Journal of Leadership Education

Impacts of peer mentor leadership in a first-year seminar

Rajeeb Das
Office of Institutional Effectiveness and Evaluation, Texas A&M University, College Station, Texas, USA

Received 21 October 2024
Revised 5 December 2024
Accepted 11 March 2025

Abstract

Purpose – The intersection of student leadership in first-year seminars (FYS) is not well studied. Outcomes for student leaders (peer mentors) in undergraduate FYS merit study as to what benefits occur and how they accrue.
Design/methodology/approach – A mixed-methods approach included analysis of focus group data for the qualitative component using a grounded theory approach. The quantitative component used a quasi-experimental approach to measure outcomes.
Findings – Student leaders obtained better quantitative outcomes than non-leaders who were matched on background characteristics. Qualitatively, student leaders gained professional skills and became better learners. Frequent repetition of leadership activities fostered gains.
Practical implications – Research should examine the mechanisms by which leadership impacts occur to inform practice. Students may struggle to articulate how leadership affects them, and leadership educators can help students surface and process impacts.
Originality/value – FYS tend to focus on participant outcomes, not student leaders. Also, student leaders are a self-selected group of better-performing students compared to non-leaders. This study adds to a less well-studied student leader group and employed a strategy to take self-selection bias into account.

Keywords Leadership assessment, Mixed methods, Propensity score matching, Quasi-experimental design, Leadership measurement, Peer mentorship

Paper type Research paper

Introduction and background

This study examines student leader outcomes for peer mentors in an undergraduate first-year seminar (FYS). Mentors are typically second-, third- or fourth-year students and are leaders to mentees, who are first-year students. The terms leader and mentor are used interchangeably. A review of the literature will describe and highlight what is known in the two fields, FYSs and peer mentorship. FYS programs may share features but can be implemented very differently. The review will focus on studies that use approaches similar to this one to examine gaps and explain how this study addresses them. Although literature findings generally show that student leaders benefit, few studies focus on leadership in FYS. Therefore, a need exists to confirm and extend findings across different institution types and different implementations of FYS programs.

FYSs have been a staple of the American undergraduate experience even if they were known by other names or not formally recognized as such (Padgett & Keup, 2011). These seminars are now considered almost *de rigueur* as part of college education and can be categorized into defined types such as basic study skills or academic seminars. The American Association of Colleges and Universities (AAC&U) and others have consistently affirmed that FYS are one of 11 practices considered high impact (American Association of Colleges & Universities, 2023; Cuseo, 2010; Kuh, 2008). They highlight features of high-impact practices (e.g. durable, meaningful, and engaging) that apply to student leaders in a peer mentoring environment. Peer mentorship is increasingly being incorporated into student programming, including FYS programs, but less attention has been paid to research on peer leaders.

Journal of Leadership Education
Vol. 25 No. 2, 2026
pp. 141-152
Emerald Publishing Limited
1552-9045
DOI 10.1108/JOLE-10-2024-0119

Both peer mentorship and FYS research focus largely on target populations in isolation: peer mentorship is highly focused on mentees and FYS focuses on participants. By ignoring potential external influences, particularly selection bias, on observed results, the utility of such research is diminished. These criticisms may explain why, in part, published research is having less of an impact over time and how narrowly focused research targets aspects of understood science (Park, Leahey, & Funk, 2023).

The burden of proof is not just a concern for FYS or peer leadership research. Rather, the lack of best practice procedures in education research occurs in all fields and is recognized by the federal government in the Every Student Succeeds Act (2015), which supports the use of experimental and quasi-experimental designs to "permit the strongest causal inferences" (p. 323). Similarly, the research and assessment arm of the Department of Education, the Institute of Education Sciences (IES), published The Future of Education Research at IES (2022) and recommended causal studies and mixed-methods research among its priorities. The American Educational Research Association (2009) published a position paper with similar recommendations. This study responds to calls for better evidence in research.

A brief review of the state of research on FYS, peer mentorship and their intersection follows. The review is limited to undergraduate education, and the gap between research and practice is evident. Keup and Young (2017) describe a large body of research on FYS, but outcomes comparing FYS students to non-FYS students are lacking. Just a few studies met the criteria for this review, employing comparison groups in the study design. A few are highlighted to show the breadth and range of findings. Several studies comparing FYS participant cases to controls found no difference in first-year grade point average (GPA) or retention rates (Barton & Donahue, 2009; Clark & Cundiff, 2011; Crissman, 2001; Culver & Bowman, 2020; Edwards, 2018). Other studies found higher GPAs for FYS compared to non-FYS students (Ben-Avie *et al.*, 2012; Jamelske, 2008; Karp, Raufman, Efthimiou, & Ritze, 2016; Klatt & Ray, 2014; Shao, Hufnagel, & Karp, 2010; Shoemaker, 1995; Tampke & Durodoye, 2013; van Herpen, Meeuwisse, Hofman, & Severiens, 2019; Vaughan, Parra, & Lalonde, 2014; Wang, Wilhite, Wyat, Young, & Bloemker, 2012). In the precursor to this study, FYS participants obtained better grades and were retained to the second year at higher rates compared to non-participants (Das, Schmitt, & Stephenson, 2021). From the perspective of student leadership, none of these studies examined the leadership component within FYS.

Examining literature from the peer mentorship perspective, peer leadership may have effects on mentees, mentors and/or leaders or instructors. An early review on the state of mentorship literature was published by Jacobi (1991). She summarized the literature on mentorship from the 1970s to 1991, but this review failed to consider that mentorship could have effects on mentors. The review concluded that mentorship definitions were not clear, methodological rigor was lacking, and too many studies inferred causality without considering other causes. The review cited one early study that used an experimental design and found greater satisfaction for mentees compared to unmentored students (Cosgrove, 1984). In the Cosgrove (1984) study, mentors reflected on positive and negative experiences, but the opportunity to examine how mentorship affected these individuals as leaders was missed.

Following where Jacobi left off, another review of mentorship examined studies from 1990 to 2007 (Crisp & Cruz, 2009). Of the 42 studies, only 2 examined outcomes for mentors. The first, by Carlsen and Single (2000), examined effects on mentors and mentees. Mentors cited increased satisfaction, improved interpersonal skills and encouraging reflection on their own careers. The second, by Reddick (2006), focused on Black mentors at a predominantly white institution. Reddick's study sample was four faculty mentors who recognized the impact they had on mentees, but this veers away from focus on student leaders.

A review of undergraduate mentoring programs by Gershenfeld (2014) examined 20 studies published between 2008 and 2012. Gershenfeld observed that descriptions of mentoring functions have improved, but that minimal progress has been made on applying methodological approaches that isolate the effects of mentoring on mentors or mentees. A fourth review of mentorship literature was conducted by Leavitt, Nelson, and Cutucache

(2022), where they identified a scant 80 articles published on the topic from 2013 to 2020. In this review, 78 studies focused on target populations with no comparison groups; one study used a comparison group and one other showed no benefit. A typical study plucked from this review, such as Cutright and Evans (2016), describes outcomes for undergraduate mentees and how mentors serve as a technical resource. Mentor outcomes and the leader role were not examined.

More recently, momentum has gathered to examine peer leader outcomes. Graham, Wayne, Persutte-Manning, Pergantis, and Vaughan (2022) found positive outcomes for peer leaders related to improved public speaking skills and increased comfort in their role. Dixon *et al.* (2023) found that peer leaders improved skills in communication, leadership and academic self-efficacy and gained other benefits. Outcomes were not disentangled from natural skill development that occurs from being students, which peer leaders are. Indeed, almost all studies describe peer leaders improving speaking skills, gaining comfort and improving academic skills. Stockkamp and Godshalk (2022) examined leader and mentee dyads and found mutual benefits. "Learning goal orientation" and mentoring and/or leader functions predicted learning for both types of students. Although studies exist that separate leaders from others, the mechanisms by which benefits accrue are not well established.

The review of literature at the intersection of mentorship and FYS over the span of 50 years documents a broadening scope of research with increasing focus on special populations and development of theoretical frameworks, but little progress on methodology that isolates cause and effect. One constant is that peer mentorship's effects on leaders have largely been overlooked until very recently. Research on peer mentorship is almost exclusively focused on impacts on mentees, with little examination of leadership's effects on mentors or instructors. For articles that assess peer mentorship's effects on leaders, alternative explanations were often not ruled out. This study is one effort to fill this gap.

Purpose of the current study

This study aims to better characterize benefits, if any, for students choosing to participate as leaders in a peer mentoring relationship. The goal of such characterization is to understand more deeply what elements of peer mentorship produce the observed results on leaders. If peer leaders derive benefit, delineating the nature of the benefits can inform training, engagement, and assessment of student leaders. Findings may also inform leadership educators to address challenges students face in leadership roles.

Methods:

Institutional setting

This study was undertaken at one of the top five largest universities in the United States of America, where the fall undergraduate entering class surpassed 12,000 students in 2023. The public land-, sea- and space-grant institution is in the south and has a Carnegie Classification defined as Research I. Its FYS program was launched in fall 2019. The FYS was offered to about 24% of incoming first-year students. It was primarily taken as a fall semester course, but it was optionally offered as a two-semester experience. Most sections were taken for zero credit, while a few sections were taken for one to three credits with additional college-specific content. In all cases, course performance was transcribed whether taken for a letter grade or pass/fail. Enrollment in sections was usually kept at or below 30 students, and most course sections met for one hour, one day per week for the duration of the first semester in college (15 weeks). The course quickly scaled and was taken by 99% of first-year fall 2023 enrolled students.

First-year seminar

Padgett and Keup (2011) enumerate five types of FYS, and the one under study in this analysis aligns most closely under the category of extended orientation. The content in the FYS in this

study includes academic success strategies and resources, wellness, time management, resilience and transition skills. Another purpose of the class is to help students build community among their classmates.

Student leaders

Student leaders are selected via a competitive process annually. Requirements for peer mentors include maintaining good academic standing, maintaining a minimum 2.5 cumulative GPA and being in good disciplinary standing. Peer mentors receive 4.5 to 6.5 hours of required training, both in person and online. They may optionally participate to obtain additional training. Students commit to working three hours per week during a 15-week fall semester. Peer mentors allocate time weekly to meet with their course instructor to coordinate and plan course components, meet once per week in class and meet individually with each student once per semester. Peer mentoring is voluntary, and mentors receive a $500 stipend mid-semester. Peer mentors may obtain additional support by reaching out to staff in a dedicated FYS office. The peer mentor-mentee ratio ranged from 1:25 to 1:30, and about 150 peer mentors are recruited annually for the zero-credit sections of the course. A minority of FYS courses are discipline-based and have multiple peer mentors (about 600 peer mentors are recruited annually for these specialty FYS). Peer mentors participate in an end-of-semester debrief where they may choose to continue in their leadership role in subsequent years.

Participants

A qualitative study sample was obtained by inviting peer leaders by email to participate in semi-structured focus groups and interviews in fall 2022 and spring 2023. In total, 16 students participated, and the sessions were recorded to produce audio transcripts. Two first-year non-leader students who completed the FYS course participated in a separate focus group. They served as a comparison to the peer mentor focus groups to compare findings. For the quantitative component, selected academic indicators were compared between leaders and non-leaders matched on background characteristics. To contextualize results and guide the development of recommendations, 10 directors of FYS programs across the eastern United States of America were contacted, requesting an accounting of how their programs originated and developed. An Institutional Review Board approval was granted for this study (study number 2023–1312).

Analysis

Peer leaders and mentees were compared on select items from a first-year student survey and quantitative outcomes from academic data. Propensity score matching (PSM) was used to obtain a comparison group for all mentors (Stuart, 2010). Two control students were selected for every treatment student by minimizing the total absolute difference in propensity scores across matches. The following variables were used to match treatment and control students: college of chosen major, first-generation status, gender, race, Hispanic ethnicity flag, Pell status flag, student class level, cohort year, high school sextile rank, in-state residency flag and high school grade point average (HS GPA). The first five variables were required to be exact matches for a link to be successful. Other parameters of the PSM included employing an optimal matching strategy (all control students that matched each treatment student were selected by minimizing the total absolute difference in propensity score across all matches; matches were selected simultaneously without replacement) and two controls were selected for every case. The caliper value was set to 0.2. SAS 9.4 was used to perform data management and statistics.

During the semi-structured focus groups and interviews, field notes were recorded alongside automatically generated Zoom transcripts. The latter were manually cleaned and

initial codes were obtained from field notes. Using the grounded theory approach (Strauss & Corbin, 1990), the codes were further developed by separately examining text through the lenses of value coding (portraying subjective experiences) and thematic coding (examining relationships between ideas). Then codes were triangulated to support identification, modification or labeling themes. Triangulation was accomplished by aligning similar meanings for themes in the two coding methods, then comparing supporting codes to confirm alignment. A similar approach was taken with transcripts obtained from a focus group with two first-year students who did not participate as peer leaders. They served as the comparison group.

Methodological integrity was examined in several ways (Levitt *et al.*, 2018). Questions were asked in a neutral manner. The prompt, "Did you gain anything by participating?" was used instead of a prompt that implied advantage, "What benefits did you gain?" Also, specific benefits, such as leadership, were not probed until participants voiced them. It was expected that some findings would align with existing literature and demonstrate consistency with known outcomes. Transcripts and findings were shared with colleagues to interpret findings differently and challenge any aspect of this work. Direct quotes were used to demonstrate that findings were grounded in evidence. Confidence in the credibility of results was also supported by findings from a study similar to this one initiated after findings were established in this study. The subsequent study examined student leaders in a non-FYS context, but results were consistent between the two studies. Finally, the researcher actively sought information from participants that contradicted findings by asking them about the counterfactual.

Results

For the quantitative component of this study, 16 cases were compared to 32 controls. Due to unequal group size, equality of variances was checked. It was non-significant (p-value = 0.7381), which meant that the standard independent samples t-test was appropriate to perform the calculation (Table 1). For the remaining HS GPAs, sample means were found not to be statistically different (t-value = −0.47, degrees of freedom (df) = 33 and p-value = 0.6385). This was expected as the variable was included as a matching variable.

Cumulative GPA was compared between groups (Table 1) as an outcome measure. Equality of variances was not significant (p-value = 0.2349); therefore, the standard independent samples t-test was performed. It was assumed that peer leaders would have a higher GPA; thus, a one-sided t-test was conducted. The means were found to be statistically different (t-value = −1.86, df = 46 and p-value = 0.0345). The cumulative GPA for peer leaders was 3.67, and the cumulative GPA for the comparison group was 3.40.

Qualitative analysis on peer leader focus group transcripts revealed themes similar to findings from other studies described in the background section. Peer leaders developed career skills (e.g. time management, public speaking), fostered personal connections and recognized possibilities for transfer of skills to other academic pursuits. Peer leaders required interaction with professors, and students and the nature of the experience depended on unique features of

Table 1. Comparison of GPA before and after intervention

Group	Mean HS GPA	t-value	p-value	Cum. GPA	t-value	p-value
Peer leaders	4.01	−0.47	0.6385	3.67	1.86	0.0345
Non-peer mentors	3.99			3.40		

Source(s): Table by author

the physical space, personalities and rapport with instructors and students. Peer leaders expressed gaining confidence interacting with students and instructors. On gaining confidence: "I feel like I really just started, you know, talking to more people, and I felt more comfortable." On relating to students: "Talk to them, try and remember their names, memorize their names and their faces. I would try to remember at least one thing about them so I could have a follow-up with them. I was a junior the first time and was struggling a lot. I feel like that helped them relate to me more." On developing relationships: "Even if you can't find someone, there is someone out there. And if no one else is that person for them, then I am that person." On sense of purpose: "When they actually engage, then I feel motivated too. I feel like I'm actually doing something, that my work, in a sense, is purposeful." These findings are confirmatory.

What is new, however, are three themes not well described in the literature. The first theme is labeled professional practices, which includes time management, punctuality, the ability to speak publicly, and other skills used in the workplace. Leaders expressed gaining confidence, comfort, and expertise in their role as peer leaders: "My professor treated me exactly like a colleague, and he always valued my opinion. I often made edits to the way that we were going to present things to the students so that it would be received better and not just kind of seen as useless [. . .] in that aspect, I feel like the relationship between me and the professor was great." Professional relationships developed: "I really got close with the instructor. I like to say we were like a dynamic duo in the classroom." Peer leaders operate within the bounds of their role, and they developed skills useful in a professional environment.

A second theme is that student leaders became better learners, which occurred through two mechanisms. The first mechanism is that students learned how to practice, which is engaging in behaviors that lead to enacting practice. This student's sentiment described discomfort in learning how to practice but also recognized benefits: "Trying to make an effort, even if you feel hopeless and it's awkward, and it's not feeling natural because it's not flowing. Having that skill is huge." Another student explained, "I just need my practice [. . .]. It's fine other than my voice shaking, and me just getting a tiny bit nervous." These students engaged in the act of practicing, which was effortful and uncomfortable. Here, a student leader is introspective about how to practice: "I try to practice presentation skills [. . .] Do I need to change it? I would question it a little bit." Students reflected on the quality of practicing that related to learning a skill, but sometimes they focused just on the quality of the act of practicing. Being able to reflect on practicing while experiencing taxing emotions is a learning experience.

The second mechanism by which student leaders became better learners was that they practiced how to learn. Practicing how to learn is when student leaders develop their repertoire of learning strategies. It is learning about strategies and then updating a belief, adopting a new strategy or just recognizing an experience about how to learn. This student leader acted on advice from mentees about practicing how to learn: "My students taught me so much [...]. They told me about some tools that I could use for myself, and [I] would practice it." The leader could try out different learning strategies and adopt the best ones.

Another leader described practicing how to learn as: "incorporat[ing] it into your mental model, and then just us[ing] it [. . .] I'm not actively, 'Oh, this is what I learned. This is what I noticed.' But it's incorporated into my behavior. I can't identify the moment, but I can tell you, for sure, it's incorporated. There is growth in the skill set." In speaking in front of an audience, this leader "had to better refine what I'm saying, and so I think that's a skill I can apply in many different places. Additionally, it led me towards learning more about soft skills." The repeated actions of "refining" (learning how to practice) and "learning more" (practicing how to learn) are mechanisms by which this student addressed a perceived deficit.

A consequence of becoming better learners is getting better at learning, as this student described: "Now I can take charge and be more involved, instead of just getting what I need to pass the class [...]. I'm just getting more out of school in a way, instead of just focusing on numbers. It's more about what I am actually learning." Another student explained that practicing how to learn involved repetition: "I would mentally catch it. 'I've been speaking for a little too

long.' And so, I fix it and put it in that feedback loop for myself. Fix it, and then do better the next time, and so on. I don't think it's specific moments, but rather repetitions of practice where you kind of see something and you notice, okay, that can be improved." A few key phrases stand out in the last quote that refers to making a change about how to learn: "feedback loop to myself," "repetitions of practice" and recognizing elements "that can be improved."

This quote also supports a third theme, which is that student leadership occurs frequently and describes a catalyst effect. A catalyst is defined as something that increases the rate of a reaction without itself being consumed (Britannica and Editors of Encyclopaedia, 2024). Student leadership is a catalyst because it speeds multiple years of potential development into one semester. Interviewees described why rapid skill development occurred and why it did not occur, or occurred slowly, elsewhere. A student leader described the effects of frequently speaking publicly: "Having to do this every single week [. . .] I still do shake occasionally when I'm overthinking what I'm trying to talk about. But it did become a lot easier." Another student described the catalyst effect as "an opportunity to take on a leadership role and still work with students [. . .] so getting to [teach and] do different lectures and get that experience and see if I'm comfortable with that was definitely something that I wanted to do and have absolutely loved."

When the counterfactual was suggested that skills could develop in other courses and settings, student leaders refuted this claim. Student leaders were able to articulate why these skills did not develop in other settings, and they described specific instances where they used these enhanced skills. On the uniqueness of being a student leader: "The teaching experience I've had [. . .]. I don't think I would have gotten that from anything else, and that's really helped me kind of figure out that I do enjoy that, and I would potentially love to do that in the future." A consequence of performing student leadership duties was experiencing growth, which this student describes: "I used to be more of a follower, you know, like whatever the leader tells me. I'll just do that. So this project gets done, and we get a grade. But now I can [. . .] take charge and be more involved."

Two students who were not peer mentors participated in a focus group to serve as a comparison to the peer mentor focus groups. Findings were compared to the student leader findings above. Non-leader students described how participating in an FYS made a difference primarily in social interactions and knowledge of academic skills. The first student described FYS impacts: "It's definitely made the biggest difference socially." The second student on FYS impacts: "this all translated to my time outside of the classroom, and where I tend to try to accomplish what's really important first, more academic-wise." The keyword "skills" was mentioned 11 times, while "learning" was mentioned 9 times; however, these were in relation to interpersonal interactions and study skills.

Two additional components were included in this study. The first was that efforts to examine first-year student climate survey items and compare student leaders to non-leader responses, but it was unsuccessful because the non-response rate was high and sample size ($n = 10$ for each group) was too small to make conclusions. The second was summarizing correspondence from a convenience sample of institutions in the southeast of United States of America, individuals who closely work with FYS programs. Responses were gathered to contextualize findings from this study and to suggest next steps.

To summarize, student leaders performed better academically compared to non-leaders in a matched sample. Student leaders described benefits consistent with the literature in performing the role of peer mentor. They also described unique benefits, which were not obtained anywhere else in their university career. This was confirmed by asking the counterfactual. Non-leaders described benefits from participating in an FYS program different from those of leaders.

Discussion

Analyzing experiences and outcomes of student leaders in peer mentoring roles is important because findings often describe outcomes that may be high impact. However, the mechanisms

that produce them are not well described. This study found that peer leaders obtained higher cumulative GPAs compared to non-leader counterparts but also that their role afforded them opportunities to develop, practice and improve social and academic skills.

The repetitive nature of being a leader produced a catalyst effect, which made gaining professional skills and becoming better learners possible. Student leaders experienced the catalyst effect as a feedback loop comprised of frequent engagement, self-assessment and modification if warranted: "It's hard to train for this role, because it's not all the same. It's not like copy and paste." Another student contrasted training to reality: "You might have all the ideas, concepts and/or theories of understanding. But when you come to apply it, when you come to talk to people, it's kind of a different beast." Being a student leader is effortful and the repetitive nature of being a leader allowed students to practice.

Practice improved skills in public speaking, comfort in the leader role, advanced academic skills and improved other soft skills. Students described how they did not practice leadership skills in other curricular or co-curricular settings. Or, if they experienced such opportunities, they were too brief to be of benefit. The skill of public speaking in a course, for example, is high stakes in that it contributes to a grade. However, public speaking as a student leader is high stakes because it may impact students' lives. The desire for a high grade was an extrinsic motivator, while the desire to perform well as a peer mentor was an intrinsic motivator. Student leaders described spillover effects from developing professional practices in that they gravitated towards leadership roles in co-curricular activities and in courses. Non-leaders reported that their FYS experiences related to social activities and academic engagement. They did not mention leadership roles in curricular or co-curricular activities.

Student leaders described that some professional practices were skills that could be used lifelong. Participants described how speaking skills could be used in a business environment, at an internship and in other settings. A student described learning transference: "Talking in front of a group, and leading a group, and getting people to pay attention to you [. . .]. I learned that from being a peer mentor and applied that in a lot of areas of my life." Students must make the mental calculation whether something they learned fits a proposed new application, and there was no shortage of descriptions of usage cases. They also described how these skills would not be forgotten, in contrast to content memorized for courses.

Strengths and limitations

Students who pursue leadership positions generally perform better academically compared to non-leaders. For the quantitative component, this selection bias was addressed by matching background characteristics between cases and controls using PSM. However, selection bias may still exist. In the qualitative component of the study, only two students participated in a comparison focus group despite inviting hundreds of students by email. It would have been better to have a larger comparison sample to better capture the breadth and depth of non-leader student experiences. Future studies will include small incentives to encourage participation.

The mixed-methods and quasi-experimental approach in this study lends more confidence to the findings. However, confirming the themes identified in this study may be difficult in other contexts. For example, learning how to learn was not confirmed in a qualitative study of a living learning community conducted at the same institution as this study (Dunn & Moore, 2020). Study authors suggested that the interview protocol did not adequately query students or that students were not able to connect their experiences to the concept of learning how to learn. A student in the present study asserted the latter by expressing difficulty in articulating how benefit occurred: "I can't identify the moment." Learning how to practice (the act of practicing) and practicing how to learn (developing learning strategies) were the mechanisms by which students became better learners, and the two mechanisms may appear to be a tautology. Both phenomena occurred and were often tied closely together, which can make it difficult to identify them.

FYS programs can vary widely in terms of structure, content or whether peer leaders are present. FYS programs take advantage of resources available to them, and this FYS program is no exception. Caution is advised when generalizing findings from one of the largest institutions in the country to other settings. Sample size was relatively small for both the quantitative and qualitative components, which is a limitation. However, quantitative and qualitative measures are internally consistent and consistent with the literature. Evidence supports student leaders in peer mentoring relationships obtaining positive, impactful and durable outcomes.

Future research and practice

This study suggests strategies for practice. If student leaders have frequent opportunities to practice skills, then leadership educators could guide development of discrete skills in training and periodic assessments. Educators should be able to anticipate common student struggles, such as nervousness and reassure students that frequent practice (due to the catalyst effect) will make things easier. This study demonstrated that students may struggle to identify challenges they face. After a few FYS sessions, educators could help peer mentors surface and process challenges they encounter. Leadership educators could advise student leaders in becoming better learners by suggesting strategies to improve (i.e. engage in activity, critique, adjust skills and repeat effort). Leadership educators can take advantage of the repetitive nature of leadership functions to improve student skills, monitor progress and offer constructive feedback.

This study also suggests a research agenda to further characterize how leadership impacts student leaders in a peer mentoring relationship. When conducting qualitative studies, a strong practice is to ask the counterfactual. When an interviewee asserts a benefit, the interviewer could respond by suggesting that the benefit is obtained elsewhere in the college experience. Allow the student to justify and support the claim. This simple addition to existing procedures costs almost nothing and is a strategy to employ regardless of whether the focus is leaders or non-leaders.

To further examine how this study might inform research, correspondence with a convenience sample of institutions in the southeast United States of America asked about FYS programs and student leadership. Discussions centered on how these programs developed, how peer leaders were utilized and how programs were assessed. Their responses refer to what Blalock, Harper, and Piker (2004) labeled as implementation strategies developed from a "matrix of educational influences" (p. 128) in creating FYS programs. Part of that matrix included following institutional procedures for course development and approval, review from general education and curriculum committees and endorsement by accreditation or other agencies.

How, then, do student leaders in mentoring relationships persist, evolve and improve in such contexts? Everett Rogers (1983) described what likely happens in developing pedagogy where professional and social networks adopt, spread and perpetuate practices. Confidence in these networks to guide the development of pedagogy can often be more trusted than recommendations in the literature.

Research findings and recommendations can be made more relevant by offering insights explaining why, how, when and under what conditions student leaders experience benefits. Probing more deeply to characterize these features will improve understanding of what makes the leadership experience impactful. In practice, leadership educators can lean into the high impact features of student leadership training, reflection and assessment to ensure a high-quality experience for students. If improving FYS student leadership's effects on student leaders is a worthy goal, then using comparison groups and exploring mechanisms for how impacts occur should be on the agenda for program practitioners and researchers.

References

American Association of Colleges & Universities (2023). High-impact practices. Available from: https://www.aacu.org/trending-topics/high-impact (accessed 30 October 2023).

American Educational Research Association (2009). Standards for reporting on humanities-oriented research in AERA publications. *Educational Researcher*, *38*(6), 481–486. doi: 10.3102/0013189X09341833.

Barton, C., & Donahue, A. (2009). Multiple assessments of a first-year seminar pilot. *The Journal of General Education*, *58*(4), 259–278. doi: 10.1353/jge.0.0051.

Ben-Avie, M., Kennedy, M., Unson, C., Li, J., Riccardi, R. L., & Mugno, R. (2012). First-year experience: A comparison study. *Journal of Assessment and Institutional Effectiveness*, *2*(2), 143–170.

Blalock, G., Harper, S., & Piker, A. (2004). Welcoming the first class of first-year students with an integrated experience. In J. Henscheid (Ed.), *Integrating the first-year experience: The Role of First-Year Seminars in Learning Communities*. Columbia, SC: National Resource Center for the First-Year Experience and Students in Transition.

Britannica & Editors of Encyclopaedia (2024). Catalyst. Encyclopedia Britannica. Available from: https://www.britannica.com/science/catalyst

Carlsen, W. S., & Single, P. B. (2000). Factors related to success in electronic mentoring of female college engineering students by mentors by working in industry. In *Paper presented at the annual meeting of the National Association for Research in Science Teaching*, New Orleans, LA.

Clark, M. H., & Cundiff, N. L. (2011). Assessing the effectiveness of a college freshman seminar using propensity score adjustments. *Research in Higher Education*, *52*(6), 616–639. doi: 10.1007/s11162-010-9208-x.

Cosgrove, T. J. (1984). *The effects of participation in a student development mentoring-transcript program on freshmen university students (Publication No. 478)*. Doctoral dissertation. University of San Diego. Digital USD.

Crisp, G., & Cruz, I. (2009). Mentoring college students: A critical review of the literature between 1990 and 2007. *Research in Higher Education*, *50*(6), 525–545. doi: 10.1007/s11162-009-9130-2.

Crissman, J. L. (2001). The impact of clustering first year seminars with English composition courses on new students' retention rates. *Journal of College Student Retention: Research, Theory & Practice*, *3*(2), 137–152. doi: 10.2190/FJHU-RT1X-GA6Y-EME5.

Culver, K. C., & Bowman, N. A. (2020). Is what glitters really gold? A quasi-experimental study of first-year seminars and college student success. *Research in Higher Education*, *61*(2), 167–196. doi: 10.1007/s11162-019-09558-8.

Cuseo, J. B. (2010). *The empirical case for the first-year seminar: Promoting positive student outcomes and campus-wide benefits*. Dubuque, IA: Kendall/Hunt.

Cutright, T. J., & Evans, E. (2016). Year-long peer mentoring activity to enhance the retention of freshmen stem students in a NSF scholarship program. *Mentoring & Tutoring: Partnership in Learning*, *24*(3), 1–12. doi: 10.1080/13611267.2016.1222811.

Das, R., Schmitt, E., & Stephenson, M. (2021). A quasiexperimental analysis of first-year seminar outcomes at a large university. *Journal of College Student Retention: Research, Theory & Practice*, *25*(4), 940–954. doi: 10.1177/15210251211038591.

Dixon, B.T., Agboola, O., Hauck, A., Argento, M., Miller, C., & Vaughan, A.L. (2023). Peer mentoring: Benefits to first-time college students and their peer mentors. *Journal of Higher Education Theory and Practice*, *23*(2), 202–217.

Dunn, A., & Moore, L. (2020). Significant learning of peer-mentors within a leadership living-learning community: A basic qualitative study. *Journal of Leadership Education*, *19*(2), 64–75. doi: 10.12806/V19/I2/R5.

Edwards, C. (2018). *First-year seminars and student expectations: A correlational study of retention and success*. Graduate Theses and Dissertations. Available from: https://scholarcommons.usf.edu/etd/7281

Every Student Succeeds Act (2015) U.S.C. § 6301. US Congress. Available from: https://congress.gov/114/plaws/publ95/PLAW-114publ95.pdf

Gershenfeld, S. (2014). A review of undergraduate mentoring programs. *Review of Educational Research*, *84*(3), 365–391. doi: 10.3102/0034654313520512.

Graham, M., Wayne, I., Persutte-Manning, S., Pergantis, S., & Vaughan, A. (2022). Enhancing student outcomes: Peer mentors and student transition. *International Journal of Teaching and Learning in Higher Education*, *34*(1), 1–6.

Jacobi, M. (1991). Mentoring and undergraduate academic success: A literature review. *Review of Educational Research*, *61*(4), 505–532. doi: 10.2307/1170575.

Jamelske, E. (2008). Measuring the impact of a university first-year experience program on student GPA and retention. *Higher Education*, *57*(3), 373–391.

Karp, M. M., Raufman, J., Efthimiou, C., & Ritze, N. (2016). Revising a college 101 course for sustained impact: Early outcomes. *Community College Journal of Research and Practice*, *41*(1), 42–55.

Keup, J. R., & Young, D. G. (2017). Investigating the first-year seminar as a high-impact practice. In R. Feldman (Ed.), *The first year of college: Research, theory, and practice on improving the student experience and increasing retention* (pp. 93–125). Cambridge University Press. doi: 10.1017/9781316811764.005.

Klatt, J., & Ray, R. (2014). Student academic outcomes after completing a first-year seminar. *NACTA Journal*, *58*(4), 288–292.

Kuh, G. D. (2008). *High-impact educational practices: What they are, who has access to them, and why they matter.* Washington, DC: Association of American Colleges and Universities.

Leavitt, A. S., Nelson, K. L., & Cutucache, C. E. (2022). The effect of mentoring on undergraduate mentors: A systematic review of the literature. *Frontiers in Education*, *6*, 1–9, 731657. doi: 10.3389/feduc.2021.731657.

Levitt, H., Bamberg, M., Creswell, J., Frost, D., Josselson, R., & Suárez-Orozco, C. (2018). Journal article reporting standards for qualitative primary, qualitative meta-analytic, and mixed methods research in psychology: The APA publications and communications board task force report. *American Psychologist*, *73*(1), 26–46. doi: 10.1037/amp0000151.

Padgett, R. D., & Keup, J. R. (2011). *2009 National survey of first-year seminars: Ongoing efforts to support students in transition (Research Reports on College Transitions No. 2)*. Columbia, SC: University of South Carolina.

Park, M., Leahey, E., & Funk, R. (2023). Papers and patents are becoming less disruptive over time. *Nature*, *613*(7942), 138–144. doi: 10.1038/s41586-022-05543-x.

Reddick, R. J. (2006). The gift that keeps giving: Historically black college and university-educated scholars and their mentoring at predominantly white institutions. *Educational Foundations*, *20*(Win-Spr), 61–84.

Rogers, E. M. (1983). *Diffusion of innovations*. New York, NY: The Free Press.

Shao, X., Hufnagel, P., & Karp, R. (2010). The effect of Clarion *Transitions* on student academic performance and retention. *Journal of College Student Retention: Research, Theory and Practice*, *11*(4), 435–457.

Shoemaker, J. S. (1995). *Evaluating the effectiveness of extended orientation for new, undecided freshmen* (pp. 1–15). San Francisco, CA: Annual Meeting of the American Educational Research Association.

Stockkamp, M., & Godshalk, V.M. (2022). Mutual learning in peer mentoring: Effects on mentors and protégés. *Mentoring & Tutoring: Partnership in Learning*, *30*(2), 164–183. doi: 10.1080/13611267.2022.2057100.

Strauss, A., & Corbin, J. (1990). *Basics of qualitative research: Grounded theory procedures and techniques*. Newbury Park, CA: Sage.

Stuart, E. A. (2010). Matching methods for causal inference: A review and a look forward. *Statistical Science*, *25*(1), 1–21. doi: 10.1214/09-STS313.

Tampke, D. R., & Durodoye, R. (2013). Improving academic success for undecided students: A first-year seminar/learning community approach. *Learning Communities: Research and Practice*, *1* (2). Available from: https://eric.ed.gov/?id=EJ1112851

van Herpen, S. G. A., Meeuwisse, M., Hofman, W. H. A., & Severiens, S. E. (2019). A head start in higher education: The effect of a transition intervention on interaction, sense of belonging, and academic performance. *Studies in Higher Education*, *45*(4), 862–877.

Vaughan, A., Parra, J., & Lalonde, T. (2014). *Journal of the First-Year Experience and Students in Transition*, *26*(2), 51–67.

Wang, N., Wilhite, S. C., Wyat, J., Young, T., & Bloemker, G. (2012). Impact of a college freshman social and emotional learning curriculum on student learning outcomes: An exploratory study. *Journal of University Teaching and Learning Practice*, *9*(2). Available from: https://eric.ed.gov/?id=EJ984909

Corresponding author
Rajeeb Das can be contacted at: r.das@tamu.edu