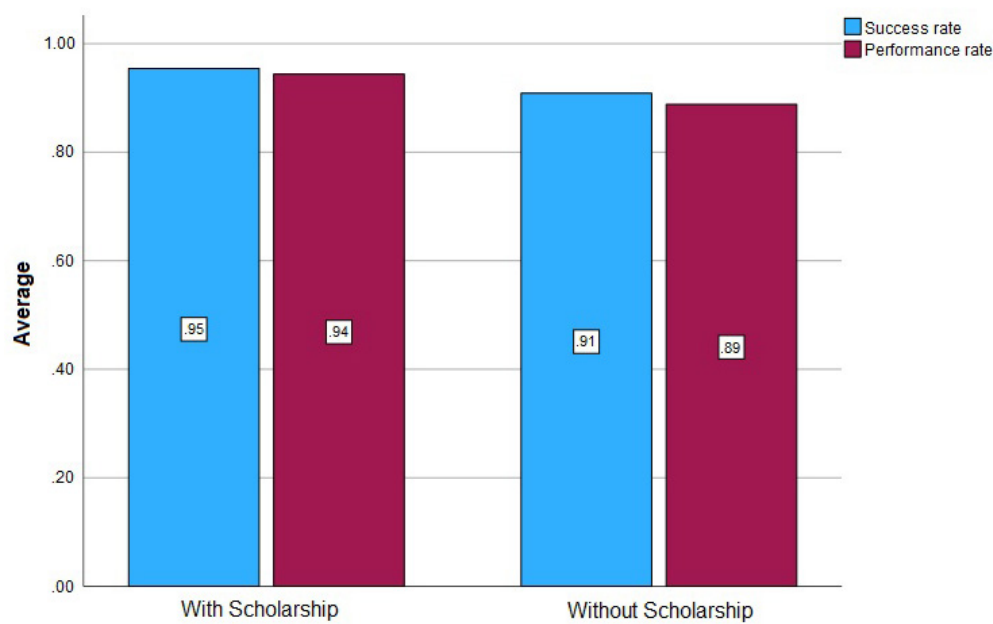
FIGURE 1
Differences in success and performance rates between groups of scholarship and non-scholarship students.

TABLE 2 Comparative descriptive analysis of academic performance: students with scholarship × students without scholarship.

	Students with scholarships		Students without scholarships	
	Mean	Std. deviation	Mean	Std. deviation
Average grade	7.47	1.06	6.87	0.97
Credits enrolled	64.34	14.78	58.49	19.17
Credits submitted	63.58	15.30	57.13	19.53
Credits not submitted	0.76	3.53	1.36	4.64
Credits passed	60.95	17.34	52.05	20.74
Suspended credits	2.63	7.56	5.09	9.91
Success rate	0.95	0.13	0.91	0.18
Performance rate	0.94	0.15	0.89	0.20

TABLE 3 Non-parametric comparative analysis of academic performance: students with scholarship × students without scholarship.

Test statistics[a]								
	Average grade	Credits enrolled	Credits submitted	Credits not submitted	Credits passed	Suspended credits	Success rate	Performance rate
Mann-Whitney U	2734952.0	3476753.0	3398392.0	3862249.0	3060583.5	3473994.5	3464599.5	3367845.0
Wilcoxon W	1271423.0	13456031.0	13377670.0	5533955.0	13039861.5	5145700.5	13443877.5	13347123.0
Z	−20.593	−9.883	−11.071	−6.445	−16.021	−11.739	−11.900	−13.119
Asymp. Sig. (2-tailed)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

[a]Grouping variable: scholarship.

and motivation. This process may result in scholarship students already having a high-performance profile before entering college, which may explain their continued good performance.

- Ongoing Support and Resources: Scholarship students often have access to additional supports such as tutoring, counseling, and enrichment activities that are not available or are less accessible to non-scholarship students. This

support structure can play a crucial role in their continued academic success.

- Pressures and Expectations: There is inherent pressure for scholarship recipients to maintain certain academic standards as a condition of continuing to receive financial support. This pressure may translate into greater dedication and effort toward their studies, in contrast to the possible lack of similar incentives for students without scholarships.
- Socioeconomic Factors: Students without scholarships may face significant financial challenges that interfere with their ability to devote themselves fully to their studies. Concern about finances can lead to compromises such as working while studying, which can negatively affect their academic performance.
- Family Support and Cultural Capital: Students with scholarships may receive greater moral and motivational support from their families and communities, who see the scholarship as a significant opportunity to improve their circumstances. In contrast, non-scholarship students facing economic disadvantage may not have the same level of support or expectations.

In terms of cumulative grade point average, students with scholarships have an average of 7.47, higher than the 6.87 observed in students without scholarships. This difference indicates that access to scholarships may be associated with a stronger academic profile or additional motivation to maintain an outstanding performance.

In terms of credits enrolled, students with scholarships enrolled an average of 64.34 credits per year, compared to 58.49 for students without scholarships. This difference is also reflected in the credits submitted, with 63.58 for students with scholarships and 57.13 for students without scholarships, suggesting a greater academic commitment in the group of students with scholarships.

In addition, the percentage of credits not submitted is notably lower among students with scholarships (0.76) compared to students without scholarships (1.36).

In terms of credits passed, students with scholarships achieve an average of 60.95, significantly higher than the 52.05 achieved by students without scholarships. This superior performance is also reflected in the number of suspended credits, where students with scholarships have an average of 2.63, while students without scholarships have an average of 5.09.

Metrics such as success and achievement rates show p-values below 0.05, indicating relevant differences. Students with scholarships tend to perform higher on these variables, reinforcing the positive impact of scholarships on academic success. Students with scholarships achieve a success rate of 95.42%, in contrast to the 90.86% of students without scholarships. Similarly, the performance rate (ratio of credits passed to credits enrolled) is 94.40% for students with scholarships, compared to 88.81% for students without scholarships.

These results underscore the positive impact of scholarships on students' academic performance. Scholarships not only appear to encourage greater academic commitment and dedication but may also contribute to reducing the economic barriers that limit educational success. This analysis highlights the importance of financial support policies as a key mechanism for improving academic outcomes and promoting equity in higher education.

3.4 Analysis by gender: general, students with scholarship and without scholarship

The results of the Mann-Whitney U tests reveal significant differences between men and women in several academic performance variables. The findings are presented below for the three contexts analyzed: general, students with scholarships and students without scholarships.

In the overall analysis, p-values for the main performance variables indicate significant differences in several metrics:

- Cumulative mean score: $p = 0.021$. Females obtained on average higher grades than males.
- Success rate: $p = 0.034$. Women showed a higher proportion of approved credits with respect to those presented.
- Rate of return: $p = 0.041$. Females outperformed males in the ratio of credits passed to credits enrolled.

Among students with scholarships, the differences were also significant in some key indicators:

- Cumulative mean score: $p = 0.019$. Female scholarship students outperformed male scholarship students.
- Success rate: $p = 0.028$. Female scholarship recipients showed better performance in terms of credits approved.
- Rate of return: $p = 0.045$. Female scholarship students outperformed male scholarship students.

In the group of students without scholarships, the differences were less marked, but still relevant:

- Cumulative mean score: $p = 0.046$. Non-scholarship women obtained slightly higher grades.
- Success rate: $p = 0.052$. Not significant, but with a tendency to be better for women.
- Rate of return: $p = 0.048$. Non-scholarship women also showed better performance.

The results suggest that, in general, women outperform men on several academic performance metrics, regardless of whether they are on scholarship or not. The differences are more pronounced among scholarship students, which could reflect a greater motivation or ability to take advantage of the opportunities offered by scholarships.

3.5 Differences in academic performance by grade: students with scholarships and students without scholarships

The analysis of differences in academic performance by grade level, distinguishing students with scholarships and students without scholarships, reveals important findings on

how scholarships influence performance within each program. The ANOVA tests performed allowed us to identify statistically significant differences in several key variables.

Among students with scholarships, significant differences were observed in indicators such as cumulative grade point average, success rate and credits passed.

- Law Degree: Students with scholarships in this program obtained the best success rates and cumulative average grade, standing out as the program with the greatest consistency in performance.
- Degree in Early Childhood Education: This degree also showed superior performance among students with scholarships, with outstanding success and performance rates.
- Degree in Criminology: Although there were students with scholarships with good performance, this degree presented greater variability, indicating possible differences in the demands or profile of the students.

Among students without scholarships, the differences were also significant, but the observed patterns differed slightly:

- Degree in Business Administration and Management (BAM): This program showed a greater dispersion in credits passed and failed, suggesting a wider heterogeneity in the performance of students without scholarships.
- Degree in Criminology: Students without a scholarship in this program had lower success and performance rates compared to other degrees.
- Degree in Early Childhood Education: This grade reflected a good average performance, although with lower success rates than students with scholarships.

The differences observed by grade level between students with scholarships and students without scholarships highlight the importance of considering the context of each program when evaluating the impact of scholarships. In degrees such as Law and Early Childhood Education, scholarships seem to have a clear positive impact, while in others, such as Criminology, additional strategies could be implemented to improve students' academic performance.

These findings suggest that scholarship policies should be tailored to the specific characteristics of each program to maximize their effectiveness and ensure an equitable distribution of resources. In addition, they highlight the need for complementary interventions in programs with lower success and achievement rates, regardless of scholarship status.

4 Discussion

The detailed analysis of the academic trajectories of students at the Universitat Abat Oliba CEU during the period 2020–2024 allows us to understand the importance of scholarships as a key tool for equity and academic success. The results show that students with scholarships have a significantly higher academic performance compared to students without scholarships, which underlines the positive impact of these policies on university trajectories.

First, it confirms that scholarships facilitate access to university for students from different socioeconomic backgrounds. This finding supports previous studies that highlight the role of scholarships in promoting equity and inclusion (Michavila, 2013; Eurydice., 2020, 2022). Furthermore, academic performance metrics show that students with scholarships not only gain access to higher education, but also achieve outstanding levels of academic success, with success and achievement rates that exceed those of their non-scholarship peers.

Second, the maintenance of the scholarship throughout the academic trajectory of the beneficiaries indicates that these grants are sustainable and effective in the long term. This data contrasts with studies that mention additional pressures on students with scholarships to maintain their performance (Berlanga et al., 2018; Grasset, 2018). In the case analyzed, scholarship students show an outstanding ability to meet academic requirements, which may be related to the adequate design of scholarship policies at this university.

On the other hand, the comparative analysis between scholarship and non-scholarship students reveals disparities that suggest areas for improvement. Although scholarship students have superior performance, the gap in failed and unsuccessful credits indicates the need for additional measures to support non-scholarship students, who may face greater economic or personal barriers that affect their performance.

The analysis conducted provides key information on differences in academic performance from two fundamental perspectives: by gender and by type of degree, differentiating between students with scholarships and students without scholarships. These observations offer important implications for the implementation and improvement of educational and scholarship policies.

In terms of gender comparisons, women consistently outperform men in indicators such as cumulative grade point average, success rate and rate of return. These differences are particularly pronounced among students with scholarships, suggesting that women manage to take more effective advantage of the opportunities offered by these financial aids. Among non-scholarship students, although the differences are less marked, women also show superior performance on most metrics. These findings underscore the need for further research on gender dynamics in the university context and their relationship to scholarship policies.

In relation to the differences by degree, significant variations in academic performance are observed depending on the program of study; a result that is aligned with the study on the importance of the variable Degree in adaptation to university by Corti et al., 2023). Among students with scholarships, degrees such as Law and Early Childhood Education stand out for their high success and performance rates, while Criminology presents greater variability, possibly due to differences in the demands or characteristics of the program. Among non-scholarship students, programs such as BAM show greater dispersion in credits passed and failed, suggesting greater heterogeneity in performance. In contrast, Early Childhood Education continues to reflect good average performance, although with lower success rates compared to students with scholarships.

The results of our study indicate that there is a significant concentration of scholarship students in the areas of Social

Sciences. This could be attributed to several factors, including a greater offering of programs in these areas at our institution or a particular focus of scholarship policies toward disciplines that traditionally attract a greater number of students in need of financial support. That said, the observed differences in academic performance attributable to subject areas suggest that the impact of scholarships may vary by field of study. In Social Sciences, where we observe a higher number of scholarship students, we may also be seeing a combined effect of program structure and the additional support that scholarships provide, such as tutoring and access to additional academic resources, which can be especially beneficial in disciplines that require a great deal of critical reading and writing.

These findings have important implications for the improvement of scholarship policies and academic support strategies. It is essential to adapt these policies to the specific needs of each degree and to promote complementary interventions in programs with lower success rates, such as Criminology. Likewise, the gender dynamics identified highlight the relevance of designing differentiated approaches to maximize the positive impact of scholarships, ensuring that all students, regardless of their gender or program of study, have access to the same opportunities for academic success. These findings reinforce the importance of scholarships not only as an instrument to guarantee access, but also as a tool to promote equity and achievement in higher education.

Likewise, scholarships have compounding and multifaceted effects on students. The empirical indicators considered in the present study may not fully reflect other intangible benefits of scholarships, such as psychological well-being and financial security, which may also influence academic performance. Future studies could explore the inclusion of broader variables to measure the impact of scholarships, such as student satisfaction and participation in university life, to obtain a more complete picture of the object of study.

The findings of this study coincide with previous research such as Berlanga et al. (2017) and Figuera and Torrado (2013), which highlight the positive impact of scholarships on the permanence and academic performance of students. As in these works, it is confirmed that students with scholarships present higher success rates and greater continuity in their studies compared to students without scholarships. However, this analysis complements the literature by emphasizing the importance of a comprehensive approach that includes not only financial support, but also academic strategies that enhance the impact of scholarships on student success.

In the context of private universities such as the Universitat Abat Oliba CEU, the results reinforce the value of scholarship policies as key instruments to promote equity and attract diverse talent. In social and educational terms, scholarships not only facilitate access to higher education, but also contribute to reducing structural inequalities, fostering social mobility and the development of skills in traditionally disadvantaged populations. This impact transcends individual trajectories and becomes a transformational factor for communities and the labor market.

To maximize the positive impact of scholarships, it is essential to complement these aids with mentoring, tutoring and academic guidance programs that guarantee the academic success of the beneficiaries. In addition, it is a priority to expand the coverage of scholarships, increasing the resources allocated to them, especially in private universities, to include a greater number of economically vulnerable students. It is also necessary to implement monitoring and evaluation systems to measure the long-term impact of scholarships, considering indicators such as academic performance, graduation rates and labor market insertion. Finally, it is crucial to promote territorial equity through policies that reduce disparities in access to scholarships, considering regional differences in costs and educational needs.

These actions would not only strengthen the positive impact of scholarships but would also contribute to a more inclusive and equitable education system. This study provides a solid basis for the design of more inclusive and evidence-based education policies. The results underline the importance of scholarships not only to ensure access to higher education, but also as a key instrument to boost academic success and foster participatory equity (European Higher Education Area, 2020). It is essential that these policies are accompanied by academic and social support strategies that reinforce the retention and graduation of all students, regardless of their socioeconomic status.

Data availability statement

The data analyzed in this study is subject to the following licenses/restrictions: data available on request due to privacy/ethical restrictions. Requests to access these datasets should be directed to FC, fcorti@uao.es.

Ethics statement

The studies involving humans were approved by Research Ethics Committee of the Universitat Abat Oliba CEU. The studies were conducted in accordance with the local legislation and institutional requirements. The ethics committee/institutional review board waived the requirement of written informed consent for participation from the participants or the participants' legal guardians/next of kin because at the time of enrollment at the university, students sign an informed consent form authorizing the use of their data for educational research purposes.

Author contributions

VB: Conceptualization, Data curation, Formal Analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review and editing. FC: Conceptualization, Data curation, Formal Analysis, Investigation, Methodology, Software, Validation, Visualization, Writing – original draft, Writing – review and editing.

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The authors declare that no Generative AI was used in the creation of this manuscript.

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Rotten from all that came before? How interest convergence has informed and usurped initiatives for racial progress in the UK

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This discussion paper examines how British Higher Education Institutions (HEIs) approach anti-racist and decolonial initiatives through the lens of Interest Convergence (IC). It highlights how institutional actions, largely sparked by the Black Lives Matter (BLM) protests in 2020, align with existing neoliberal and capitalist priorities—therefore limiting their transformative potential. While efforts to participate in the Race Equality Charter (REC) and decolonise the curriculum have gained traction, they are often implemented in ways that fail to properly address systemic inequalities. Finally, a case is made for ritual theory as a potential vehicle to educate staff and students about IC, as ritualised activities can promote community building and wider cultural change.

Introduction

Over the course of the last decade, an increasing number of Higher Education Institutions (HEIs) in the United Kingdom (UK) have initiated various projects to progress racial equality. More recently, such work has been complemented with efforts to decolonise academia, commonly by targeting the contents of the curriculum to eradicate White western biases. While it is positive that such projects are finally being pursued, the timing and manner in which they have developed indicate that they might be a consequence of Interest Convergence (IC), which means that the pursuit of anti-racist and decolonial work currently aligns with the neoliberal and capitalist interests of the status quo, which will ultimately limit their transformative potential.

This discussion paper critically examines the manifestation of IC within UK HEIs, with a particular focus on its relationship with anti-racist and decolonial initiatives. It situates institutional responses within the broader socio-political landscape of the past decade, including movements such as Black Lives Matter (BLM) and the recent encampments for Palestine, and considers how these reflect the neoliberal and capitalist ideals that have become ingrained with academia. Finally, a case is made for ritual theory as a potential vehicle to educate staff and students about IC, as ritualised activities can promote community building and wider cultural change.

Interest convergence: what is it and how does it manifest in UK HEIs?

The term 'interest convergence', first coined by Bell (1980), posits that "the interests of Blacks in achieving racial equality will be accommodated only when it converges with the interests of Whites." This explains the slow progress towards racial equality in western nations, as racism advances the material interests of the White elites, while also providing psychological benefits to working-class White people through a shared understanding that White middle-class people will support them, should their educational or employment prospects fall below those of certain ME groups (Gillborn, 2010; Delgado and Stefancic, 2023). This provides the White majority in western nations with little incentive to challenge systemic racial inequalities (Delgado and Stefancic, 2023), thus allowing them to gate-keep racial equality and drip feed it to ME groups in a way that does not threaten the existing racial hierarchies.

In HEIs, IC often manifests itself through instrumentalist approaches to diversity that justifies inclusivity through perceived educational benefits—such as preparing students for careers in a globalised market, rather than being informed by diversity as a moral principle (Starck et al., 2024). However, this rationale primarily benefits White students, providing them with marketable and CV-friendly 'diversity skills', while rarely resonating with ME groups - as it often fails to prioritise their welfare, nor does it actively reduce discrimination against them (Shih, 2017; Starck et al., 2021; Pierson-Brown, 2022). This highlights a disconnect between HEIs' stated intentions to support ME students, and the impact of their actions - which is a key indicator of IC (Pierson-Brown, 2022).

Similarly, HEIs have often favoured 'colour blind' approaches to diversity, which diminish differences and overlook systemic oppression (Starck et al., 2024)—thus failing to address anything but the most egregious forms of oppression, while maintaining structures that subordinate minorities (Delgado and Stefancic, 2023). This is exemplified through the individual deficiency models that, until recently, were used to explain away persisting racial attainment gaps by blaming them on personal shortcomings (Singh, 2011; Codiroli McMaster, 2020). Such approaches also align with neoliberal ideals that emphasise "market efficiency, individual responsibility, and a reduced role for the state in economic and social life" (Gasser, 2024), as they utilise a meritocratic lens that reinforces harmful stereotypes about ME students as lazy or incapable (Martini and Robertson, 2022; Rana et al., 2022). Fortunately, these approaches have faced growing criticism (Singh, 2011; Rana et al., 2022) - partially due to the arrival of Critical Race Theory to the UK, which challenges neoliberal justifications and encourages new pathways to equality (Zamudio et al., 2010; Cowley, 2022).

Distract them with reading lists: decolonialism and interest convergence

While decoloniality has a long history as a political and epistemological movement, it has generally been overshadowed by the Euro- and US-centric hegemony (Ndlovu-Gatsheni, 2015)—at least within the context of the Global North. However, over the past decades, calls to decolonise campuses, public spaces, and academia in general have gained traction—with an increasing number of western HEIs adopting decolonial projects to reflect these conversations (Moosavi, 2020).

This wave of decolonialism can be attributed to the *Rhodes Must Fall* (RMF) movement in South Africa, which demanded the removal of plaques and statues honouring White supremacists from campus, decentring western traditions and perspectives from the curriculum (RMF, 2015). RMF inspired global discussions on colonialism's lingering presence within academic institutions through statues, monuments, and names of buildings (Doherty, 2017; Holson, 2019; Croft, 2020), and how coloniality in academia reinforces the racialised hierarchy between the 'developed' Global North and 'developing' Global South (Narayanaswamy and Schöneberg, 2024). In the UK, the conversation quickly honed in on the contents of the curriculum, with many institutions committing to apply a decolonial lens when reviewing their curricula (Charles, 2019). This particular aspect of decoloniality gained momentum via *Why is my curriculum white?* (UCL, 2015), a project that saw students openly discussing the lack of diverse perspectives presented within British institutions, thus promoting Eurocentric perspectives and ideas of White and western superiority through the elimination of blackness (Peters, 2015; Jivraj, 2020).

Addressing physical representations of colonialism and reviewing curricula are often the first steps taken to decolonise education (Tamimi et al., 2023), perhaps due to the historic failings to recognise the works of ME scholars, or the validity of non-English literature, being easily identifiable sources of injustice (Enslin and Hedge, 2023). However, such initiatives barely scratch the surface of the systemic racism present in academia. Real change demands radical systemic transformations (Moghli and Kadiwal, 2021) that threaten the neoliberal and capitalist nature of current academic systems (Kerrigan and Nehring, 2020)—which are likely to be met with resistance. The focus on statues, reading lists, and the names of buildings or lecture theatres indicates the presence of IC, as such projects effectively function more as appeasement strategies to mitigate threats to the already established hierarchy (Chow et al., 2013).

However, to better understand how and why decoloniality has become financially, strategically, and reputationally important to UK HEIs - we must consider the cultural and societal context that these initiatives have sprung from.

Why now? A decade of racism and xenophobia

Conservative columnists have pointed to the successes of Sunak and Badenoch, and the diversity of their predecessors' cabinets as evidence of a post-racial Britain (Timothy, 2022; Ehsan, 2023), where racism is a 'sin of the past' and any lingering inequalities can be attributed to other factors (Seikkula, 2019; Meghji, 2022). However, these individual success stories do not erase systemic racism or its enduring impact (Gines, 2014). The consequences of which have been laid bare to the public over the last decade (Shain et al., 2021)—notably through the Brexit referendum and the Covid-19 pandemic, which both caused surges in hate crimes against ME groups (Lusher, 2016; Awan, 2018; Cox et al., 2021; Williams et al., 2023; Gram and Mau, 2024).

On the Brexit campaign-trail, politicians employed Islamophobic rhetoric to frame a potential Turkish EU membership as a security threat, while also racialising the acts of migration and asylum seeking through the now infamous *Breaking Point* poster (Stewart and Mason, 2016; Worrall, 2019; Abbas, 2020). Similarly, Trump's references to Covid-19 as the 'China Virus' and 'Kung Flu' fuelled sinophobic hate crimes (Pei and Metha, 2020; Gram and Mau, 2024). ME communities were also disproportionately affected by the virus itself due to medical racism having eroded ME communities' trust in the NHS, while frontline staff of diverse faiths were provided with inadequate protective equipment - thus leaving them more vulnerable to infection (Aldridge et al., 2020; Public Health England, 2020; Phiri et al., 2021; Razai et al., 2021).

Finally, years of media sensationalism have stoked racism and xenophobia across the UK (Guru-Murthy, 2024; Sultana, 2024). This came to a head in 2024, as racist riots, fuelled by online disinformation campaigns, erupted across the country—leading to violent attacks on mosques, refugee accommodations, and ME people (Fox, 2024; Specia, 2024; White, 2024).

Why now? Student movements in the 2020s

While Brexit and the Covid-19 pandemic heightened insecurities for ME communities, the 2020 lockdowns appear to have acted as a catalyst for activism - as exemplified by the global turnout for BLM protests (Otobo, 2020). In the UK, staff and students pressured HEIs to respond, as silence was equated to complicity in White supremacy (Advance, 2021). Many did issue statements, but few explicitly mentioned BLM and opted for 'colour-blind' language—referencing diversity, which failed to acknowledge the persisting racial inequalities within their own institutions, or the sector's past failures, thus rendering them performative (Choudhery, 2020; Otobo, 2020; Perry et al., 2020). More recently, student encampments that 'occupied' university campuses demanded that HEIs end partnerships with the Israeli state and divest from companies that are complicit in the state's actions in Gaza (Buheji and Hasan, 2024; Nagesh and McSorley, 2024; Palestinian BDS National Committee, 2024; Scialom, 2024; UCU, 2024). Again, HEIs responded cautiously, issuing non-specific statements or reiterating commitments to free speech, debate, and protest within the legal boundaries (UUK, 2023).

The response to these movements also highlighted the presence of IC within UK HEIs. BLM spurred institutions to engage with the REC, and to launch anti-racist and decolonial initiatives (Advance, 2021; Douglas Oloyede et al., 2021). These disparities have been reported on since the turn of the millennium (Singh, 2011) and it is therefore unlikely that it was the BLM protests that alerted institutions to their existence. Indeed, Shain et al. (2021) highlighted how a commitment to eradicating racial inequalities has become financially, reputationally, and strategically important to UK HEIs, as this can be beneficial when competing for the recruitment of students - especially international students from the Global South. The initiatives therefore seem to be driven by capitalistic self-interest, fuelled by an increasing reliance on international student fees to cope with government funding cuts (Lewis and Lally, 2025) - which, in itself, dehumanises these students by reducing them to a 'cash cow' (Bennett et al., 2023).

The desire to protect capitalist interests were also evident in HEIs' responses to the student encampments for Palestine, as the protesters' demands, as well as their methods of protest, threatened these - thus resulting in diverging interests. Some encampments were successful in prompting policy reviews, promises to rebuild academic institutions in Gaza post-conflict, and the creation of Palestinian scholarship programmes (Goldsmiths, 2024; SOAS, 2024). However, in some instances these were made while threatening advocates for Palestinian freedom and motioning to forcibly shut the encampments down (Adams, 2024; Leeds, 2024; UCU, 2024; Siddique, 2024; SOAS, 2024).

Why now? The race equality charter and an instrumentalist approach to decoloniality

The introduction of the REC incentivises HEIs to pursue racial equality work, as it allows them to align post-BLM commitments with an accreditation that can be used for promotional purposes. The tiered nature of these accreditations also reinforces academic capitalism by creating comparative metrics that disadvantages more resource-limited institutions—not dissimilar from how global ranking tables disproportionately benefits western HEIs that gained wealth and power throughout the colonial era, compared to institutions in the Global South (Enslin and Hedge, 2023). This suggests that the motivation behind the REC is motivated by the same financial interests identified in the previous section.

While further comparative studies are required to establish the true impact of the REC, Nwosu (2024) found that, to date, participation has not had a significant impact on ME staff representation. The lack of impact might be explained by 'equality work' not always being recognised by workload models, which would negatively impact ME staff at REC-participating institutions, as those who are meant to benefit from equality initiatives often end up doing the labour associated with them (Bhopal and Henderson, 2019; Bhopal and Pitkin, 2020; Douglas Oloyede et al., 2021; Yarrow and Johnston, 2022). This also indicates that the REC aligns with IC, as it remains an effective promotional tool that disproportionately benefits the White people that are already better positioned within HEIs than their ME peers, regardless of whether it effectively combats racial inequality at participating institutions or not (Bhopal and Pitkin, 2020).

The REC also injects IC into decolonisation projects, as it does not ask applicants to undertake decolonial work (Johns, 2022), and while the current guidance makes no reference to the curriculum (Advance, 2023), previous iterations emphasised 'diversity' over 'decoloniality' (Advance, 2019). It therefore fails to highlight that increased diversity does not eliminate western biases (Race et al., 2022; Ahmed-Landeryou, 2023), nor does it dissuade HEIs from pursuing watered-down approaches to decoloniality (Batty, 2020) that ultimately relegates many non-Eurocentric perspectives to the 'null curriculum' - signalling that these hold less academic value (Milner, 2008).

Moving forward: a case for ritualised awareness raising practices

The impact of IC on anti-racist and decolonial work is evident, as Otobo and Greaves (2024) highlight how the BLM momentum has

already been lost, and that conversations on anti-blackness have been diluted into broader and more generalised discussions of racism. It is therefore important that we continue to hold institutions to account by exposing the obstructive effects of IC, i.e., by educating staff and students about IC and its presence in HEIs.

This can be achieved through ritualised awareness-raising events that incorporate a variety of ritualised elements (see Table 1), as this can encourage a wider culture shift through community building - which promotes unity in the face of identified challenges (Fenn, 2009; Krishnan et al., 2021). To achieve this, the event must be set up in a way that makes it distinct from the routine of everyday life within the institution (Bell, 1997), a setting that tends to be highly routinised with clearly defined social hierarchies and structures (Neergard and Refslund Christensen, 2017). As such, it might be more effective to treat the event as an 'anti-ritual' that seeks to remove and break down the already established conventions of the 'ritualised' academic environment that the participants operate within, as opposed to add additional layers of formality and symbolism.

An effective way for the 'anti-ritual' to separate itself from the status quo would be to 'attack' the elements of formality and sacral symbolism—as academic spaces are often littered with both through academic jargon, corporate buzzwords, long-standing traditions, heraldic weapons, school mottos, and special ID-cards and lanyards that indicate one's membership and position within the institution (i.e., staff, student, and researcher). For example, by covering or defacing institutional symbols (i.e., emblems and letter-headed paper), or by having attendees remove and lock away their ID-cards, thus altering the dynamics between participants (Uche and Atkins, 2015).

However, if respected academics and heads of department, whose names and faces are well-known within the institution, are in attendance, removing an ID-card may not be sufficient to change these dynamics. The performance element can therefore be drawn on to push people away from the 'roles' they normally assume within the institution. Firstly, in line with the anti-ritual, participants should be encouraged to communicate in a way that feels natural and authentic to them, without fear of professional scrutiny or expectations to code-switch to better fit in with the socio-cultural linguistics of the status quo (Nousak and Harvey,

2023). Additionally, performance can be built into the foundations of the event structure through a bottom-up approach that centres students and frontline staff, where learning is facilitated through collaborative methods, as opposed to delivering knowledge from the top-down through a lecture or similar (Kim et al., 2014; Brailas et al., 2017). This will help establish the event as a space that exists outside of the regular conventions that govern academic and professional life (Smith and Stewart, 2011).

Ritualisation also demands a certain level of recurrence, both in the temporal and spatial sense, as this creates both a special time and place that is associated with the event (Stark, 2019) - further cementing it as a space that exists outside of the everyday academic space. Repeating the event on a regular basis (i.e., the first Friday of every month) would also enhance the aforementioned ritualistic removal of symbols and expectations of formality. These changes in behaviour would then become symbolic of the event starting and ending - not dissimilar from how a child may associate the ringing of a bell with the start or end of the school day, or how corporate meetings might be structured using standing agenda items (Bell, 1997; Smith and Stewart, 2011).

Conclusion

This paper has highlighted the presence of IC within UK HEIs and its influence on contemporary anti-racist and decolonial initiatives. This is particularly evident when looking at the institutional responses to movements such as BLM and encampments for Palestine. In the former, universities incorporated anti-racist initiatives as a strategy to protect their reputational and financial interests, while the latter exposed their reluctance to engage when faced with demands that directly threaten their capitalist and political interests.

It is certainly positive that anti-racist and decolonial work is being conducted on a larger scale, but the mainstreaming of such initiatives will inevitably hamper their potential for radical change. It is therefore crucial that we question the motivation that drives 'equality work', and to push HEIs to go beyond superficial engagements that prioritise metrics, marketing, symbolic gestures, and 'colour blind' policies. This might be achieved through

TABLE 1 Ritualised elements and definitions.

Ritualised element	Definition (Bell, 1997)
Formality	Ritualised formality contrasts with the casual and informal, both implicitly and explicitly, by restricting our manner of speaking and moving. Often in ways that replicate or enforce overarching social hierarchies and values.
Traditionalism	The act of synchronising the ritualised activities with an older precedent or evoking a link to the past through archaic language, folk dress, or similar. It often manifests in tandem with formality.
Invariance	The process of repetition, either in terms of precisely replicated series of actions that follow a specific rhythm or pattern, or through scheduled recurrence.
Rule governance	The rules that are imposed upon participants which they must play by and are held accountable to. These can define when, how, and who can perform certain actions, which behaviours are or are not acceptable, or similar.
Sacral symbolism	Places, people, or things that have been granted a special status of some sort. They represent something greater than their own individual parts, often associated with a larger collective, and the ideals and values that govern them.
Performance	An acknowledgment of the theatrical elements of ritualised activities where certain symbolic actions are 'performed' with or before others. These often include multifaceted sensory experiences that can shape other's perception and cognitive ordering of the world.

ritualised awareness-raising practices that seek to expose and disrupt IC in academia, as these can help build communities that can act collectively to hold institutions accountable whenever they pursue performativity over meaningful change.

Suggestions for future research

This paper highlighted how educators could draw on ritual theory to develop an 'anti-ritual' that can be used as a vehicle to raise awareness about IC. Future research should pilot a series of awareness-events using the 'anti-ritual' strategy to evaluate its impact and collect feedback from participants to further refine its as an educational tool.

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

JK: Writing – original draft, Writing – review & editing. UO: Writing – review & editing, Supervision.

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Equitable faculty hiring: development and implementation of teaching faculty hiring rubrics

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Despite the increasing diversity of undergraduate students in the United States, university faculty demographics, particularly in science, technology, engineering, and mathematics (STEM) fields, remain largely homogeneous, which is problematic for fostering an inclusive academic environment. We examined the hiring process for tenure-track teaching-focused faculty (TFF) positions, specifically within the University of California system, to develop and implement inclusive hiring practices that may promote greater faculty diversity. Through a series of faculty learning communities (FLCs), we developed and implemented inclusive hiring rubrics designed to better evaluate teaching excellence and ensure the recruitment of diverse faculty members. Our findings highlight the critical need for faculty diversity, particularly TFF who instruct in gateway introductory STEM courses, to enhance student outcomes by fostering more inclusive teaching practices and reducing racial disparities in academic achievement. We recommend that institutions adopt inclusive hiring practices, including the use of tailored hiring rubrics, to create a more equitable and supportive learning environment for all students.

KEYWORDS

hiring, faculty, STEM, equity, rubric

Introduction

While U.S. undergraduate students have grown increasingly diverse over the last two decades, significant racial disparities in educational outcomes including graduation and grade point achievement persist, underscoring the ongoing challenges faced by underrepresented minority students in higher education (Kim et al., 2024). These academic inequities are particularly glaring in science, technology, engineering, and mathematics (STEM) educational programs (Feder and Malcom, 2016; Riegle-Crumb et al., 2019; Seymour and Hunter, 2019; Graves et al., 2022). A significant amount of research has documented the impacts of interventions in STEM fields intended to bring these students "up to speed," including supplemental and co-curricular instruction programs or summer bridge programs (Peterfreund et al., 2008; Dawson et al., 2014; Bradford et al., 2021). While well-intentioned, these programs often emphasize assimilation to majority norms. More recently though, educational research has shifted focus and has begun to characterize instructional and pedagogical approaches that instructors can implement to establish an inclusive learning environment that, in turn, promotes equity across diverse student populations. Faculty are responsible for the instructional practices they implement, the course structure, and the course assessments: with decisions regarding these course components having been shown to impact

student outcomes (Gasiewski et al., 2012; Eddy and Hogan, 2014; Theobald et al., 2020). Increasing amounts of educational research demonstrate that faculty beliefs about teaching and learning are also central to addressing undergraduate academic equity, as they shape the pedagogical decisions of instructors (Canning et al., 2019; Rozhenkova et al., 2023; Park et al., 2024). Thus, it is important to consider the individuals being hired into faculty positions, as their instructional values, decisions, and approaches will shape the academic experiences of future generations of STEM professionals.

Despite continuing racial diversification of undergraduate students at universities in the United States, faculty racial composition remains largely white (National Center for Education Statistics, 2024). But does faculty racial diversity influence student academic outcomes? Increased faculty diversity is strongly linked to improved academic outcomes for racially minoritized students, including higher graduation and transfer rates, as well as lower dropout rates across various racial and ethnic groups (Cross and Carman, 2022). Specifically, disaggregation of racially minoritized student outcomes reveals students perform better when faculty share their racial or ethnic background, fostering a more supportive environment (Bowman and Denson, 2022). Minority-serving institutions, like Hispanic-Serving Institutions or Historically Black Colleges and Universities, which tend to have more diverse faculty, exhibit fewer racial achievement gaps, with Black and Latine students experiencing graduation rates comparable to their white peers when faculty diversity mirrors student demographics (Bowman and Denson, 2022). This highlights the positive impact of same-race faculty representation on student outcomes, as seen particularly with Latine professors who, due to their shared social and cultural experiences, provide invaluable mentorship and guidance to students facing systemic barriers (Bañuelos and Flores, 2021). Additionally, institutions with more diverse student bodies, including various racially minoritized groups, tend to have smaller graduation gaps between white and students of color, further supporting the idea that a diverse campus environment fosters greater racial equity in academic achievement (Bowman and Denson, 2022). The match between student and faculty race/ethnicity is positively associated with higher grades and graduation rates for students of color, with the campus racial/ethnic climate serving as a key mediator for these academic outcomes (Llamas et al., 2019).

Colleges and universities have historically relied on two faculty lines - the traditional research-focused faculty member, primarily evaluated on the success of their research program, and the adjunct lecturer, typically responsible for classroom instruction exclusively. In recent years, a third category of faculty has gained prominence: teaching-focused faculty (TFF; Bush et al., 2017; Harlow et al., 2020; Molinaro et al., 2020). These faculty positions are primarily responsible for classroom instruction, but also have professional duties in both scholarly and/or service-related tasks (Bush et al., 2013; Molinaro et al., 2020; Harlow et al., 2022). The rationale for TFF positions can vary, but often include providing instruction to meet increasing enrollment in STEM fields, acting as disciplinary experts in teaching-related matters, as well as conducting discipline-based education research and translating these findings into instructional practice (Bush et al., 2019; Harlow et al., 2022). Most often, TFF are placed in high-enrollment, introductory STEM courses which have historically had gatekeeper functions on undergraduate STEM student retention and graduation with STEM degrees (Harris et al., 2020; Hatfield et al., 2022). Therefore, strategic placement of instructors in these courses

may lead to improved academic equity across a diversity of undergraduate STEM students.

Similar to the demographics of research faculty at universities in the United States, TFF also lack racial/ethnic diversity compared to the STEM students they are instructing. Over the past decade, STEM faculty across the top forty public universities were 80% white, 15% Asian or Pacific Islander, 3% Hispanic and 1% Black (Baker and Koedel, 2024). A sample of TFF from the University of California system, where the described intervention was implemented, were 76% white, 9% Asian, 4% Hispanic and 3% Black (Harlow et al., 2020). This is despite the fact that the majority of the universities within this system are Hispanic-Serving Institutions (Paredes et al., 2021). Combined, the lack of TFF faculty diversity and their placement in gatekeeper introductory STEM courses challenges progression toward undergraduate academic equity (Bitar et al., 2022; Llamas et al., 2019). Further, this challenge is particularly troubling as TFF have higher teaching loads and thus more student contact hours than their research faculty colleagues (Harlow et al., 2022; Meaders et al., 2020; Seymour and Hunter, 2019). As such, the lack of diversity amongst TFF populations is a missed opportunity for colleges and universities striving to create more inclusive undergraduate learning environments.

The causes driving the homogeneity in faculty demographics are many and can intersect. These barriers include the cost of post-graduate training (Poloma, 2014), gender-based family responsibilities (Beddoes and Pawley, 2013), pressure on minoritized to conform or assimilate (Diggs et al., 2009), gender and ethnicity-race based biases related to the evaluation of teaching excellence (Chávez and Mitchell, 2020; Wang and Gonzalez, 2020), and biases in the faculty promotion process (Perna, 2001). Although some hurdles are systemic, one significant barrier to faculty diversity that institutions have direct ability to positively change is the hiring process. These faculty searches include the construction and dissemination of the job advertisement, the evaluation of applicants, the interview process and evaluation of interviewed candidates, and the negotiation of the job offer. While hiring of all faculty positions broadly includes these stages, moving toward increased TFF diversity may be particularly susceptible to bias because of the subjective nature by which teaching quality is evaluated (Thomas et al., 2014; Mengel et al., 2019) and a lack of a requirement for or an understanding of how to consider contributions to diversity, equity, and inclusion in the classroom (Tiede, 2022; Noone and Murray, 2024).

To address the lack of faculty diversity, there has been significant work identifying more inclusive hiring practices (Smith et al., 2004; Cavanaugh and Green, 2020). Job advertisement construction and dissemination has been examined by reviewing different core aspects. These aspects can include the language used throughout the advertisement (Gaucher et al., 2011; Boyle et al., 2020), the message conveyed by the importance of the diversity, equity, and inclusion (DEI) statement (Bradford et al., 2022), or the dissemination of the job advertisement (Kazmi et al., 2022). Additionally, the manner and approach in which candidate materials are evaluated (Wright and Vanderford, 2017), the strategies applied during the interview process (White-Lewis, 2020), and the selection of the successful candidate (Smith et al., 2015). While the adoption of these practices has been shown to create a more inclusive hiring process, it is important to note that they are generally created in the context of research faculty hiring (Blair-Loy et al., 2022). As applicants for these positions are primarily evaluated on the merit of their

research agenda and its impacts (Wright and Vanderford, 2017), recently adopted inclusive hiring practices may fall short in the context of TFF searches. This presents a need to better understand how inclusive practices can be adopted in the context of TFF hiring, particularly in regards to the evaluation of teaching excellence. While particularly beneficial for inclusive TFF hiring, such practices ultimately will be of value in the hiring of all faculty positions that contribute toward academic equity in a college or university's educational mission.

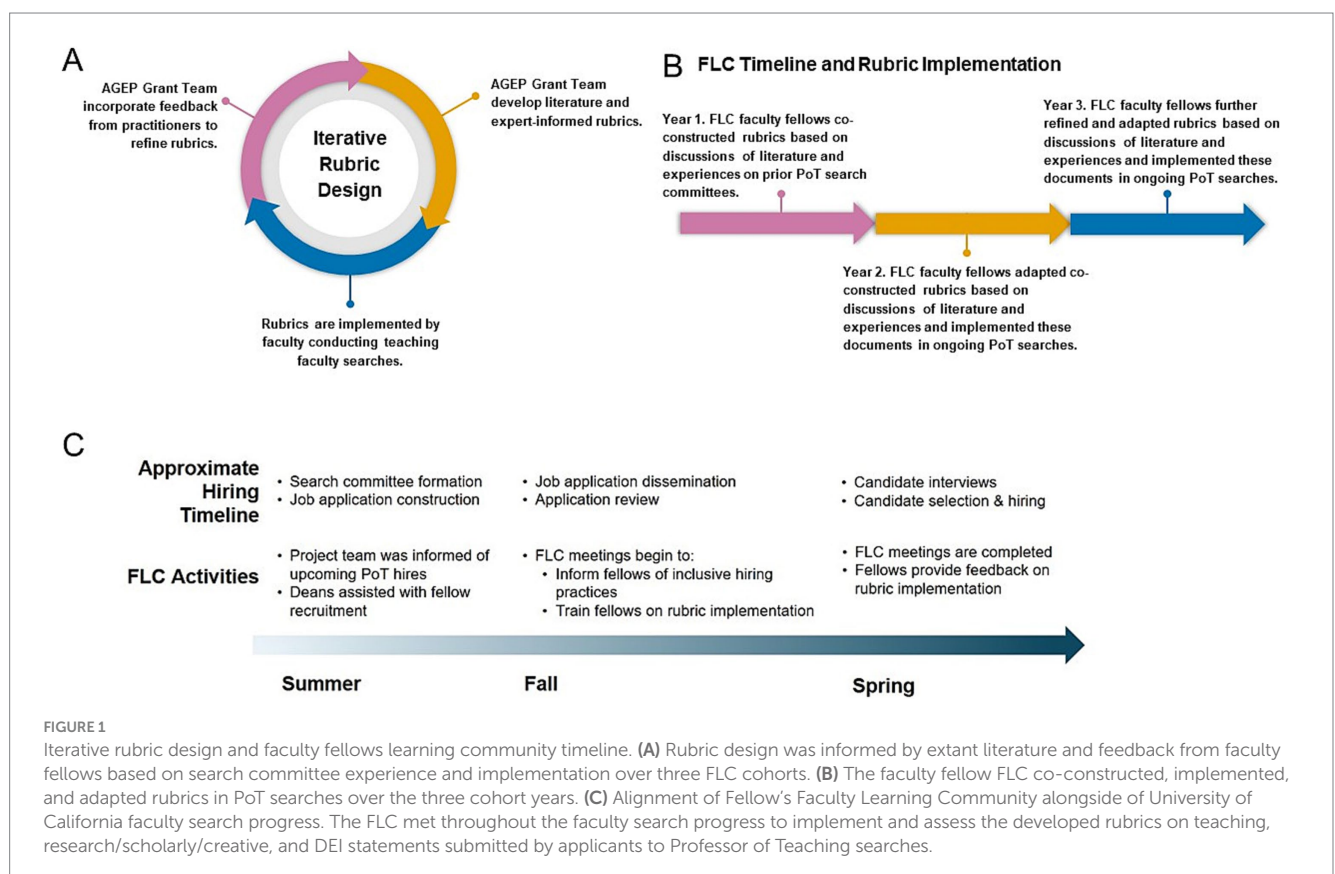## Faculty learning community and rubric development

Funded by a National Science Foundation Alliances for Graduate Education and the Professoriate (AGEP) grant (NSF EES #2113355), our AGEP research team's work focuses on a specific TFF position, the University of California (UC)'s Professor of Teaching (PoT). The PoT is a tenure-track position where these faculty, on average, spend roughly two-thirds of their time on classroom instruction, and split the remaining time on scholarly activities and service responsibilities (Harlow et al., 2020; Harlow et al., 2022). Research has shown that PoTs are more likely to implement active learning pedagogies (Denaro et al., 2022), have more advanced conceptions of teaching and learning (Rozhenkova et al., 2023), and serve as departmental resources for pedagogy-related matters (Wilton et al., 2024); however, the demographics of PoT faculty do not reflect demographics of the student populations they instruct. While the work conducted by our

AGEP research team focuses on TFF hiring in the context of PoTs in the UC system, the resulting insights and products can be leveraged by any institution that hires TFF or other faculty positions that are expected to possess teaching expertise.

Applicants to UC faculty positions submit multiple written documents including statements on teaching, research/creative/scholarly activities, as well as diversity, equity, and inclusion for evaluation by the search committees. Evaluation of these documents is most often the first review conducted by search committees; thus, minimizing bias at this key stage may promise to improve the diversity of the qualified candidate pool applying to faculty positions at the UC.

To create and implement a PoT hiring process that promotes equity in evaluation of diverse applicant pools, the research team convened three cohorts of cross-institutional UC faculty learning communities (FLCs) to collaboratively co-construct and adapt the use of a series of faculty statement rubrics for initial candidate evaluation. Utilizing a modified design-based research approach (Easterday et al., 2017), the research team convened FLCs over three sequential years enabling multiple cohorts of participants, the AGEP Faculty Fellows, to iteratively refine the development and implementation of the rubrics (Figure 1A).

Hiring rubrics have been previously demonstrated to promote diversification of faculty hires (Smith et al., 2015; Blair-Loy et al., 2022). Therefore, a major focus of the convened FLCs was to construct, disseminate, and implement TFF search process rubrics as they pertain to UC PoT faculty searches (Figure 1B). With insights from the FLC curriculum, participants shaped rubric elements based on the published recommendations but also their

FIGURE 1
Iterative rubric design and faculty fellows learning community timeline. **(A)** Rubric design was informed by extant literature and feedback from faculty fellows based on search committee experience and implementation over three FLC cohorts. **(B)** The faculty fellow FLC co-constructed, implemented, and adapted rubrics in PoT searches over the three cohort years. **(C)** Alignment of Fellow's Faculty Learning Community alongside of University of California faculty search progress. The FLC met throughout the faculty search progress to implement and assess the developed rubrics on teaching, research/scholarly/creative, and DEI statements submitted by applicants to Professor of Teaching searches.

prior experiences taking into account their department's specific expectations for the PoT position and broader norms and culture. The FLC also provided space for participants to share challenges to implementation across department and campus contexts as well as suggestions for improvement to rubrics. As such, fellows had shared ownership of the FLC-produced materials, which is known to increase the odds of their adoption (Christie, 2016; Sipple and Lightner, 2023).

To recruit AGEP Faculty Fellows into the FLC, the research team met with the deans from each campus to identify STEM faculty participating in upcoming PoT searches. FLCs ranged in size from six to 10 fellows and maintained participation across disciplines and UC campuses to provide a variety of perspectives and search committee experiences. The fellows engaged in the FLC both prior to and during the faculty search committee hiring process (Figure 1C). The main goals of the were to empower fellows with knowledge of equitable search practices and to develop search process rubrics that would guide these practices. The FLC meetings followed a 2 week cycle. The first meeting centered on fellows sharing current PoT recruitment practices and discussing published research on faculty recruitment approaches while the second meeting leveraged fellows insights from current practices as well as the discussed reading to co-construct PoT search rubric items. Developed iteratively over 3 years, the final FLC curriculum (Table 1) centered on familiarizing faculty fellows with search committee biases, best search committee practices, and novel research documenting the experiences of TFF from minoritized populations (Kayes, 2006; Li and Koedel, 2017).

Faculty fellows integrated and tailored their insights to create novel rubric items for the equitable evaluation of PoT faculty applicant statements of instruction, research/creative/scholarly activities, as well as diversity, equity and inclusion statements.

Combined, these approaches empower the faculty fellows to act as potential departmental change agents to learn about equitable search committee practices and disseminate their constructed search rubrics within their departments and UC campuses. During the fall term of the academic year, FLCs met twice a month. The meetings offered a structured space for fellows to discuss their department's current recruitment strategies. They also had the opportunity to reflect on how the scholarship introduced by the FLC influenced their views on equity in faculty recruitment. Additionally, the fellows compared and contrasted their department's perspectives and actions with the evidence-based equitable hiring recommendations. Each meeting period was structured with a pre-FLC reading/rubric to review, a discussion of personal search committee experiences, insights from the reading, and potential rubric item ideas. Importantly, fellows implemented their rubrics as the PoT search progressed, enabling real-time feedback on the implementation of this strategy. The readings, discussions, and co-construction of the three rubrics can be found in Table 1.

Through reflective discussion of readings coupled to personal experiences on faculty search committees, FLC members came away empowered as change agents as seen in several reflections:

Information provided demonstrates current practices in hiring Professors of Teaching but successful practices can be amplified

TABLE 1 AGEP Faculty Fellows faculty learning community discussion schedule and curriculum.

Meeting	Faculty learning community curriculum	Associated documents
1	Faculty learning community orientation and goals. Goal: establish the need for rubrics that align with PoT faculty positions.	White-Lewis (2020)
2	Discussion of current search committee practices. Goals: leverage strategies from faculty fellows. Work toward alignment between faculty position, job advertisement and candidate statement rubrics. Implementation rubrics.	Rubric: candidate teaching, scholarly, and DEI statement rubrics
3	Generation of candidate long-lists and how to avoid common pitfalls.	Wright and Vanderford (2017)
4	Discussion: evidence of excellence in STEM instruction Goals: familiarize Faculty Fellows with positive impacts of active learning and evidence-based instructional approaches	Borda et al. (2020)
5	Discussion: search Committee Practices. Goal: implementation of teaching excellence rubric	Rubric: Teaching excellence rubric
6	Discussion of inclusive interview practices feedback on rubrics Goal: solicit feedback on alterations to rubrics, improve adaptability of rubrics	Rubric: candidate teaching, scholarly, DEI statement, and teaching excellence rubrics
7	Discussion: how to support and retain minoritized faculty Goals: Promote faculty fellow awareness in alignment of recruitment goals with retention of minoritized individuals.	Zambrana et al. (2015)
8	Discussion on acting as a change agent to disseminate rubrics for future faculty searches Goals: Faculty fellows to identify levers of change within department to disseminate the use of search rubrics	Reinholz and Apkarian (2018).
9	Follow-up discussion on acting as a change agent to disseminate rubrics for future faculty searches Goals: Faculty fellows to develop a strategy for rubric dissemination within the department	Reinholz and Apkarian (2018).
10	Asynchronous long-term feedback Goal: solicit feedback after searches conclude on alterations to rubrics, improve adaptability of rubrics	Rubric: candidate teaching, scholarly, DEI statement, and teaching excellence rubrics

across the system and likewise unsuccessful practices are weeded out. The discussion is leading to the achievement of the recruitment of a diversified candidate base.

Our discussion brought to light the diverse hiring practices and some situations and subtleties which I had not previously considered.

Fellows also developed a greater appreciation of the importance of alignment of search committee members and the minimization of bias as the faculty search process progresses:

In the future, I think I will be more upfront about asking what my responsibilities/expectations would be so that there [is] no room for unplanned discussions.

After the PoT hiring process was complete, the FLCs reconvened so that fellows could reflect on the hiring process in the context of what they learned from the literature on inclusive hiring practices, to provide feedback on the content of the hiring rubrics and their implementation, and to reflect on ways to promote more equitable PoT hiring outcomes in future hiring cycles:

I'm even more convinced that the rubric needs to be decided for a given search before the ad is written, to ensure that the appropriate evidence is gathered. Decisions need to be made in advance about whether a criterion is critical or only desirable.

Integration of novel research into the hiring rubrics

As part of our NSF AGEP project, the research team also conducted a series of interviews with TFF from minoritized backgrounds to better understand their experiences with the faculty hiring process and as early career faculty in academia in general (Henry, 2022; Henry, 2024; Henry et al., 2024). Integration of these minoritized teaching faculty perspectives into the search rubrics to ensure alignment of racially minoritized STEM faculty lived experiences with the items present in various PoT rubrics. Specifically, this work highlighted the servingness of these faculty who sought to invest deeply in personal mentorship and professional development of minoritized students while also creating supportive and affirming educational spaces (Henry, 2022; Henry, 2024; Henry et al., 2024). These elements were added to each of the three constructed rubrics.

Discussion of recommendations for inclusive TFF hiring practices

Prior to commencement of faculty search, it is important that key institutional and departmental stakeholders specify the roles and responsibilities for the new faculty position, the skills and attributes a qualified candidate would possess to fulfill these roles, and the means by which the institution will support their success. Next, the search committee must collectively work to construct or adapt search rubrics that are aligned with these position roles and responsibilities, to equitably evaluate both the application materials as well as the components of the interview process (e.g., teaching demonstration) (our project team's rubrics can be found

in the supplementary materials). Finally, and in-light of the established expectations for the position, the job advertisement must be co-constructed, utilizing inclusive language that explicitly communicates position details that aligns with the criteria that comprise teaching faculty search rubrics. This advertisement must then be disseminated through formal channels, like university websites and broad readership journals and websites, but importantly also through personal networks soliciting specific individuals to apply (Kayes, 2006; Smith et al., 2004).

Once the job advertisement is released, it is important for search committee members to ensure they have an understanding of the rubrics and their implementation, and take time to calibrate their review of applicant materials throughout the application review process.

Finally, while not a point of emphasis for the current project, it is important that TFF are supported once hired, through inclusive mentorship practices (Diggs et al., 2009; Jayakumar et al., 2009), adequate financial and material resources, and access to professional development opportunities.

Through the process described above, our team was able to consider the hiring of TFF leveraging the literature on inclusive faculty hiring practices, the perspectives of individuals with direct experience in running the faculty hiring process (faculty fellows), and the perspectives of TFF from minoritized backgrounds (Henry, 2022; Henry, 2024; Henry et al., 2024). As TFF rise in popularity (Bush et al., 2019; Harlow et al., 2022), institutions interested in adopting more inclusive hiring practices may leverage the FLC process and hiring rubrics that were produced through these efforts. While potentially more labor intensive than traditional hiring mechanisms, only through more inclusive hiring practices can TFF be expected to contribute to more inclusive and equitable higher education programs.

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.

Ethics statement

This research was approved by Institutional Review Board at University of California Irvine under exempt protocol IRB#1976 and University of California San Diego under exempt protocol #800038. Written informed consent from the participants or participants was not required to participate in this study in accordance with the national legislation and the institutional requirements.

Author contributions

EA: Writing – original draft. BS: Conceptualization, Writing – original draft, Writing – review & editing. SL: Conceptualization,

Funding acquisition, Writing – original draft. MW: Conceptualization, Supervision, Writing – original draft, Writing – review & editing.

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The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The authors declare that no Gen AI was used in the creation of this manuscript.

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Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/feduc.2025.1560813/full#supplementary-material

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