

BUILDING DIVERSITY, BELONGING AND INCLUSION IN STEM HIGHER EDUCATION

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The focus on diversity, belonging and inclusion (DBI) is especially critical in the post-COVID era, where institutional diversity is essential to address the varied needs of students and the labour market (Krause, 2022). Embracing DBI in STEM higher education is crucial for fostering innovation, addressing systemic inequalities, and creating a more inclusive and supportive educational environment leading to a broader talent pool, better problem-solving, and alignment with societal and economic needs.

Studies on diversity, equity, and inclusion in STEM higher education have focused on behaviour change interventions, climate surveys, and effective pro-diversity initiatives (Moreu et al., 2021). Programs like the Whole of Community Engagement, aimed at increasing Indigenous participation in STEM, have achieved success in remote Indigenous communities in the Northern Territory (Osborne et al., 2018). However, significant issues remain, such as longstanding gender disparities in the undergraduate STEM experience, with female students often experiencing lower self-efficacy (Fisher et al., 2020). Addressing these persistent challenges requires not only structural changes but also efforts to transform the underlying attitudes and beliefs within academic communities.

This presentation will share concepts and insights from recent research through an artistic representation involving conference participants. Arts-based representation of research employs creative methods to convey findings and insights, aiming to evoke emotional responses, foster deeper understanding, and reach broader audiences by translating research into engaging and relatable experiences (Finley, 2008). Using existing literature, this presentation reviews the current state of diversity work in STEM higher education and offers key insights and potential strategies to advance diversity, belonging, and inclusion in STEM higher education.

REFERENCES

- Finley, S. (2008). Arts-based research. *Handbook of the arts in qualitative research: Perspectives, methodologies, examples, and issues*, 71-81.
- Fisher, C. R., Thompson, C. D., & Brookes, R. H. (2020). Gender differences in the Australian undergraduate STEM student experience: a systematic review. *Higher Education Research & Development*, 39(6), 1155-1168. <https://doi.org/10.1080/07294360.2020.1721441>
- Krause, K.-L. (2022). Higher education sector institutional diversity: an Australian case study. *Journal of Higher Education Policy and Management*, 1-18. <https://doi.org/10.1080/1360080x.2022.2051221>
- Moreu, G., Isenberg, N., & Brauer, M. (2021). How to Promote Diversity and Inclusion in Educational Settings: Behavior Change, Climate Surveys, and Effective Pro-Diversity Initiatives. *Frontiers in Education*, 6. <https://doi.org/10.3389/educ.2021.668250>
- Osborne, S., Paige, K., Hattam, R., Rigney, L.-I., & Morrison, A. (2018). Strengthening Australian Aboriginal Participation in University STEM Programs: A Northern Territory Perspective. *Journal of Intercultural Studies*, 40(1), 49-67. <https://doi.org/10.1080/07256868.2018.1552574>

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