




Decolonising Engineering by an Engineer

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Introduction

Engineering is frequently perceived as a discipline that is factual and, consequently, unbiased. As engineers, we take pride in our commitment to justice and rely on the premise that numbers and equations are inherently truthful. Indeed, numbers do not lie. However, if we begin with incorrect data, we cannot anticipate an accurate outcome.

Engineering students, academics, and professional engineers are often not fully aware of the historical context surrounding inventions and engineering developments. As engineers, we excel at identifying problems and devising solutions, primarily in an effort to enhance quality of life. There is, however, a notable lack of curiosity regarding the origins of the theories or equations we employ, the timeline of their development, or the processes that led to their formulation. Furthermore, there is insufficient reflection on the entire process. Questions concerning our own understanding, such as how we arrived at a particular answer and what biases may have influenced our approach, remain largely unaddressed.

Consequently, the decolonisation of engineering presents numerous challenges, the most prevalent of which is resistance. Statements such as “Engineering does not need decolonising, it is all about numbers”, “Why change it if it’s not broken?”, and “How can we decolonise 2+2?” exemplify this resistance.

This chapter elucidates the what, why, and how of decolonisation. What does decolonisation entail? Why is it

necessary to decolonise engineering? How can we effectuate the decolonisation of engineering? The straightforward steps outlined in this chapter will enable lecturers and educators to embark on their journey towards decolonising their modules or programmes and addressing the inequalities present in our education system.

What Is Decolonising?

Numerous definitions of decolonisation exist, yet they generally convey a similar message.

Decolonising ... means introducing previously ignored voices, images, authors, topics, theories and arguments into the curriculum” (Scholar 1 narrative, in Manchester Metropolitan University, 2022).

Decolonisation itself refers to the undoing of colonial rule over subordinate countries but has taken on a wider meaning as the ‘freeing of minds from colonial ideology’ in particular by addressing the ingrained idea that to be colonised was to be inferior” (Warwick University, 2018).

Decolonisation not only refers to the complete removal of the domination of external forces within a geographical space, but it also refers to decolonisation of the mind from the colonisers’ ideas – ideas that made the colonised seem inferior” (Keele University, 2018).

More specifically, what does decolonising mean for engineering? In my view, decolonising engineering entails recognising and valuing the fact that engineering knowledge has originated from diverse cultures across the globe at various points in history and is practised in a multitude of styles.

Decolonising involves contextualising knowledge; it requires us to ask questions such as: Who was responsible for its development? Why was it invented? How did it come about? Understanding the origins of knowledge is essential to establishing its credibility. Remarkable engineering achievements are being realised worldwide, by numerous

individuals, and we ought to acknowledge them and incorporate them into our teaching. Decolonisation allows engineers and engineering academics in the West⁴ to gain deeper insight into existing knowledge, broaden the parameters of understanding, and ultimately enhance innovation and creativity in the application of engineering skills and knowledge.

Why Decolonise?

In the words of the artist, Chronixx (2017), “They never told us that Black is beautiful.” The biases that exist regarding physical traits and skin colour in our societies, sports, and education systems are undeniable. Angela Saini’s (2019) book, *Superior – The Return of Race Science*, elaborately describes how the term “race” was constructed to define Black and Minority Ethnic (BME) individuals, with its primary purpose being to control and subjugate. Race is a socially constructed term; it lacks scientific validity and serves as a mechanism of oppression. Racial categorisation is a tool developed by the West to impose its values on others. Unsurprisingly, the highest status is accorded to how it perceives itself – white. One might contemplate how a racial structure devised by Black or Brown individuals, who constitute the majority population globally, would manifest.

Numerous historical events underscore the profound cruelty and violence perpetrated by the West. Michael Holding’s book, *Why We Kneel, How We Rise* (2021), vividly illustrates the atrocities committed by Western powers and their enduring consequences for contemporary life. The West engaged in acts of robbery, plunder, and murder during the colonial era, justifying these actions as “good”. The colonial era is responsible for, among other atrocities, the systemic elimination of the Aboriginal population in Australia (Australians Together, 2022), the killing of the Māori people in New Zealand (Graham-McLay, 2019), the Bengal famine, the Jallianwala Bagh massacre, the looting of approximately £9.2 trillion over 200 years from India (Randeep, 2007; *Histories of Colour*, 2021; Sreevatsan,

4 The term “West” refers to majority white countries that have historically engaged in colonisation.

2018), genocide and the illegal seizure of natural resources in the Congo (Gregoire, 2017), apartheid in South Africa (Mandela, 1994), and the dehumanisation of millions of Africans under slavery (Olusoga, 2017).

Africa is a continent that is rich in natural resources and larger than the combined landmass of the United States of America, Europe, India, and China. The disdain and contempt inflicted upon Africans by the West are both inhumane and vicious. Men, women, and children were violently abducted and killed, leaving families permanently scarred; languages, cultures, and faiths were obliterated; and individuals were tortured and murdered over centuries. This violence stemmed from the West's disapproval of how Africans looked, lived, or possessed wealth. Today, generations later, it remains exceedingly rare for the respective governments to offer an apology.

Colonialism is not merely a relic of the past, and its principles are not only perpetuated by the ignorant (Saini, 2019). Colonial practices are embedded in our society, and various systems continue to embrace and often reward them. One notable example is the education system, which perpetuates colonial philosophies across disciplines such as history, medicine, science, literature, sports, engineering, mathematics, the arts, and many others. How is this system fit for purpose? The current education system emphasises a biased perspective, which results in school leavers and graduates being socially unaware and uncritically admiring colonial beliefs. Had we been more inclusive and diverse in our pedagogical approaches, events such as the murder of George Floyd, the disproportionately higher mortality rates among BME populations compared to white individuals during the COVID-19 pandemic (Office for National Statistics, 2020), the increase in hate crimes particularly following Brexit (Home Office, 2020), the significantly higher likelihood of death in police custody for BME individuals under restraint (Coles, 2022), the fourfold disparity in maternal mortality rates between Black mothers and white mothers (Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries across the UK [MBRRACE-

UK], 2020), the rise of extremist and intolerant political sentiments (Gale Primary Sources, 2022), and the growing number of BME families living below the poverty line (Butler, 2020) may have been mitigated.

A number of studies and research projects have been conducted that demonstrate that our education system, as it currently stands, is outdated and biased (Arday, 2021; Bancroft, 2018; Sylvester, 2022; Cultural Intelligence Hub, 2021). It fails to promote creativity, diversity, or inclusion. Our current curriculum, whether in primary, secondary, or higher education, is not fostering independent thinkers and creative minds; rather, it is producing narrow-minded professionals with a colonial perspective.

Decolonising Higher Education

The process of decolonising is painful and agonising, as it reveals how one segment of society has disproportionately benefitted from existing systems, while others have suffered. The current education system was created by and for white culture and white values. It is an inequitable system that was further exposed during the COVID-19 pandemic (Morreira et al., 2020). Much of the curriculum is not suited to our current student population.

It has been extensively researched and established that the disparities in attainment gaps between white students and BME students are alarming in higher education (Universities UK, 2022; Nicholson, 2022; Universities UK & National Union of Students, 2019; Cabinet Office, 2017). Figures released by the Higher Education Statistics Agency (HESA) indicate that in the 2020–2021 academic year, the awarding gap between white students and Black students for a first-class degree was 19.3% (Universities UK, 2022). Students' final degree classifications and progression rates are determined by academic performance, which is heavily reliant on student engagement. BME students often experience feelings of isolation and differentiation (Davies & Garrett, 2013; Bunce et al., 2019). Personal biases of both staff and students contribute to this sense of non-belonging, which

results in poor student engagement and inadequate performance (Bernard et al., 2011; Narang, 2021). Personal biases can be particularly severe for Black students; in the words of Frank Wilderson III: “One of the bleakest aspects of Afropessimist thought is its denial that there is any meaningful analogy between Blacks and other nonwhites” (Cunningham, 2020).

Furthermore, employment figures for graduates were at best 67% in 2019 and at worst 47%. The disparity is largely attributable to ethnicity, with the lowest figures recorded for Arab graduates (Department of Education, 2022). These statistics serve as a stark reminder that our current higher education curricula do not meet the needs of the student population or the requirements of industry.

If a university aims to remain committed to the pursuit of knowledge and its dissemination, it is imperative that it undertakes a process of decolonisation. In higher education institutions, each programme⁵ comprises a series of subject-specific modules, which are facilitated by a cadre of scholars.

These modules generally encompass a variety of learning outcomes and several teaching techniques to ensure that the content delivered is both relevant and engaging. However, the content and delivery of these modules are often driven by past practices and do not evolve over time, especially if the module is already achieving high progression and student satisfaction figures. This underscores the importance of having a decolonising directive from the upper echelons of the institution or as part of the institution’s strategic goals.

A number of initiatives have been initiated by universities, as described in the report by Stevenson et al. (2019), but these tend to be at the institutional level. Such changes must be cascaded down to the teaching level. Specific, well-defined changes and measurable decolonising objectives should be established at the programme level to ensure that they are both actionable and reportable. It is crucial to avoid allowing

5 A programme refers to an academic course that students can enrol in at universities, which culminates in the attainment of a degree upon successful completion.

decolonisation to devolve into a tick-box exercise, such as completing awareness training without subsequent actions or forming decolonising committees without an actionable plan.

As Rao (2020) notes in his paper on neoliberal anti-racism and the British university, “Decolonisation movements are ‘in but not of’ the university, using it and abusing it for purposes that are not reducible to its mission.”

How to Decolonise Engineering

There is a belief that the West possesses the most advanced technology and is responsible for the majority of engineering achievements (Eichhorn, 2020); however, this belief is fundamentally flawed, and higher education has a responsibility to address it. This section outlines practical steps that teaching staff can implement across various areas in their modules. The selected areas include module delivery, module content, assessment design, representation, and institutional structures. These areas align with the findings of the paper “Decolonising the engineering curriculum in a South African university of technology” (Fomunyam, 2017), as well as the three forms identified by Le Grange (2016) in his research on decolonising the university curriculum: explicit curriculum, hidden curriculum, and null curriculum.

Module Delivery

When planning a module, module leaders⁶ should deliberately consider the methods of presenting information to students. Generally, in engineering, presentation modes are employed to convey information, and practice example questions are conducted during tutorials. During these presentations, various online platforms should be utilised, such as Microsoft PowerPoint, YouTube videos, virtual subject experts, face-to-face industry speakers, case studies, research, and quiz

6 Module leaders are academic staff members who are responsible for delivering the module and ensuring that it meets the learning outcomes and assessment criteria established by the university and accrediting bodies.

questions. Adopting a range of different platforms will cater for different learning preferences and promote inclusive delivery. Particular attention should be paid to representation and diversity on these platforms. For example, in the context of aerospace engineering, companies such as Airbus and Boeing are frequently cited as prime examples in case studies or videos. This should be expanded to incorporate global perspectives, including Hindustan Aeronautics in India, Embraer in Brazil, and Mitsubishi in Japan. When including industry speakers and subject experts, it is essential that they reflect diversity in terms of ethnicity, gender, age, and nationality, both in face-to-face and online formats.

Similarly, for all reference materials, such as books, journal articles, conference papers, regulatory bodies, and specifications, a wide range of examples should be integrated into the module, and students should be encouraged to explore the full variety of reference materials. It is relatively easy to find information that originates from or is disseminated by Western sources on search engines or social media platforms. Consequently, students may gravitate towards reviewing only these sources and develop a perception that “the West knows best”. It is the responsibility of the module leader to rectify this misconception. Given that significant effort is required for students to expand their reference pool, extra credits or marks can be awarded for such initiatives. For instance, in an assessment that requires students to review publications on engineering developments, additional marks could be granted for reviews that encompass authors and scientists from diverse ethnic backgrounds, as well as from various countries worldwide. This approach will not only encourage but also reward diversity in the module.

Module Content

Similar to mathematics (Brodie, 2016), decolonising content in engineering programmes is not straightforward, but it is not impossible. The first step towards decolonising the content requires the removal of knowledge boundaries. The modules should include engineering examples and theories that originate

from all corners of the globe, in any format and at any given time. They should not be constrained by Western knowledge restrictions. Moreover, they should also encompass information regarding the circumstances that led to these engineering developments in order to provide a holistic understanding. The following are some examples of facts that are not commonly known or discussed as part of engineering developments:

The Suez Canal, regarded as one of the major engineering successes, was not a project supported by the British, who, in fact, considered it impossible. The political climate of the time was a significant factor in determining the involvement of various parties and the development of the project (Eichhorn, 2020; Chamberlain, 2014).

One of the greatest engineering feats of the British Empire is attributed to the Indian railway network. However, the railway network was not constructed to aid in the development or prosperity of India and its populace. Its primary purpose was to facilitate the transport of India's valuable resources and wealth to Britain. This initiative represented Britain's strategy of enriching itself at the expense of another nation (Eichhorn, 2020; Satya, 2008).

The Moors introduced Spain to education, libraries, music, architecture, science, technology, and engineering in the eighth century, well before these capabilities had developed in Europe.

At its height, Córdoba, the heart of Moorish territory in Spain, was the most modern city in Europe. The streets were well-paved, with raised sidewalks for pedestrians. During the night, ten miles of streets were well illuminated by lamps. This was hundreds of years before there was a paved street in Paris or a street lamp in London" (Black History Studies, 2009).

The invention of zero as a number enabled mathematics to flourish and paved the way for advances in engineering.

Critical Conversations From Different Worlds

The credit for the invention of zero is attributed to Indian mathematicians, who began using it as early as 300 CE (Ward, 2018; Revell, 2017).

While most aerospace engineers will encounter Sir Frank Whittle and the Wright brothers during their university studies, they are unlikely to be introduced to the aircraft mentioned in the “Ramayana”, an epic piece of Indian literature composed around 500 CE by Valmiki (Basu, 2016; Booksfact, 2016).

Engineering higher education programmes are characterised by learning outcomes that align with each university’s quality assurance standards, higher education specifications, such as the Accreditation of Higher Education Programmes and the United Kingdom Standard for Professional Engineering Competence and Commitment (UK-SPEC), as well as the requirements established by various accreditation bodies, including the Royal Aeronautical Society, the Institution of Mechanical Engineers, and the Institution of Engineering and Technology, in addition to the needs of the engineering industry. These learning outcomes require critical examination and deconstruction. They must reflect the contemporary needs and demands of the engineering sector and society at large. Furthermore, they should encompass practical learning experiences, including technical drawing, laboratory experiments, and prototype development, as well as the cultivation of employability skills, sustainable design solutions, an understanding of the history of engineering advancements, and the promotion of social responsibility among engineers. As part of the annual quality review of each programme, programme directors⁷ should conduct an evaluation of the learning outcomes and examine them through a decolonising lens. This presents a significant opportunity for students to be encouraged to engage in and contribute to the development of the course. Student voices have been instrumental in driving

7 Programme directors, also referred to as course directors, are responsible for the quality, delivery, student satisfaction, progression, scheduling, and accreditation of a specific course and all its associated modules.

major changes in higher education (Pimblott, 2020), and their insights and lived experiences provide invaluable contributions to the decolonisation of the curriculum. “Acknowledging that the students too have intelligence and are not just blank slates, is an important step” (Baron, 2016).

Programme directors should avoid addressing decolonisation through the inclusion of superficial decolonisation-specific learning outcomes for modules, such as “implement decolonising activities in the module”, or decolonising performance objectives for programme team members, as these merely serve as a tick-box exercise and do not constitute a genuine effort to decolonise. Universities and accreditation bodies should establish a process that allows programme directors to propose changes aimed at decolonising learning outcomes and support them in realising those changes. Furthermore, awarding bodies, such as the Teaching Excellence Framework, should also recognise programmes that proactively pursue decolonisation.

Assessment Design

Not all assessments need to be conducted in written format or via presentations. Engineering, in particular, is diverse in this respect; assessments encompass laboratory experiments and reporting, technical reports that involve research and analysis, examinations with structured qualitative and quantitative questions, posters, presentations, and design activities. However, are these the most effective methods for assessing the learning outcomes? Do these methods cultivate an engineering mindset that is creative, problem-solving, and innovative? Or are they employed merely because of tradition?

Module leaders must critically analyse the module and consider the following:

- What is the module trying to achieve?
- What kinds of skills and knowledge is the module looking to develop?
- Are those attributes in demand in industry and in need in society?

These questions will enable the module leader to plan and deliver assessments that are both adequate and appropriate. We should not confine ourselves to the methods that we know and are familiar with; instead, we need to explore and learn from diverse cultures around the world. In the book *The Boy Who Harnessed the Wind* by William Kamkwamba and Bryan Mealer (2010), it becomes evident that, despite not having undergone assessment through a Western-defined engineering programme structure, William is indeed an engineer. He designs, develops, manufactures, and maintains a working windmill in Malawi. Various cultures around the world engage in engineering in numerous forms, and rather than attempting to reduce these practices to Western methodologies, our pedagogies must expand to encompass all forms of engineering.

Engineering is often characterised by a lack of reflective analysis, debates, and open discussions. It tends to be delivered as a mere amalgamation of number-crunching, experimental, and theoretical modules. However, engineering does not exist in isolation; engineers must engage with societies to understand the challenges and remain mindful of their own biases when designing solutions. Module leaders should incorporate reflective sessions related to the historical context of engineering topics, promote debates surrounding sustainable design solutions and ethical practices, and facilitate round-table conversations on contentious issues. Such practices can be integrated into the module as engagement activities or incorporated as part of an assessment.

A significant component of an engineering degree is the individual project, which can be a rather isolating module, given that students are required to progress their research independently with minimal supervision. The structure of supervision is difficult to define and often results in a highly subjective experience; some academics provide guidance through regular meetings, formative feedback, personal care, and performance advice, while others may not interact with their students at all. This module is a prime example of how personal biases among staff can impact student performance, particularly for BME students (Hopkins, 2011; Woolf et al., 2008). A study

conducted by Dancy (2020) revealed that BME students often feel more intimidated and out of place, with students identifying as women of colour experiencing the most significant impact when surveyed in a cohort of students pursuing STEM subjects at the higher education level. To ensure that students receive appropriate support, the module leader should implement a structured approach across all supervisors, mandating the scheduling of meetings via Microsoft Outlook, weekly minute-taking, and timely feedback on students' progress. This should be complemented by a monthly meeting with the programme director to capture and address concerns and issues raised by students. This approach will not only benefit all students but will also help to mitigate any staff biases against BME students.

The research remit for individual projects is relatively broad, with proposed titles being submitted by both academics and students. However, the project proposals themselves often reflect engineering challenges and problem-solving techniques as perceived through a Western lens (Mkansi et al., 2018). The module leader should ensure that project titles represent the engineering industry globally, taking into account the challenges faced in various parts of the world and by different cultures. For instance, in aerospace engineering, one project proposed by my student focused on exploring the challenges of establishing a small aviation company in East Africa, from which we both gained significant insights into the region's aviation industry and its demands. Offering students the opportunity to choose their own titles, with guidance on scoping and planning, can help to broaden the traditional list of projects, while also involving students in this process as an empowering means of decolonisation (Notman, 2021).

Representation

Data collected by the HESA during the academic year 2020–2021 and analysed by Universities UK (2022) indicate that 19% of academic staff identified as BME at a time when 26% of students were BME. There is a notable lack of BME lecturers in engineering or in senior leadership positions in higher education. The Equality Challenge Unit (2015) found that only

2.9% of British academic managers, directors, and senior officials were BME. In addition to teaching staff and leadership teams, the research sector also suffers from a lack of BME representation. BME researchers are less likely to be recruited or receive grant funding, as evidenced by a study conducted by the Bridge Group (2017). Moreover, even in the BME student population, progression to postgraduate degrees and interest in research is limited (Wakeling & Kyriacou, 2010).

The significance of representation is immense. The impact of diversifying the teaching workforce to ensure better representation was emphasised in research conducted by Arday (2021) as part of The Black Curriculum initiatives. Engineering schools should ensure that each course team, including teaching staff, support staff, and student ambassadors, is diverse. Programme directors should analyse and reflect on their diversity and inclusion practices as part of their annual review process and propose plans to address any shortcomings, mirroring the approach taken with national student satisfaction and awarding gap figures. The report published by Guyan and Oloyede (2019) outlines clear actions that institutions can undertake, as well as best practices that have been successfully implemented.

To enhance the recruitment of BME staff, a comprehensive review of recruitment processes should be undertaken to ensure impartiality and fairness. The composition of interview panels, types of interview questions, methods and locations of job advertisements, and job specifications must be scrutinised. In addition to recruiting new staff, the retention of existing BME staff members should be prioritised. Often, the few BME staff members in a school are burdened with every initiative related to diversity and inclusion, which increases their workload and hinders career progression (Advance HE, 2015). Furthermore, pathways to senior roles often lack support and may be intentionally obstructed by racism, bullying, prejudiced perceptions, microaggressions, and biased processes; all of which contribute to detrimental stress and pave the way for BME staff attrition (University and College Union, 2016; Equality Challenge Unit, 2011). Schools should establish clear

and stringent policies against racism, bullying, harassment, and any form of derogatory behaviour. The complaint procedure should be well-publicised and clearly explained to ensure that staff and students feel safe to raise concerns and that any individual found guilty of discriminatory behaviour faces severe repercussions. Additionally, BME staff progression should not only be encouraged but actively sponsored by the leadership team through established progression pathways, professionally recognised training, and mentoring opportunities.

The myriad of “university faces” that students encounter throughout their degree significantly influences their sense of belonging and self-worth. This includes not only academics, leadership teams, and support staff but also engineers and scientists in their respective fields. Role models play a crucial role in this context. As articulated by Charles (2019b), “The human aspect of knowledge origination is extremely important for learners of any age in any learning space.” Black engineers and scientists have not received the same level of visibility as their white counterparts (Nobles, 2017). At times, they have not even been recognised or credited for their achievements; a prime example being Lewis Howard Latimer, who invented the carbon filament for electric bulbs but never received the same recognition and rewards for his engineering skills as his white counterpart, Thomas Edison, who was responsible for the paper filament bulb. Programme directors should ensure that, as part of the course, students are made aware of the remarkable contributions of BME engineers and scientists in their field (Nicolson, 2022). BME engineers should be mentioned as frequently in university teaching and promotional materials as white engineers. Furthermore, BME alumni who have excelled in the course should be invited as guest speakers to share their journeys with current BME students and be encouraged to act as mentors. This approach will foster a sense of belonging for BME students and will ultimately lead to enhanced student engagement and progression.

Peck (2017) articulated this brilliantly through the words of James Baldwin:

Critical Conversations From Different Worlds

I attest to this

The world is not white

It never was white

Cannot be white

White is a metaphor for power

And this is simply a way of describing

hase Manhattan Bank

Lastly, one important action that can be taken to help BME students feel more at home in their classrooms is to pronounce their names correctly. Lecturers should not hesitate to ask BME students how their names are pronounced. This demonstrates that their identities matter and that lecturers acknowledge and value cultural differences. Although this may seem a small request, it is crucial to fostering a sense of belonging.

Institutional Structures

There are several changes (as described earlier) that can be implemented by an engineering programme director or module leader. However, to cultivate a greater sense of belonging for BME students during their time at the university, some institutional-level changes are necessary, including a critical evaluation of core processes and a reinvigoration of the mindset of heads of schools, deans, and vice-chancellors.

Schools should emphasise the need for staff to engage with decolonising activities. Staff can be encouraged to participate in decolonising initiatives through involvement in awareness campaigns, membership of decolonising and BME committees, or engagement with self-educational material ranging from books and publications to stand-up comedy performances, such as those by Trevor Noah and Loyiso Gola, who address colonisation (Noah, 2021) and white privilege (Gola, 2020) in a humorous yet factual and impactful manner. Staff should also be provided with the appropriate tools to initiate the transformation of their modules. Pedagogical research in this area should be facilitated and funded by the

school. Moreover, the school's quality board should mandate that module annual reporting includes improvements relating to the application of a decolonised approach. Exceptional progress made regarding decolonisation in a course, module, or by an individual should be recognised, akin to awards for student support and excellent performance.

Another process that necessitates significant revision is the academic conduct review, which includes assessments of collusion, plagiarism, and ethical violations. Many BME students, particularly international students (Bamford & Sergiou, 2005), do not have a clear understanding of these processes. They encounter challenges when writing technical reports in a language that is entirely foreign to them (Amsberry, 2009) and may resort to assistance from websites by copying certain "intellectual" phrases. Schools should ensure that students receive adequate support in comprehending the meanings of collusion and plagiarism and are offered guidance on their assignments, along with formative feedback on draft submissions. Easily accessible online quizzes on understanding plagiarism and collusion, as well as additional links to supporting information, can be made available on module pages or the school's website.

In addition to the teaching and learning aspects of universities, facilities and resources also need to be decolonised. Libraries play a crucial role in providing reference materials for students to conduct their research. Libraries should ensure that the books, journals, and publications they offer encompass authors from diverse backgrounds and ethnicities. They ought to monitor reading lists for modules and advise module leaders on how to create more inclusive and diverse reading lists (Charles, 2019a). Furthermore, libraries should actively seek out research materials that are non-traditional from a Western perspective, such as artwork, short stories, and poems, which are common methods of preserving valuable knowledge in other cultures.

The names of buildings, lecture halls, artwork, and monuments should be carefully selected to reflect inclusivity and diversity across a university campus. Existing names should

be reviewed and amended if necessary. External organisations and subcontracting firms should be thoroughly vetted to ensure that they are impartial and do not promote anti-decolonising views. University cafés should offer a variety of food and beverage options, and engineering buildings should provide prayer rooms as well as facilities for baby feeding and changing.

All festivals and celebrations should be afforded the same platform and enthusiasm on university premises. Eid, Diwali, Chinese New Year, and Pesah should be acknowledged and celebrated with students just as we extend Merry Christmas wishes. Moreover, assessment planners should be instructed to take into account festivities or fasting periods when setting examination or test schedules.

Lastly, engineering schools are intended to serve communities and, as such, they should engage in more community projects and fund research to understand the challenges faced by different ethnic groups. They should also support and participate in outreach activities, promote engineering in primary and secondary schools, and offer scholarships to BME students who wish to pursue engineering degrees.

Conclusion

Decolonisation is a journey, not a destination. It involves questioning our current knowledge, accepting our mistakes, and possessing the willpower to change. It will occur gradually and over an extended period. The colonial era has persisted for more than 500 years (Blakemore, 2019) and decolonisation will, undoubtedly, require time. The actions mentioned in this paper can be easily implemented by engineering module leaders to initiate this journey. As we engage further in decolonisation, we will become aware of additional areas that require attention. Anyone involved in the education system should be willing to educate themselves and unlearn before they can educate the next generation. This journey can be further reinforced by university leadership teams through the implementation of more challenging actions, such as supporting and developing BME

staff members, reviewing existing policies and procedures, and setting decolonising directives for all programmes. Encouraging diversity is essential; supporting diversity is commendable, but rewarding diversity is paramount.

Decolonisation will not only address the biases in the education system, leading to improved student satisfaction and progression, but it will also tackle the challenges surrounding equality, diversity, and inclusion in engineering. Providing a global perspective of engineering, valuing diverse viewpoints, and reducing colonial influences will cultivate well-rounded graduate engineers who are more cognisant of societal disparities.

To conclude, I borrow the words of Maya Angelou:

“Do the best you can until you know better,
Then when you know better, do better.”

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