

Development of University Teaching Assistants' Self-Efficacy for Working with Diverse Learners

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Abstract

Teaching assistants are essential for students' higher education success, but with increasing student diversity, educators must adopt a broader and more integrated range of teaching approaches to effectively meet their diverse needs. Teacher self-efficacy (TSE) describes educators' confidence in their ability to facilitate student success; however, such confidence may be undermined without specialised training, particularly when tutors face the challenge of working with increasingly diverse populations (Larsen & Bradbury, 2024). This study evaluated the impact of a training intervention, which focused on self-efficacy principles and inclusive teaching strategies, on tutor TSE for diverse learners. Using a mixed-method design, we describe the pre-, during, and post-intervention perceptions of six tutors teaching in large, first-year biology laboratory classes at an Australian university. Tutors reported increased TSE, particularly in classroom management, and an improved ability to engage diverse learners using inclusive strategies. These findings highlight the importance of targeted training to enhance tutors' self-efficacy and improve student learning experiences.

Introduction

Teaching assistants in higher education (HE), also known as sessional teachers or tutors, are essential to students' academic and professional development, and for supporting their emotional and mental wellbeing (Dodo-Balu, 2022; Kahu & Picton, 2019; Seary & Willans, 2020). Greater accessibility to HE has increased student diversity, requiring tutors adopt inclusive practices. However, their professional development in this area remains limited (McFarlane, 2016; Yamauchi, Taira & Trevorrow, 2016).

This is particularly evident in inquiry-based laboratory classes (practicals), where tutors must develop specialised skills (Zimbardi, Bugarcic, Colthorpe, Good & Lluka, 2013), including:

- **meta-cognitive regulation** - planning, monitoring, and adapting their teaching
- **social regulation** - facilitating collaboration and discussion
- **conceptual regulation** - applying disciplinary knowledge (Dobber, Zwart, Tanis & van Oers, 2017)
- **critical thinking skills** - analysing information, evaluating evidence, and making reasoned judgments to guide learning.

These are all necessary while also using various teaching strategies to engage all students (Pather, Meda, Norodien-Fataar & Dippenaar, 2020; Zhao, Pandian & Singh, 2016). Though critical to fostering engagement and inclusive learning, the impact of a tutor's confidence (self-efficacy) on applying these strategies for diverse learners remains unclear.

Teacher self-efficacy

Self-efficacy (SE; Bandura, 1977) is the belief in one's ability to manage and overcome challenges. SE underscores the interplay of a person's behaviour, environment, and self-perceptions with four key pillars:

- **Mastery Experience (ME):** Performance accomplishments where overcoming difficult situations increases SE.
- **Vicarious Experience (VE):** Observing others model a behaviour; seeing someone overcome difficulties increases SE.
- **Verbal Persuasion (VP):** Self or external feedback about a task, with negative commentary decreasing SE.
- **Affective State (AS):** Psychological and emotional self-evaluation; stress can decrease whilst confidence enhances SE.

Teacher Self-Efficacy (TSE) refers to an educator's confidence in their ability to guide students toward successful outcomes (Tucker et al., 2005). It is shaped by the four SE pillars and involves a cognitive cycle in which educators evaluate teaching tasks and their own competencies (Tschannen-Moran & Hoy 2001). Stronger SE beliefs encourage greater teacher effort and student engagement (Shaukat & Iqbal, 2012), reinforcing TSE. Understanding TSE is thus crucial, as it influences how teachers adapt to and address challenges, ultimately benefiting student learning. However, TSE research has traditionally focused on primary and secondary educators, with little attention on HE. Adult learners encounter distinct challenges from those of children, such as balancing work, life, and study, as well as economic pressures (Gibney, Moore, Murphy & O'Sullivan, 2011). Tertiary educators may thus need a more holistic approach to effectively engage today's diverse students (Fives & Looney, 2009), developing inclusive teaching strategies that reach beyond pedagogical expertise alone.

Tutor TSE for working with diverse learners

Australian government policies have expanded HE access for students with disabilities, Indigenous backgrounds, low socioeconomic status, and regional or international origins, increasing classroom diversity (Government of Australia, 2024). While all students may face challenges, those affecting such diversity groups may be particularly amplified, including cultural adjustment, communication barriers, organisation and workload management, time and financial pressures, and limited access to opportunities (see Supplementary Table 1). Tutors must understand these diverse students, tailoring their teaching, enhancing engagement, and fostering belonging (Farmer, Hamm, Dawes, Barko-Alva & Cross, 2019), in turn strengthening their TSE (Yada, Tolvanen & Savolainen, 2018). With limited research, identifying key influences on TSE and delivering targeted training is essential to support educators and students.

Research aims and questions

Given the link between TSE and student success, increased learner diversity, and sparse research on today's tutors' pedagogical development, this study aimed to explore factors shaping university tutors' TSE for working with diverse learners, asking:

- How do tutors and students define diverse learners?
- How do tutors perceive their TSE toward working with diverse learners?
- What strategies do they utilise to support diverse learner needs?
- How can a targeted training intervention impact tutor TSE and strategies?

Methods

Research design and researcher perspectives

A mixed-method design investigated how a training intervention influenced tutors' TSE for working with diverse learners. Data sampling occurred around a 13-week teaching semester (Figure 1) using surveys (*Qualtrics Survey Software*, Qualtrics, Provo, UT) delivered before (week 1), during (week 3) and after the intervention (week 7), and semi-structured interviews in week 15. This timeframe enabled integration of survey analyses into interview question design and aligned with participant availability during non-teaching periods. A convergent parallel research design (Demir & Pismek, 2018) allowed qualitative and quantitative data to be collected simultaneously but analysed separately. Thematic analyses identified common tutor perspectives, while quantitative data from a verified SE instrument were analysed for significance. Integrated analysis assessed the intervention's impact on tutor TSE.

The authors bring a unique perspective: the primary author is a peer of tutor participants, understanding their challenges and successes, while the other authors supervise participating tutors and students, possessing institutional and pedagogical understanding. To mitigate bias, a researcher who was not directly involved in this project completed participant recruitment, de-identification and data collection. An external researcher on the project ethics (The University of Queensland (UQ), Australia, #2024000543 and #2018001055). Further, the primary author facilitated tutor interviews; to ensure impartiality and topical relevance, the interview script was co-developed with the third, experienced author.

Participants and teaching context

Invited participants ($n = 21$) were biomedical science tutors of inquiry-based practicals in three first-semester, first-year courses at UQ. All held a Bachelor's degree in science and completed five hours of institutional training (Institute of Teaching and Learning Innovation, 2024) upon employment. Eight individuals consented, with six completing the study wholly. Although a small sample size, this group provides focused insights on tutor TSE in a consistent teaching context. Participants were reimbursed through normal paid work (intervention) and a \$20 gift card (interviews); otherwise, they volunteered their contributions. Their aliases, teaching experiences and course(s) taught are in Table 1. Courses cover biology and anatomy content tailored to distinct programs of study: Exercise and Nutrition Science (BIOM1050), Pharmacy, Dentistry and Occupational Health and Safety Science (BIOM1051), and Health Sciences (BIOM1070). They differ in all regards except the practicals, which have identical activities and assessments.

Table 1. Tutor participant details.

Alias	Experience	Course(s)	Sex
Arthur	1 st semester	BIOM1070	M
Belinda	15 semesters	BIOM1050/51	F
Claire	3 semesters	BIOM1050/51	F
Delilah	1 st semester	BIOM1050/51/70	F
Emily	6 semesters	BIOM1050/51	F
Gordon	1 st semester	BIOM1050/51/70	M
Heather	7 semesters	BIOM1050/51/70	F

Across the semester, there were three practicals per course with BIOM1050 and 1051 having an additional practical. Before each practical class, all 21 tutors completed a 1.5-hour training

session facilitated by the third author, an experienced laboratory coordinator. Training focused on teaching scientific conventions, delivering classes, assessment (report expectations) and effective feedback. Classes were taught by teams of eight tutors of mixed experience, and assessment marking moderated by the secondary authors.

Training intervention design

Eleven of the 21 tutors attended a 2-hour workshop about inclusive practises for diverse learners, including the eight in this study. The secondary authors facilitated, one of whom has expertise in SE principles and presented on the four SE pillars (Bandura, 1977) and real-life examples to encourage tutor self-reflection of factors shaping their TSE. A UQ Diversity, Disability & Inclusion Adviser with seven years of experience led the second part about how student diversity influences learning, and effective teacher strategies like language choices and managing student dynamics. Participants were prompted in a think-share-pair format and provided written responses to open-ended worksheet questions collected for this study.

Data collection

Closed questions

Closed survey questions came from the College Teaching Self-Efficacy Questionnaire (CTSEQ; Siwatu, Page & Hadi, 2023), which assesses university educators' confidence in Instructional Planning, Instructional Delivery, Classroom Management and Assessment. Since tutors did not have Instructional Planning duties, these questions were excluded. The remaining subsets had high Cronbach alpha reliability: Instructional Delivery ($\alpha = 0.95$), Classroom Management ($\alpha = 0.94$), and Assessment ($\alpha = 0.88$). Participants rated themselves on 32 questions, from 0 (no confidence at all) to 100 (completely confident), a range that offers greater discrimination than Likert scales (Pajares, Hartley & Valiante, 2001). An overall percentage TSE score was calculated for each tutor, along with TSE scores for individual subsets. With no established TSE ranking in the literature, we classified scores $> 75\%$ as high TSE, 50-75% as medium, and $< 50\%$ low.

Open-ended questions

Open-ended survey questions explored tutors' experiences and perspectives, offering more profound insight into their beliefs. Pre-intervention items examined current understandings of diverse learners and practises (e.g., "*What sort of strategies do you use to address the diverse needs of your students?*"). The term 'confidence' was used rather than 'self-efficacy', as tutors were naïve to SE principles at this stage. Post-intervention items addressed changes in TSE and inclusive practises (e.g., "*What teaching practices, if any, did you learn at the workshop that you plan to use to ensure inclusivity for all your students?*"). Intervention worksheet questions probed tutors' understanding and application of TSE principles and inclusive practises (e.g., "*Of the pillars of self-efficacy, which one(s) do you believe has/have the greatest impact on your self-efficacy?*").

Interviews

Six tutors participated in a 15-minute semi-structured interview, where questions aimed to validate and further explore participants' open-ended responses. The interviews were audio-recorded and transcribed, then thematically analysed (see *Qualitative Analysis*).

Student insights

As part of the course assessment design, consenting BIOM1070 students ($n = 117$) were asked: "*Given the definition of 'Diversity includes but is not limited to gender, race and ethnicity, language, disability, neurodiversity, etc.', do you feel that you identify as a diverse learner?*".

University assessment policies prevented sampling BIOM1050/1051 students. Responses from 66 students who identified as diverse learners provided student insight and were compared with tutors' definitions to contextualise findings.

Data analysis

Qualitative analysis

Qualitative data underwent inductive thematic analysis based on Terry, Hayfield, Clarke & Braun (2017). Themes were generated from the data rather than an established framework (Braun & Clarke 2022) and refined through iterative team discussion until consensus on final coding frameworks. For defining diverse learners, tutor responses formed an initial framework, then expanded by additional themes emerging from student responses. *NVivo 12* software (QSR International, MA, USA) aided categorisation of response themes, with theme frequencies expressed as the number of responses. Tutors could report multiple themes within their responses.

Quantitative analysis

Tutors' TSE scores in the pre- and post-intervention CTSEQ survey were subject to a paired t-test. Pearson's correlation determined the effect of experience on tutors' TSE. Statistical analysis was conducted in *GraphPad Prism* (GraphPad, San Diego, CA, USA v7.0a). Data are presented as mean \pm SEM, and statistical significance accepted at $p < 0.05$.

Results

Definitions of diverse learners

Tutors' and students' responses regarding diverse learners are summarised in Supplementary Table 2. Tutors initially described up to four definitions of diversity (Figure 1), with five tutors identifying three or more. For example, Emily stated:

"Those that are not neurotypical (e.g., ADHD, autism), or come from different cultural/societal backgrounds"

Initially, all seven tutors defined diversity based on a learner's demographics, most often students' cultural origins or domestic status. Disability was the next most frequent theme (four tutors), while other definitions were reported by three or fewer tutors and characterised by just one or two sub-themes (Figure 1).

Comparing the student perspective (Figure 2), 57% of the 117 BIOM1070 respondents identified as diverse learners. A third of these students ($n = 19$) described learner demographics, and almost 20% emphasised cognitive processes.

Post-intervention, half of the six tutors who completed the survey stated their definitions of diverse learners had changed. In interviews, they reflected on seeing diversity as a broader concept than they previously thought. Arthur, for example, described:

"Traditionally, ... I've always thought of diversity as just being all about people's races and cultures... but I think the workshop taught me that over time it's... become something more broad, to include people with different disabilities of different learning styles, different learning abilities and all that, yeah."

Factors affecting tutor self-efficacy

Tutor TSE scores

TSE scores from the CTSEQ were averaged and compared over time (Table 3). Mean Overall TSE did not change ($p = .18$), with tutors demonstrating high scores before (76%) and after (80%) the intervention. Individual scores ranged from moderate (58) to high (97) TSE.

Across the three teaching dimensions, mean scores were also high (Table 3). Classroom Management mean score increased significantly by 5%, post-intervention ($p = .016$), with the range widening from 50 – 91 to 50 – 99. Instructional Delivery mean score rose slightly, but not significantly, to 81% ($p = .22$), and the range of scores from individual tutors widened. Similarly, the mean Assessment score marginally rose but was not statistically significant ($p = .63$).

Table 3: Tutor TSE scores (%) overall and across teaching domains, determined pre- and post-intervention via the CTSEQ instrument (Siwatu et al., 2023), where 0 indicates no confidence and 100 is completely confident.

	Mean score \pm SEM (%)		Range (%)		P value	T(df)
	Pre	Post	Pre	Post		
Overall TSE	76 \pm 11	80 \pm 15	58 – 90	60 – 97	0.18	1.56(5)
Instructional Delivery	78 \pm 4	81 \pm 5	62 – 88	66 – 97	0.22	1.41(5)
Classroom Management	74 \pm 16	79 \pm 18	50 – 91	50 – 99	0.02	3.56(5)
Assessment	76 \pm 6	79 \pm 8	49 – 92	45 – 96	0.63	0.51(5)

Effect of experience on Tutor TSE

Tutors ranged from being in their first semester to 7.5 years (Table 2). However, there was no significant effect of experience on Tutors' TSE scores for Instructional Delivery ($p = .51$), Classroom Management ($p = .89$) or Assessment ($p = .84$).

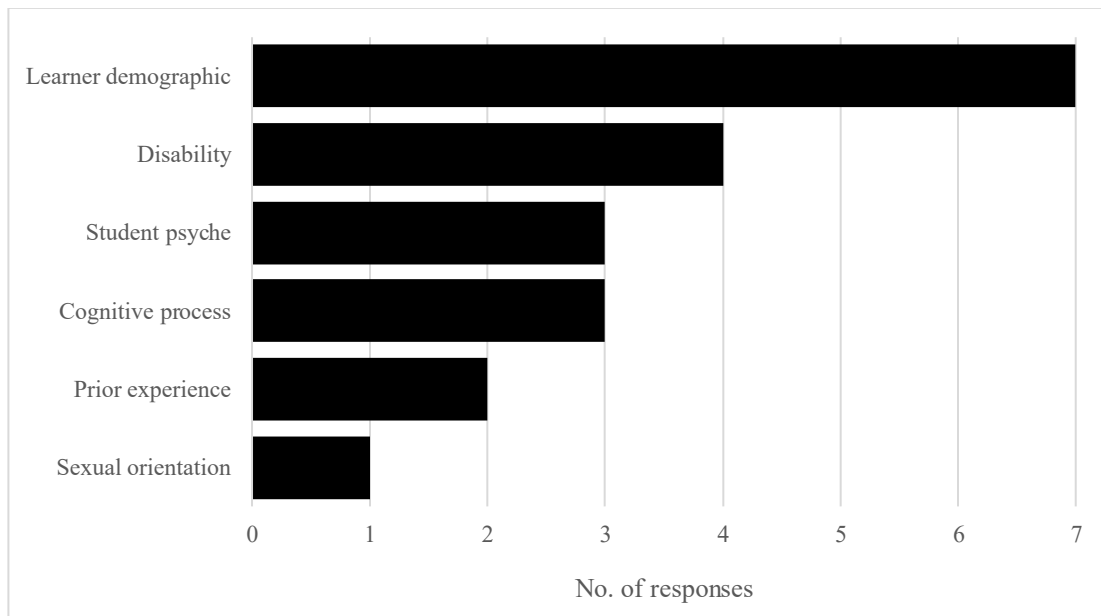


Figure 1: Response frequencies of tutor ($n = 7$) definitions of diverse learners, reported in the pre-intervention survey. Tutors could report multiple themes.

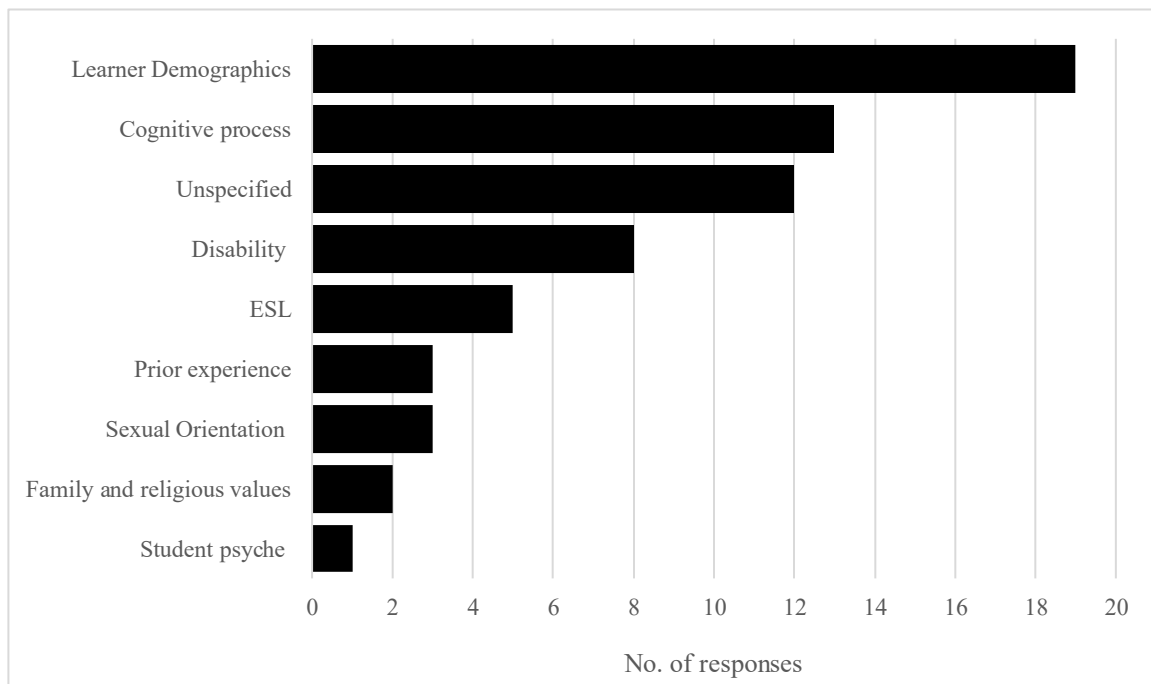


Figure 2: Response frequencies of first-year university students' reasons for being diverse learners ($n = 66$). Students could report multiple themes.

Factors enhancing tutor TSE

Supplementary Table 3 defines factors enhancing tutors' TSE, reported in the pre-intervention survey and training intervention, with frequencies depicted in Figures 3A and B, and all data aligned to Bandura's SE pillars (1977).

In the pre-intervention survey, most tutors ($n = 5$) cited ME as confidence-building through using various teaching strategies and learning from training sessions (Figure 3A). VP, like seeking advice from peers, was also reported ($n = 4$ tutors), while one tutor drew on AS, reporting:

"I have learned to not take it personally when my explanations don't work and to say to the students straight away "I am going to explain it to you the way I would understand it, if this doesn't work for you, please let me know and I will adjust my explanation to suit your learning style"

After learning about the SE pillars in the intervention, tutors' reported six additional themes. VP increased notably ($n = 9$ responses from 5 tutors, Figure 3B), now including feedback from self, students and peers. AS was also cited frequently ($n = 5$ responses), while ME were reported similarly ($n = 4$ responses).

In the post-intervention survey, most tutors reported that becoming more mindful of their SE will likely improve their teaching practice ($n = 4$ responses). Belinda stated:

"I learnt how to understand what affects my self-efficacy. This knowledge will help me to make sure I am meeting my needs as a tutor, and it helped me to understand my weaknesses and where I could improve."

Tutors also recognised the role of VP through peer feedback ($n = 2$ responses) and ME, including understanding student needs ($n = 2$) and self-reflection ($n = 1$), in shaping their SE.

Factors diminishing tutor TSE

In the pre-intervention survey, tutors were asked about student interactions that affected their confidence. Five factors emerged, each at low frequency, so we provide only a brief description. Three responses concerned supporting students with specific needs, such as anxiety. Claire reflected:

"I once had a student who seemed to be suffering from social anxiety which can make working in a group seem daunting, and another student who was overloaded (sensory issues). Both times I wasn't sure how to best approach these students without making them uncomfortable or drawing attention to them from the group and I wish that I had been confident in handling these situations."

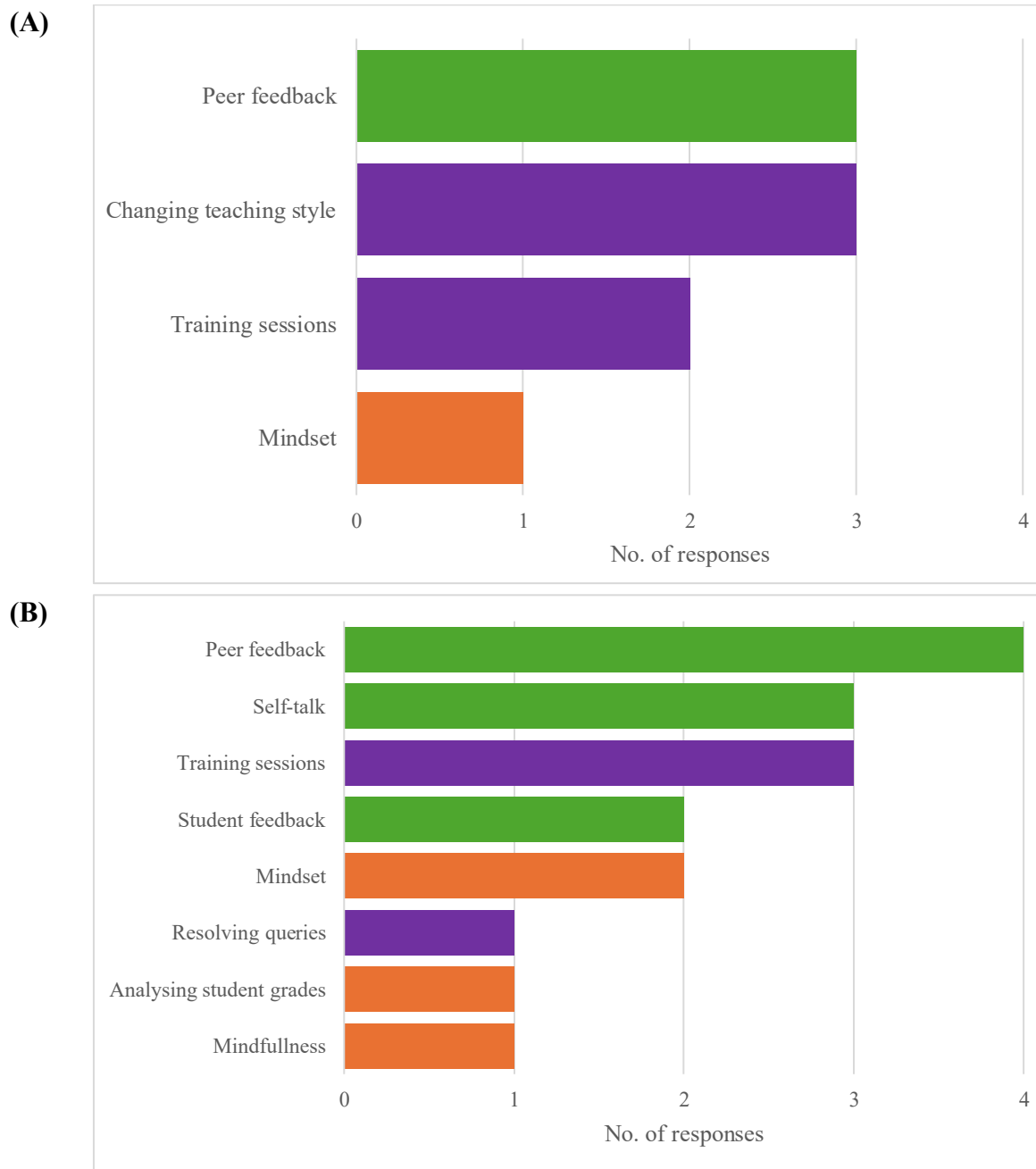


Figure 3: Frequencies of TSE factors reported by tutors in the (A) pre-intervention survey ($n = 7$) and (B) intervention workshop ($n = 6$), as enhancing their confidence in working with diverse learners. Themes are grouped by Verbal Persuasion (green), Mastery Experience (purple) and Affective State (orange). Tutors could report multiple themes.

Tutors' confidence was also reduced by being unable to answer student questions ($n = 2$ responses), manage disruptive behaviour ($n = 1$), and disengagement. Heather and Emily noted:

[H]: "My confidence gets knocked when I can't answer a student's question and [I] need to ask for help or when I am giving instructions and/or an explanation and it's not meeting their need and therefore someone else needs to explain it to them."

[E]: "Some students don't engage much with the content. Also, some students don't enjoy particular teaching styles, which makes it difficult to get points across."

In interviews ($n = 6$ tutors), reoccurring themes included specific student needs and disengagement ($n = 3$ responses each), inability to answer questions ($n = 2$), as well as students not understanding course content ($n = 2$) and receiving negative student feedback ($n = 1$).

Tutors' strategies for working with diverse learners

Supplementary Table 4 describes the strategies tutors reported using with diverse learners in the pre- and post-intervention surveys and intervention. Initially, tutors identified using one to four different strategies each. Following the intervention, they reported acquiring an additional one to six strategies, with two tutors describing three new strategies. Almost all tutors described interpersonal skills, such as maintaining eye contact, with the remainder of themes reflecting various teaching strategies, such as inviting student questions and personalising teaching (Figure 4A).

During the intervention (Figure 4B), classroom management and interpersonal skills were the most reported strategies ($n = 5$ responses each), followed by language choices (e.g., using literal and inclusive language ($n = 4$)).

Post-intervention, the most frequently reported themes were Interpersonal skills, Teaching strategies and Classroom management (Figure 4C, $n = 3$ each). Four new subthemes also emerged, including providing students with breaks as a classroom management strategy.

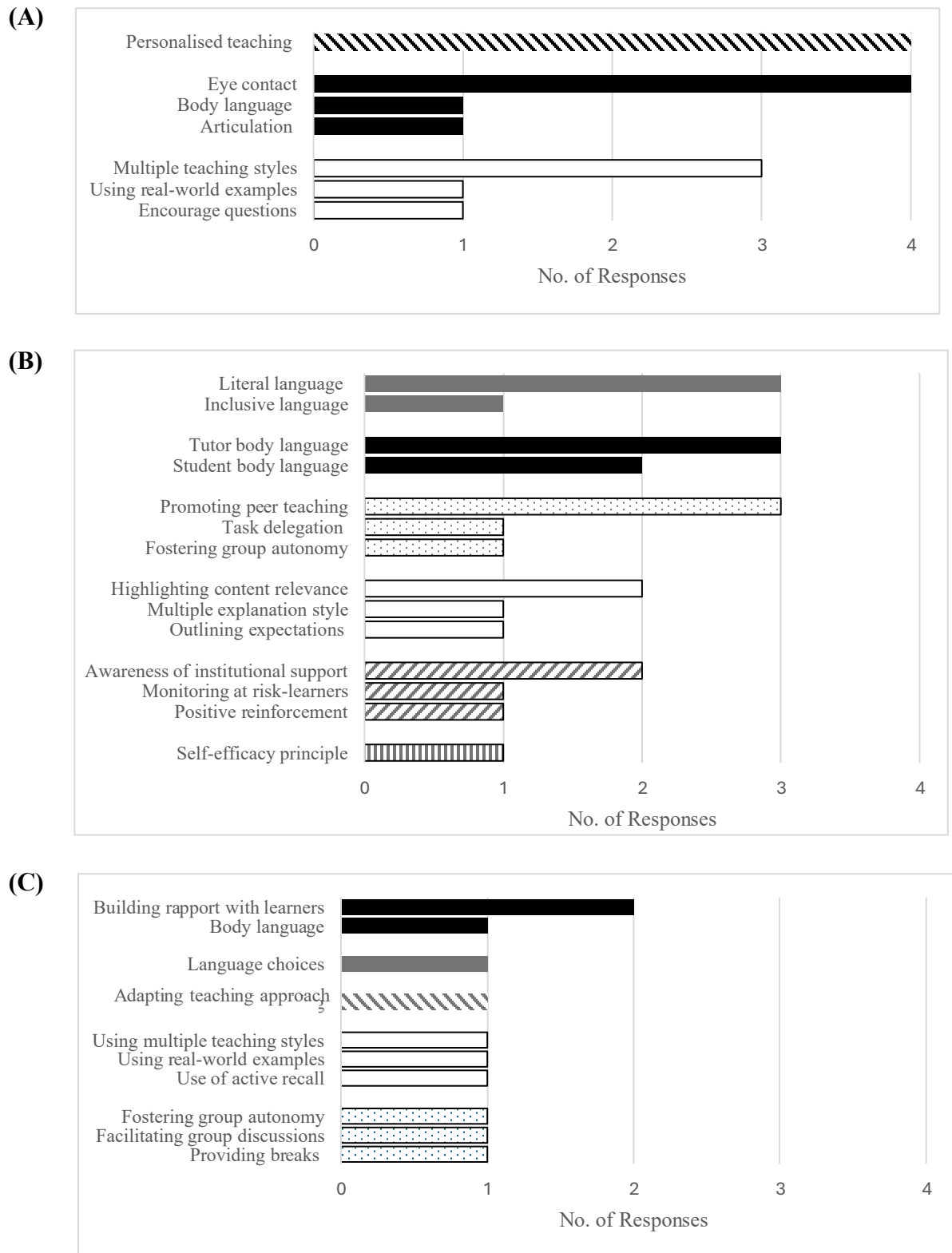


Figure 4: Frequencies of strategies reported by tutors in the (A) pre-intervention survey ($n = 7$), (B) training intervention ($n = 7$), and (C) post-intervention survey ($n = 6$). Strategies themes: Interpersonal skills (black), Teaching strategies (white), Personalising teaching (diagonal stripes), Classroom management (dots), Language choices (grey),

Supporting learner wellbeing (chequerboard), and SE principles (vertical lines). Multiple themes could be reported.

Discussion and conclusion

Despite its established link to teaching quality and student engagement, little attention has been given to the factors shaping university teachers' TSE and its impact on meeting diverse learner needs (Hussain & Khan, 2022). This study sought to understand TSE development amongst tutors and their perception of TSE for inclusive practise.

Redefining learner diversity

The term "diverse learner" is commonly but inconsistently associated in the literature with demographic factors like cultural and societal background (Rowan et al., 2021). Initially, our tutors and students also associated the term with traditional demographic characteristics (Figures 1 and 2), alongside disability. However, students also emphasised attention differences, potentially reflecting their current experiences, while tutors drew on more retrospective observations from past encounters. This highlights that learners and educators may perceive diversity very differently. Regardless, whilst sharing a basic understanding of diversity, neither groups' views captured the full breadth of factors that shape learner diversity (Rienties, Beausaert, Grohnert, Niemantsverdriet, & Kommers, 2012).

After the intervention, tutors provided a more nuanced definition encompassing learners' cognitive processes and psyche, with half of them acknowledging learners' unique needs and the complexities of meeting these needs. These shifts in perspectives surpass literature-based definitions, prompting tutors to better address students' cognitive, emotional, and academic needs. Indeed, such understanding enhances teacher communication, empathy, and adaptability, fostering students' sense of belonging (Simonsen et al., 2014). These findings highlight how professional development shapes teacher perspectives toward inclusive learning environments.

Tutors' self-efficacy development

Collectively, tutors reported high TSE across teaching dimensions (Table 3), but individual variation was evident. Our sample included tutors ranging from minimal (1 semester) to high (15 semesters) experience. While teaching experience alone does not predict SE in inquiry-based teaching (Khusniyah, Surjono, Tohani & Purwanta, 2023), newer tutors may underestimate their teaching performance due to novel challenges, whereas experienced tutors may manage this with little impact on their TSE (Shohani, Azizifar, Gowhary & Jamalinesari, 2015). Indeed, more teaching experience correlates with higher SE for student engagement (Woodcock, Gibbs, Hitches & Regan, 2023), content knowledge, and skills (Sadler, 2013). Future research might recruit wholly novice tutors to test intervention effects better; though notably, all participants here reported gaining insights from the intervention.

Tutors reported high Instructional Delivery and Assessment TSE, remaining so over time. Since diverse professional roles and contexts shape TSE, tutors' prior experience with diverse learners may have influenced this stability. Alternatively, factors not investigated, like external experiential opportunities (e.g., prior jobs, volunteering or personal experiences), could also contribute (Bandura, 1997; Wray, Sharma & Subban, 2022). Conversely, Classroom Management TSE increased significantly following the intervention, a positive outcome given educators often report challenges in managing classroom dynamics (Simonsen et al., 2014). Effective classroom management is vital for an optimal learning environment and can lead to

better student outcomes (Evertson & Weinstein, 2006). The intervention appears to have strengthened tutors' strategies, expanded their use of varied instructional approaches and validated their practices, all of which positively contributes to fostering inclusive learning environments.

This study also examined factors influencing tutors' TSE for working with diverse learners. Before the intervention, tutors cited ME as the most common factor shaping their TSE, with peer feedback (VP) also valued (Figure 3A). Literature confirms ME as the strongest source of SE (El-Abd & Chaaban, 2020; Artino, 2012), as successful classroom management and positive outcomes from these experiences bolster tutors' perceptions and confidence about their competence (Kleppang, Steigen & Finbråten, 2023). Yet, SE develops through multiple sources (Waltz, 2019) with pillars like VP also important. After the intervention, tutors cited a wider range of influences, most frequently VP (Figure 3B). Feedback from students, peers, and supervisors could enable tutors to benchmark their practice against pedagogical standards, enhancing their TSE and confidence to meet students' needs (Bandura, 1997; Clark & Newberry, 2018).

VE, learning through observation, can profoundly influence educators' professional identities by enhancing motivation, care for students, and visualising effective classroom management strategies (El-Abd & Chaaban, 2021). Despite the widespread opportunities for peer modelling and observation being available in teamwide training sessions and team-taught classes, which the literature shows can support TSE (Bandura, 1997; Clark & Newberry, 2018), tutors did not report VE influencing their TSE. Observing competent teachers successfully apply strategies to meet diverse learner needs is especially valuable (Goddard & Kim, 2018; Herbert, Allen & McDonald, 2018). However, the impact of peer modelling depends on the perceived success and relevance of the observed behaviour (Gibson, 2004), and is limited without structured reflection, discussion and feedback (Schunk, 2012). Tutors here may therefore not have recognised the vicarious opportunities available, or may have had insufficient time for observation during team-taught classes. Professional learning might thus incorporate these structured opportunities, allowing novice teachers to observe the efficacy of various strategies for diverse learner needs.

We also identified that factors like challenges in supporting students with anxiety can notably diminish TSE, an experience that was reported frequently by tutors pre-intervention. Indeed, without adequate training, educators' responses may inadvertently worsen student anxiety, leading to their disengagement or emotional closure (Minahan, 2019; Wilson, 2020). Tutors also cited student disengagement and difficulty addressing queries as barriers to their confidence. Disengagement is multifaceted, encompassing psychosocial, motivational, and academic elements, and manifests in behaviours that require nuanced teacher responses (Chipchase et al., 2017). These challenges underscore the importance of understanding subtle diversities, including neurodivergence and mental illness, particularly given the growing literature around students with undisclosed learning difficulties (Wischnewsky, Gallagher & Crandall, 2023). Fortunately, both tutors and students in this study acknowledged these subtler forms of diversity. Acknowledging these less visible aspects supports progress towards inclusivity, for example through Universal Design Learning, which offers flexibility in how students access content, engage with material, and demonstrate their learning (Center for Applied Special Technology, 2018).

A tutors' inability to answer student questions can trigger self-doubt, an especially corrosive factor for inexperienced teachers developing their identities. Most tutors who reported this

challenge were novices, who, the literature shows, tend to focus on the accuracy of content delivery and task achievement (Sadler, 2013), or are fearful about resolving unanticipated questions. In such cases, a perceived lack of mastery may be exposed (Tschannen-Moran & Hoy, 2001), impacting their ME. Heather also noted this despite extensive teaching experience, suggesting limited access to practical strategies for adapting instruction. Such sentiments highlight the need for ongoing, flexible professional development to address changing student needs. In their systematic review, Wray et al. (2022) confirm that in-service teacher professional development improves educators' TSE, particularly in terms of classroom management strategies and inclusive education for students with, for example, psychosocial difficulties and neurodivergence.

Collectively, these observations suggest a framework for teacher development programs that incorporate self-reflection to develop ME, peer observation and discourse (VE), and diverse feedback sources (VP). TSE principles should be prominent, given their profound impact on both tutor performance —through increased motivation and job effectiveness (Lai & Chen, 2012) —and student outcomes, including success and academic improvement (Klassen & Tze, 2014). These benefits remain underutilised in the literature, where SE is often treated as an assessment metric rather than a foundation for professional development (Kelley, Knowles, Holland & Han, 2020).

Strategies for working with diverse learners

Given the small sample size, this study is cautious in concluding a definitive impact of the intervention on tutors' repertoire and use of strategies for diverse learners. Future studies should include follow-up sessions for teachers to implement, reflect, and refine their approaches (Liu & Phelps, 2019), as well as translate their knowledge into effective classroom practises. Although post-intervention, tutors reported a greater variety of strategies (Figure 4B and C), evidence suggests TSE is shaped more by strategy effectiveness and student feedback than by quantity (Smith, Starratt, McCrink & Whitford, 2019). Further, since educators often lack confidence in implementing new strategies (De Smul, Heirweg, Van Keer, Devos, & Vandeveld, 2018), nurturing TSE with follow-up sessions is essential (Tschannen-Moran & McMaster, 2009), and future studies should examine both their effects and barriers to implementation.

We show the potential of targeted interventions for enhancing TSE, particularly in classroom management and in expanding teachers views of learner diversity. Though no statistical increase in quantitative TSE scores was observed, tutors' reflections revealed greater confidence, strategies, and inclusive perspectives. They expanded their definitions to encompass the cognitive, emotional, and academic needs *of* students, moving beyond just the demographic details *about* them. These perspective shifts are vital for fostering inclusive learning environments, highlighting the need for professional development that embeds SE training to strengthen teacher efficacy, professional satisfaction, and student outcomes. Future research should use longitudinal designs tracking tutors across semesters, examine specific diversity dimensions, and incorporate a control group to isolate teaching experience effects on TSE.

References

- Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191.
- Bandura, A. (1997). *Self-efficacy: the exercise of control*. W.H. Freeman.
- Braun, V., & Clarke, V. (2022). Conceptual and design thinking for thematic analysis. *Qualitative Psychology*, 9(1), 3-26.
- Center for Applied Special Technology. (2018). Universal Design for Learning guidelines version 2.2. <http://udlguidelines.cast.org>.
- Chipchase, L., Davidson, M., Blackstock, F., Bye, R., Clothier, P., Klupp, N., Dickson, W., Turner, D., & Williams, M. (2017). Conceptualising and measuring student disengagement in higher education: A synthesis of the literature. *International Journal of Higher Education*, 6(2), 31-42.
- Clark, S., & Newberry, M. (2018). Are we building preservice Teacher self-efficacy? A large-scale study examining Teacher education experiences. *Asia-Pacific Journal of Teacher Education*, 47(1), 32-47.
- De Smul, M., Heirweg, S., Van Keer, H., Devos, G., & Vandeveld, S. (2018). How competent do teachers feel instructing self-regulated learning strategies? Development and validation of the teacher self-efficacy scale to implement self-regulated learning. *Teaching and Teacher Education*, 71, 214-225.
- Demir, S. B., & Pismek, N. (2018). A Convergent Parallel Mixed-Methods Study of controversial issues in social studies classes: a clash of ideologies. *Educational Sciences: Theory and Practice*, 18(1), 119-149.
- Dobber, M., Zwart, R., Tanis, M., & van Oers, B. (2017). Literature review: The role of the teacher in inquiry-based education. *Educational Research Review*, 22, 194-214.
- Dodo-Balu, A. (2022). Hidden in plain sight: contrasting management and student perceptions of the value of casual teachers in online higher education. *Journal of Further and Higher Education*, 46(2), 198-210.
- El-Abd, M., & Chaaban, Y. (2020). The role of vicarious experiences in the development of pre-service teachers' classroom management self-efficacy beliefs. *International Journal of Early Years Education*, 29(3), 282-297.
- Evertson, C. M., & Weinstein, C. S. (2006). *Handbook of classroom management: Research, practice, and contemporary issues*. Lawrence Erlbaum Associates.
- Farmer, T. W., Hamm, J. V., Dawes, M., Barko-Alva, K., & Cross, J. R. (2019). Promoting inclusive communities in diverse classrooms: Teacher attunement and social dynamics management. *Educational Psychologist*, 54(4), 286-305.
- Fives, H., & Looney, L. (2009). College instructors' sense of teaching and collective efficacy. *International journal of Teaching and Learning in Higher education*, 20(2), 182-191.
- Gibson, S. K. (2004). Being mentored: The experience of women faculty. *Journal of Career Development*, 30(3), 173-188.
- Gibney, A., Moore, N., Murphy, F., & O'Sullivan, S. (2011). The first semester of university life; 'will I be able to manage it at all?'. *Higher Education*, 62, 351-366.
- Goddard, Y., & Kim, M. (2018). Examining connections between teachers perceptions of collaboration, differentiated instruction, and teacher efficacy. *Teachers College Record*, 120(1), 1-24.
- Government of Australia. (2024) *International student monthly summary and data tables*. <https://www.education.gov.au/international-education-data-and-research/international-student-monthly-summary-and-data-tables>.
- Herbert, L.P., Allen, J.M., & McDonald, C.V. (2018). Exploring the influence of multi-field classroom observations on early career teachers' professional practice. *Teaching and Teacher Education*, 73, 192-202.
- Hussain, M. S., & Khan, S. A. (2022). Self-efficacy of teachers: A review of the literature. *Multi-Disciplinary Research Journal*, 10(1), 110-116.
- XXXXX (identifies university)
- Kahu, E. R., & Picton, C. (2019). The benefits of good tutor-student relationships in the first year. *Student Success*, 10(2), 23-33.
- Kelley, T. R., Knowles, J. G., Holland, J. D., & Han, J. (2020). Increasing high school teachers self-efficacy for integrated STEM instruction through a collaborative community of practice. *International Journal of STEM Education*, 7, 1-13.
- Khusniyah, T. W., Surjono, H. D., Tohani, E., & Purwanta, E. (2023). Pre-service primary school teachers' self-efficacy for teaching social studies: An Indonesian perspective. *Issues in Educational Research*, 33(4), 1403-1420.
- Klassen, R. M., & Tze, V. M. (2014). Teachers' self-efficacy, personality, and teaching effectiveness: A meta-analysis. *Educational Research Review*, 12, 59-76.

- Kleppang, A. L., Steigen, A. M., & Finbråten, H. S. (2023). Explaining variance in self-efficacy among adolescents: the association between mastery experiences, social support, and self-efficacy. *BMC Public Health*, 23(1), 1665.
- Lai, M.-C., & Chen, Y.-C. (2012). Self-efficacy, effort, job performance, job satisfaction, and turnover intention: The effect of personal characteristics on organisation performance. *International Journal of Innovation, Management and Technology*, 3(4), 387.
- Larsen, A., & Bradbury, O. (2024). Examining strategies to support teacher self-efficacy when working with diverse student groups: A scoping literature review. *Inclusion and Social Justice in Teacher Education*, 79-97.
- Liu, S., & Phelps, G. (2019). Does teacher learning last? Understanding how much teachers retain their knowledge after professional development. *Journal of Teacher Education*, 71(5), 537-550.
- McFarlane, K. J. (2016). Tutoring the tutors: Supporting effective personal tutoring. *Active Learning in Higher Education*, 17(1), 77-88.
- Minahan, J. (2019). Building positive relationships with students struggling with mental health. *Phi Delta Kappan*, 100(6), 56-59.
- Pajares, F., Hartley, J., & Valiante, G. Please address correspondence to: Frank Pajares Division of Educational Studies Emory University Atlanta, GA 30322.
- Pather, S., Meda, L., Norodien-Fataar, N., & Dippenaar, H. (2020). Good practices across two education faculties' tutor programs: A comparative case study. Common Ground Research Networks.
- Rienties, B., Beausaert, S., Grohnert, T., Niemantsverdriet, S., & Kommers, P. (2012). Understanding academic performance of international students: The role of ethnicity, academic and social integration. *Higher education*, 63, 685-700.
- Rowan, L., Bourke, T., L'Estrange, L., Lunn Brownlee, J., Ryan, M., Walker, S., & Churchward, P. (2021). How does initial teacher education research frame the challenge of preparing future teachers for student diversity in schools? A systematic review of literature. *Review of Educational Research*, 91(1), 112-158.
- Sadler, I. (2013). The role of self-confidence in learning to teach in higher education. *Innovations in Education and Teaching International*, 50(2), 157-166.
- Schunk, D. H. (2012). *Learning theories: An educational perspective* (6th ed.). Pearson.
- Searcy, K., & Willans, J. (2020). Pastoral care and the caring teacher-value adding to enabling education. *Student Success*, 11(1), 12-21.
- Shaukat, S., & Iqbal, H. M. (2012). Teacher self-efficacy as a function of student engagement, instructional strategies and classroom management. *Pakistan Journal of Social and Clinical Psychology*, 9(3), 82-85.
- Shohani, S., Azizifar, A., Gowhary, H., & Jamalinesari, A. (2015). The relationship between novice and experienced teachers' self-efficacy for personal teaching and external influences. *Procedia-Social and Behavioral Sciences*, 185, 446-452.
- Simonsen, B., MacSuga-Gage, A. S., Briere, D. E., Freeman, J., Myers, D., Scott, T. M., & Sugai, G. (2014). Multitiered support framework for teachers' classroom-management practices: overview and case study of building the triangle for teachers. *Journal of Positive Behavior Interventions*, 16(3), 179-190.
- Siwatu, K. O., Page, K., & Hadi, N. (2023). The development of the College Teaching Self-Efficacy Scale. *College Teaching*, 1-13.
- Smith, E. C., Starratt, G. K., McCrink, C. L., & Whitford, H. (2019). Teacher evaluation feedback and instructional practice self-efficacy in secondary school teachers. *Educational Administration Quarterly*, 56(4), 671-701.
- Terry, G., Hayfield, N., Clarke, V., & Braun, V. (2017). Thematic analysis. *The SAGE handbook of qualitative research in psychology*, 2(17-37), 25.
- Tschannen-Moran, M. & Hoy, A.W. (2001). Teacher efficacy: capturing an elusive construct. *Teaching and Teacher Education*, 17(7), 783-805.
- Tschannen-Moran, M., & McMaster, P. (2009). Sources of self-efficacy: Four professional development formats and their relationship to self-efficacy and implementation of a new teaching strategy. *The Elementary School Journal*, 110(2), 228-245.
- Tucker, C. M., Porter, T., Reinke, W. M., Herman, K. C., Ivery, P. D., Mack, C. E., & Jackson, E. S. (2005). Promoting teacher efficacy for working with culturally diverse students. *Preventing School Failure: Alternative Education for Children and Youth*, 50(1), 29-34.
- Waltz, S. B. (2019). Tutor training for service learning: impact on self-efficacy beliefs. *Mentoring & Tutoring: Partnership in Learning*, 27(1), 26-43.
- Wilson, A. (2020). Teachers On The Front Line: Supporting Students with Anxiety and Depression. <https://doi.org/10.33015/dominican.edu/2020.EDU.03>.

- Wischnewsky, L. A., Gallagher, S., & Crandall, S. (2023). What Every Educator Needs to Know about Neurodivergence. *Practitioner to Practitioner*, 12(2), 9-13.
- Woodcock, S., Gibbs, K., Hitches, E., & Regan, C. (2023). Investigating teachers' beliefs in inclusive education and their levels of teacher self-efficacy: Are teachers constrained in their capacity to implement inclusive teaching practices? *Education Sciences*, 13(3), 280.
- Wray, E., Sharma, U., & Subban, P. (2022). Factors influencing teacher self-efficacy for inclusive education: A systematic literature review. *Teaching and teacher education*, 117, 103800.
- Yada, A., Tolvanen, A., & Savolainen, H. (2018). Teachers' attitudes and self-efficacy on implementing inclusive education in Japan and Finland: A comparative study using multi-group structural equation modelling. *Teaching and teacher education*, 74, 343-355.
- Yamauchi, L. A., Taira, K., & Trevorrow, T. (2016). Effective instruction for engaging culturally diverse students in higher education. *International journal of Teaching and Learning in Higher education*, 28(3), 460-470.
- Zhao, C., Pandian, A., & Singh, M. K. M. (2016). Instructional Strategies for Developing Critical Thinking in EFL Classrooms. *English Language Teaching*, 9(10), 14-21.
- Zimbardi, K., Bugarcic, A., Colthorpe, K., Good, J. P., & Lluka, L. J. (2013). A set of vertically integrated inquiry-based practical curricula that develop scientific thinking skills for large cohorts of undergraduate students. *Advances in Physiology Education*, 37(4), 303-315.