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Delivering a positive outcome for STEM students– how TEF will that be?

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ABSTRACT

As universities embrace widening participation, we are starting to observe sector-wide awarding gaps, and with student continuation within Engineering & Technology as one of the lowest in Higher Education (HE), it would appear that our current curricular is not always effective for the attainment of a diverse student body. This paper highlights the external driving forces related to the widening participation within HE and how this is influencing STEM education. It describes the current practice that has positively influenced diversity awareness and how HE can use the student voice more effectively to drive forward both institutional change and programme curricula design to ensure positive outcomes for all students.

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Opinion piece

UK governmental data indicate that to reduce the current engineering skill shortage; recruitment of 186,000 skilled engineers per year is required until 2024. To achieve this, the inclusion of a more diverse workforce is essential (Heubi, 2019). With student continuation within Engineering and Technology being one of the lowest in Higher Education (HE) (Woodfield, 2014) and sector-wide awarding gaps in degree classifications and graduate employment for Black, Asian and minority ethnic (BAME) students and for those from low-participation areas, it appears that our current curricula is not always effective for the attainment of a diverse student body (Woodfield, 2014; Webb, Wyness & Cotton, 2017).

Increasing student diversity is an agenda of the Office of Students (OfS), the UK HE regulatory body, with Access and Participation Plans and Teaching Excellence Framework (TEF) introduced to ensure ‘positive outcome for all’ (OfS, 2018). The TEF, which was introduced into English HE in 2017, detailed institutional and programme level information on teaching quality, student continuation and graduate employment outcomes in relation to gender, ethnicity and socio-economic status (OfS, 2018, 2019).

BAME students, who frequently commute to University, can be focused on family, part-time employment, religious and solitary activities (Holdsworth, 2009) and are more

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likely to miss enhancement activities, such as employability initiatives and extra-curricular work-based projects that contribute to personal and professional development (Holton & Finn, 2018; Thomas & Jones, 2017). So how can we ensure that STEM education has a greater focus on 'diversity inclusivity', whereby the curricula recognise the diversity of cohorts and ensure inclusive pedagogy that is achievable to all (Hanesworth, 2015)?

Providing a wider student support framework, rather than targeted support and initiatives, is a more inclusive practice (Nortcliffe, Parveen, & Pink-Keech, 2019). More HE institutions are now using Learning Development Centres (Gallimore & Stewart, 2014) to supply academic support and introductory socialisation courses, and to provide individualised learning to enhance cohort attainment (Hilsdon, 2011). Active monitoring of student attrition can be another effective support mechanism for identifying individual student issues earlier in the academic cycle. When correctly embedded into both academic teaching and student support, the use of Learner Analytics to monitoring students' performance in formative and summative assessments and measuring attendance and engagement with studies enables early indication of attrition (Gordon, 2016). Greater use of student peer mentorship has also been successful in supporting students (Nortcliffe et al., 2019). Peer mentorship provides new students with a greater awareness of resources and opportunities, psychosocial support of the student's sense of competence and enhanced relationship satisfaction by increasing the student's trust and connectedness with their mentor (Estrada, 2014).

Raising academic awareness on diversity attainment at the programme level is also essential, with university leadership required to instigate training about race and culture and to ensure all University staff are aware of the opportunities and challenges related to a more diverse student cohort (NUS, 2019). A recent report by the National Union of Students and UK Universities details the use of role models that reflect cohort diversity, having the right qualitative data that highlights any awarding gaps and the implementation of resources that enable staff to develop initiatives which successfully support all their students, as key recommendations for increasing inclusivity at the programme level (NUS, 2019). In response, some UK Universities are developing inclusive learning and teaching guidance to help provide academics with the information that enables them to contextualise, within their academic practice, ways to address curricula attainment and continuation issues (London, 2019).

Involving students in the design of teaching curricula can address cohort diversity attainment (NUS, 2019), with a positive impact on student engagement, increased motivation for the learning process by students and staff, as well as enhanced inclusiveness in teaching practices (Bovill, Cook-Sather, & Felten, 2011; Elsharnouby, 2015; Curran, 2017; Snelling, 2019). Student partnership takes many forms: as evaluators of their experience, participants in the decision-making process, students as co-creators of curricula, and as agents for change (Dunne & Owen, 2013; Tschirhart & Pratt-Adams, 2019). However, for academic staff to shift from using student views to inform curricula changes to actually working with students as co-creators of the curriculum will require a change in working practice (Carey, 2013), and with non-university-related commitments, particularly in the BAME committee, already influencing time commitments, do students have time to help with the widening participation development? As such, HE institutions are now examining how to develop student partnerships, exploring how different models support co-creation and analysing the effectiveness of current projects

using student: staff partnerships (Freeman, Millard, Brand, & Chapman, 2014; Mercer-Mapstone et al., 2017; Snelling et al., 2019).

In conclusion, the development of a more inclusive curricular has started to be addressed in STEM education. This implementation, is going to require providing more inclusivity focused guidance to better inform curricular developments, develop staff and student training programmes and start changing the student: staff dynamics-how TEF will that be?

Disclosure statement

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