

Impact of Mentorship, Peer-learning, and Student Organisations on Academic Performance and Research Engagement: A Review

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ABSTRACT

Mentoring, peer learning and student organisation creation are becoming effective pedagogical approaches to improve academic success, retention, engagement of students and early research exposure at the collegiate level of education. In a variety of academic disciplines and institutional settings, the use of formalised mentoring activities and peer-learning programmes have shown to have positive effects on students' academic achievement, psychosocial adjustment, motivation, and retention- especially among underrepresented or academically underserved student populations. This review draws on recent empirical work to provide an overview of the unique and overlapping contributions of mentorship, peer-learning, and student organisations in fostering academic performance and research involvement. The paper also considers theoretical models, implementation strategies, significant contextual moderators and promising directions for the integration of mentoring ecosystems in higher education.

Keywords: Medical education, Mentorship, Peer review, Student organisations

INTRODUCTION

Higher education institutions are confronted with the challenge to improve their students' academic achievement, decrease dropout rates and increase early Research and Education (R&E) participation in education, globally. Teacher-centred pedagogical approaches often fall short in meeting the diverse needs of learners, particularly first-generation learners, underrepresented minority learners, and students accustomed to low cognitive-demand environments [1-4]. In contrast, mentorship, peer learning and student organisations are increasingly cited as alternative forms of education that promote mastery of academic skills through social, cognitive and emotive supports. These interventions are effective because they operate through multiple mechanisms. First, they provide social and emotional support in the form of built-in trust relationships, which enhance motivation, reduce academic stress, as well as psychological well-being. Second, they provide cognitive scaffolding: more advanced peers or mentors supporting learners as they grapple with challenging tasks in their zone of proximal development so that academic skills can be acquired piecemeal over time. Third, they facilitate the formation of academic identity by connecting students to role models and affirming communities and reaffirming a sense of belonging in environments where academic aspirations are valued at a higher level enables students to respond with greater alignment to their own values and goals. Fourth, they encourage social integration by forming peer networks that promote peer cooperation and support cooperative learning, shared academic standards, and reciprocal engagement [1-4].

Mentoring is an informal or formal relationship in which a more experienced person helps a less experienced student or junior colleague to develop academically, professionally, and personally [1]. Peer-learning and peer-mentoring also expand on near-peer relationships through joint learning and sharing knowledge and experience and psychosocial support [5-8]. Through leadership activities, intellectual communities, and exposure to research-related activities, student groups extend the potential interaction even more. Collectively, these strategies align with principles of student-centered learning and have been linked to better achievement outcomes and

sustained engagement [9-14]. However, the effectiveness of such interventions is influenced by several factors like mentor mentee compatibility, availability of resources and students' socio-cultural background.

Conceptual Framework: Mentorship, Peer-Learning, and Student Organisations

Mentorship and peer learning are located in theories of socio-constructivist and social learning that emphasise the collaborative, social, and context-based aspects of the process of the construction of knowledge [7-11]. These theoretical underpinnings can contribute to our understanding of how and why mentorship interventions operate: they are designed to scaffold learning in the zone of proximal development, foster identity formation, and provide emotionally supportive relationships that reduce academic anxiety. Peer learning (e.g., self-learning, community-based learning) perspectives of learning and 'communities of learners' in particular, emphasise students' co-constructive role as co-agents of learning and as conscious, metacognitive thinkers [7,15]. Near peer mentoring in particular has been shown to facilitate breakdown of hierarchical boundaries and increase relatability, and therefore help improve communication and academic confidence [11,15].

Student organisations act as experiential learning agents in a variety of capacities, including academic, social, and leadership development. Participation in academic and research oriented student organisations seems to enhance students' senses of belonging, identity development, and commitment to academic engagement [14,16]. These spaces are ecosystems that enable academic engagement by providing networks of mentor engagement, peer learning, and experiential opportunities. Obstacles to implementation represent an important but under-researched aspect of mentorship ecosystems. Some widespread issues cited include insufficient mentor training, lack of institutional incentives, time constraints on students and faculty, and the struggle to match mentors with mentees in different academic branches. Research engagement among students is additionally influenced by how well mentoring programmes explicitly include research skill development

features (i.e., journal clubs, collaborative initiatives, and conference participation) in their programme development. Tackling these obstacles via programme design and policy intervention is necessary for the sustainability of successful mentoring ecosystems in higher education [7,9,16].

Impact of Mentorship on Academic Performance and Well-being

Studies have found that mentoring actually has a positive impact on both students' academic success as well as their psychological well-being. Gonçalves JC et al., found that mentoring programmes influence both student engagement and academic performance by providing enhanced emotional support and academic self-efficacy [1]. On the other hand, mentoring programmes aimed at assisting high-risk undergraduates saw increased GPAs and persistence rates [12].

There is also abundant academic evidence to support structured peer mentorship in medical and health sciences education. Eleje GU et al., demonstrated that intra-class peer mentorship had a significant positive impact on underperforming medical students' academic performance, highlighting the significance of mentorship in remediation and academic recovery. While the scale and sustainability of these models remain a question, mentoring interventions employing protocols have been implemented to enhance well-being, engagement, and academic success for at-risk students. Furthermore, peer relationships significantly influence academic achievement through learning motivation and engagement [17], and peer mentorship has demonstrated improved academic performance among nursing students [18].

Peer-mentoring and Peer-learning Models in Higher Education

Comprehensive literature reviews on peer mentoring have been conducted across a broad range of fields, and the evidence suggests a positive impact on academic achievement, retention, and confidence. Venegas-Muggli JI et al., found that peer mentoring had a positive, significant impact on the academic achievement of underrepresented college students by fostering academic integration and the development of support networks [2]. Large-scale peer mentoring initiatives were successfully integrated into first-year biology classes, leading to improved performance and retention, and are thus viable in high-enrollment settings [4].

This is reinforced by the results of systematic reviews and meta-analyses. Le HG et al., reported that peer mentoring has a positive, consistent effect on academic achievement, satisfaction with learning, and engagement in higher education settings [5]. Bengesai AV et al., carried out a meta-analysis that established moderate to strong effects of formal peer-learning strategies on academic performance and highlighted the need for systematic implementation [7]. Moreover, mentoring is more powerful when it is systematically integrated early in the academic experience, especially around the time of entry into studies [9].

Moderating Factors: Age, Gender, Discipline, and Socio-economic Context

The success of mentorship or peer-learning is influenced by several demographic and contextual factors. Amaechi UC et al., established that, in low socio-economic secondary schools, age and sex were powerful moderators of the effect of peer mentorship on school engagement underscoring the importance of the need for targeted programme design [3]. Moreover, there are discipline-specific models of mentoring, for example, those used in the fields of science, nursing and medical education, that require modified pedagogical practices to fit the requirements of the curriculum [6,13,14,16,18-20].

Near-peer mentoring approaches have been particularly successful in design education and work integrated learning to connect theory and practice [11,15]. These results underscore the need to customise mentorship mechanisms to institutional context, learner profile and disciplinary culture.

Role of Student Organisations in Academic and Research Engagement

These communities of peers are also vital venues for mentorship and peer-learning in non-traditional classroom settings. Involvement in student groups for the academic interests provides opportunities for career advancement, leadership skills and knowledge of research [14]. Structured peer mentoring in project-based and research-methods modules is positively associated with student performance and complements experiential learning [18].

Mentorship programmes that focus on leadership development and involve learning social-emotional skills also help to sustain and improve retention and success. They address students' cognitive and affective needs [16]. Undergraduate research involvement and organising groups often serve as catalysts for mentoring relationships, peer participation, and early scholarly achievement among undergraduates.

Peer Relationships, Motivation, and Academic Engagement

Peer relations interact as an important mediating mechanism between mentorship interventions and academic performance. These relationship activities work through multiple means: social comparisons, learning co-regulation, reciprocal instruction, and the formation of shared academic norms and expectations. Shao Y et al., discovered that peer relationships influence academic performance through learning motivation and participation, emphasising the psychological underpinnings that constitute effective peer-learning [19]. As such, positive peer relationships increase intrinsic motivation, persistence, and self-regulated learning and help convert social transactions into educational achievements.

Relatedly, research on nursing students and other professional programmes revealed that peer mentorship enhances academic performance by creating a supportive learning environment and decreasing academic anxiety [20]. These results indicate that mentorship and peer-learning are not just teaching tools but also social processes responsible for influencing learning behaviour.

Implementation Strategies and Institutional Integration

Successful mentoring and peer-learning initiatives require design, training, and institutional support. More formal programmes with structured models that incorporate mentor roles, training modules, and evaluation frameworks have more academic impact than informal schemes [7,9]. Scale is established through near-peer models, mentoring in cohorts and embedding into curricula [4,11].

Academic institutions integrating faculty mentorship with peer-learning and student organisations are associated with increased academic performance, student retention, and satisfaction [15,16]. For sustainability to occur, it is supported by consistent alignment with institutional objectives, appropriate resourcing and ongoing review.

Research Gaps and Future Directions

While there is increasing empirical support for mentorship and peer learning, there are still some relevant research gaps [Table/Fig-1]. Most studies rely on short-term outcome measures, and long-term studies using longitudinal samples tracking students across multiple academic years would be necessary to confirm sustained impact on career trajectories and research productivity [1,7,9]. Second, the mechanisms through which mentorship leads to academic success (e.g., the relative contributions of emotional support, cognitive scaffolding, and identity development) have not been well studied

[10,13]. Third, a majority of studies have been conducted in high-income, English-language academic settings, limiting generalisability for Low- and Middle-Income Countries (LMICs) or for multilingual educational contexts. Fourth, there is limited research on student organisations and their independent contribution to research engagement as opposed to mentoring. Lastly, there are few rigorous Randomised Controlled Trials (RCTs) examining various mentorship models; the field would be strengthened by the use of higher-quality experimental designs to establish causality and optimise program components.

Author (Year)	Study type	Population	Key finding	Ref.
Gonçalves JC et al., (2025)	Prospective study	Higher education students	Mentoring improved student engagement, emotional support, and academic self-efficacy	[1]
Venegas-Muggli JI et al., (2023)	Longitudinal study	Underrepresented college students	Peer mentoring positively impacted academic achievement through social integration	[2]
Amaechi UC et al., (2026)	Quantitative study	Low socioeconomic secondary school students	Age and gender moderated the effect of peer mentorship on school engagement	[3]
Wilton M et al., (2021)	Intervention study	First-year biology undergraduates	Scalable peer mentorship improved performance and retention in high-enrollment settings	[4]
Le HG et al., (2024)	Systematic review	Higher education settings	Peer mentoring consistently improved academic achievement, satisfaction, and engagement	[5]
Bengesai AV et al., (2023)	Meta-analysis	Higher education students	Formal peer-learning strategies had moderate to strong effects on course performance	[7]
Eleje GU et al., (2025)	RCT/ intervention	Underperforming medical students (Nigeria)	Intra-class peer mentorship significantly improved academic performance in remediation	[13]
Shao Y et al., (2024)	Mediation analysis	Junior high school students	Peer relationships improved academic achievement via learning motivation and engagement	[19]
Orgel J et al., (2025)	Program evaluation	Undergraduate students	ELM program enhanced retention and performance via social-emotional learning	[16]
Penman M et al., (2024)	Systematic review	Work integrated learning programmes	Near-peer mentoring effectively linked theory and practice in design education	[15]

[Table/Fig-1]: Summary of key studies on mentorship, peer-learning, and student organisations.

[Table/Fig-1] summarises 10 key empirical studies that collectively examine the impact of mentorship, peer-learning, and student organisations on academic performance and research engagement across diverse educational contexts. The selected studies employ a range of rigorous methodological approaches. Gonçalves JC et al., and Venegas-Muggli JI et al., utilised prospective and longitudinal designs, respectively, to demonstrate that mentoring enhances student engagement, emotional support, and academic self-efficacy, with peer mentoring fostering social integration among underrepresented college students [1,2]. Amaechi UC et al., provided quantitative evidence that age and gender serve as significant moderators of peer mentorship effectiveness in low

socio-economic secondary school settings [3], while Wilton M et al., demonstrated the scalability of peer mentorship interventions in high-enrollment undergraduate biology courses with measurable improvements in performance and retention [4]. Systematic reviews and meta-analyses by Le HG et al., and Bengesai AV et al., further corroborate these findings, establishing that peer mentoring consistently improves academic achievement, satisfaction, and engagement, with formal peer-learning strategies yielding moderate to strong effects on course performance [5,7]. In the domain of medical education, Eleje GU et al., conducted a RCT demonstrating that intra-class peer mentorship significantly improved the academic performance of underperforming medical students in Nigeria [13]. Shao Y et al., employed mediation analysis to reveal that peer relationships influence academic achievement through the chain mediating roles of learning motivation and learning engagement among junior high school students [19]. Programme evaluations by Orgel J et al., showed that the Empowerment Leadership and Mentorship programme enhanced academic performance and retention through social-emotional learning and peer mentorship [16]. Finally, Penman M et al., conducted a systematic review confirming that near-peer mentoring effectively links theory and practice in work-integrated learning programmes [15]. Collectively, these studies indicate that structured mentoring and peer-learning interventions improve academic outcomes across varied populations and institutional settings, though the variability in study designs and contexts underscores the need for context-sensitive implementation strategies tailored to factors such as age, gender, disciplinary requirements, and available institutional support.

CONCLUSION(S)

Mentorship, peer-learning, and student organisations collectively exert a substantial positive influence on academic performance, student engagement, and early research involvement across educational contexts. Evidence consistently demonstrates that structured mentoring and peer-assisted learning models improve academic achievement, retention, motivation, and psychosocial well-being, particularly among underrepresented and at-risk students. Student organisations further amplify these benefits by providing leadership opportunities, academic communities, and pathways into research engagement. Future institutional strategies should prioritise integrated mentoring ecosystems, context-specific programme design, and longitudinal evaluation to maximise educational outcomes and cultivate a robust academic and research culture.

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AUTHOR DECLARATION:

- Financial or Other Competing Interests: None
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. Yes

PLAGIARISM CHECKING METHODS: [Jain H et al.]

- Plagiarism X-checker: Mar 04, 2026
- Manual Googling: Apr 20, 2026
- iThenticate Software: Apr 24, 2026 (1%)

ETYMOLOGY: Author Origin

EMENDATIONS: 6

Date of Submission: Feb 11, 2026

Date of Peer Review: Mar 11, 2026

Date of Acceptance: Apr 27, 2026

Date of Publishing: Jun 01, 2026