Amplifying Student Voices in Curriculum Decolonisation: A Collaborative Journey in Higher Education Chemistry

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Abstract

Decolonising the curriculum in higher education is essential for addressing the lingering effects of colonial legacies in academic knowledge production. This practice-based study, conducted in the Department of Chemistry at Durham University, explores how involving students as active partners rather than passive recipients can drive decolonisation efforts. This approach empowers students as agents of change and leads to more inclusive, equitable, and culturally responsive learning environments. This qualitative work aims to explain how the different initiatives started by the decolonising committee – a survey, an online communication hub, posters, internal events such as seminars, discussion sessions, and the creation of a "History of Chemistry" course – have paved the way for a powerful partnership, driving meaningful changes and initiatives that resonate with the community. The project also highlights the need for continuous reflection and adaptation. Decolonising the curriculum is an ongoing process that requires sustained commitment from all stakeholders. This iterative approach ensures that the decolonisation process remains dynamic and responsive to the challenges it seeks to address.

Note from the authors: The names that appear below are entirely fictional and have been included solely to support the anonymised review process.

Introduction

Amplifying student voices is increasingly recognised as an important part of the ongoing transformation of higher education curricula. This approach is seen as a valuable way to address the influences of historical legacies in knowledge production and foster more inclusive, equitable, and culturally responsive learning environments (Dessent et al., 2022; Smith, 2021).

Within this context, chemistry education has often reflected Western perspectives, which may inadvertently limit the inclusion of a wider range of cultural, social, and historical contributions (Abu Moghli & Kadiwal, 2021; Bhambra et al., 2018; Bhatia, 2017; Menon, 2021). As a result, the achievements of underrepresented groups and Indigenous knowledge systems may not always be fully acknowledged, affecting the breadth and relevance of the curriculum (Dessent et al., 2022; Uleanya et al., 2023).

There is a growing interest in diversifying the chemistry curriculum, with the aim of supporting a more comprehensive understanding of the subject and encouraging critical thinking (Abu Moghli & Kadiwal, 2021; Bhatia, 2017; Keikelame et al., 2019; Menon, 2021). Central to these efforts is the recognition that students, when engaged as active partners, bring valuable insights and lived experiences that can help identify areas where the curriculum might be further developed in terms of representation and inclusivity. Their involvement helps ensure that curriculum reform is grounded in the realities of the student community, leading to practical change (Kimunguyi & Talbott, 2021; Tuck & Yang, 2012; Williams et al., 2022).

This practice-based case study explores a collaborative partnership between students and staff within the Department of Chemistry at Durham University. The study builds on a growing body of literature that highlights the benefits of student–staff co-creation as a way to democratise curriculum design and foster a sense of shared ownership (Adams & Bell, 2007; Cook-Sather, 2012; Kuh, 2008; Tuck & Yang, 2012). By treating students as co-creators of knowledge and involving them in decision-making processes, universities can develop initiatives that reflect the needs and aspirations of their communities (Cook-Sather, 2012; Takhar, 2024; Tuck & Yang, 2012).

The experiences and outcomes described in this collaborative journey highlight the many facets of curriculum transformation in chemistry. Addressing issues of representation and integrating a broader range of perspectives into course content are important not only for student engagement but also for enriching the professional environment for staff, contributing to a more dynamic and intellectually stimulating academic community (Elhinnawy, 2023; Meda, 2020).

Therefore, the main aim of this project is to amplify student voices in the ongoing development of the higher education chemistry curriculum by fostering collaborative student–staff partnerships. Since the start of this collaboration, four years ago, a series of initiatives, including surveys, events, communication strategies, and curriculum development such as the creation of the "History of Chemistry" course, have been implemented to support this goal. Through active student engagement, the project seeks to create more inclusive, equitable, and culturally responsive learning environments, thereby challenging Eurocentric narratives and integrating diverse perspectives into academic practice.

None of the work presented hereinafter could have been done without the voluntary work of the Decolonising the Curriculum Committee (referred to as the Committee). The founding members (staff and students) were selected amongst motivated staff members or recruited via internal emails. While student-led decolonisation initiatives began at Durham University in 2018, the Chemistry Department’s Committee itself was established later. The university’s student union created opportunities for departments to hire interns to support decolonisation projects. Several Committee members are now joining forces to present their insights on this experience:

Julieta Litka Milian (Litka), member of staff, started the Committee in 2021 to bring together a diverse group committed to change in the department. With an international background and passion for inclusive education, she focused on making learning accessible. The

Committee allowed them to amplify student voices, rethink teaching, and highlight chemists from underrepresented backgrounds, working with students and staff to create a more welcoming and diverse environment.

Geneviève Duché (Gen), a postdoctoral research associate at the time, joined the Committee in 2021, motivated by a strong desire to see change in science education. After moving from Australia, where the 2019–2020 bushfires highlighted the importance of listening to Indigenous voices (Williams, Constantine IV, and Mooney 2023), and studying science, technology, and society for her PhD, she realised that science and society are deeply connected. Joining the Committee was a natural step towards making chemistry education more socially aware and inclusive.

Elizabeth V. Bedwell (Elizabeth) joined the Committee as a PhD student, keen to support events that raised awareness of diversity in the department. She helped organise the Global Women's Breakfast, contributed to the Diverse Chemists poster series, assisted with Black History Month, and attended drop-in sessions. Being part of the Committee made her feel valued and encouraged more involved in departmental activities.

Exequiel O. J. Porta (Exe), a Research Fellow from Argentina, joined the Committee for both personal and professional reasons. Having studied in a Eurocentric system, he helped broaden scientific narratives and recognise the contributions of Indigenous and non-Western cultures. The Committee gave him the chance to work with others to make chemistry education more inclusive and to support student voices in shaping a curriculum that reflects global perspectives.

Billie Shearman (Billie) joined the Committee in her first undergraduate year, motivated by a personal commitment to equity and diversity, and as a person from a marginalised group from a state school entering a non-marginalised-group-dominated field, she wanted to find a supportive community. The Committee gave her opportunities for growth, including presenting at the Runnymede conference, co-creating a new module, writing for the Decolonising and Diversifying Blog, and helping drive inclusive initiatives in the department.

Alexander Harvey-Reid (Alex) joined the Committee in his third undergraduate year after seeing an advert for decolonisation interns. Coming from a mixed-race background, he was passionate to help improve diversity and inclusion in science, which is often overlooked. Being part of the group allowed him to contribute to cultural change, present at conferences, and co-create a lecture course on the History of Chemistry.

Sophie Clough (Sophie) joined the committee as a Postdoctoral Research Associate after attending events hosted by the group. One of these was the Black History Month event where she learnt it was the first of its kind held in the Chemistry department. This novelty came as a surprise, and she felt eager to ensure more events were held and widely advertised. Her main roles included advertising and assisting with the smooth running of events as well as analysing the 2024 departmental survey results.

Methodology

The Starting Point: Departmental Surveys

Two surveys were run by the Committee, one in 2022 and another in 2024. These surveys aimed to gather views on diversity and decolonisation in the Department. Ethical approval was obtained from the departmental Ethics Committee. The online surveys, sent to staff members, postgraduate and undergraduate students of the Chemistry Department via internal emails, contained nineteen questions (survey 1), and twelve questions (survey 2). While the 2022 survey focused on quantitative data, the 2024 survey allowed for more reflective answers, aiming at a qualitative analysis. They were left open for over a month, and several reminders were sent via the internal email system and social media.

Although both staff and student responses were collected, this paper presents only the student data, in line with the project's focus on amplifying student voice. Only responses from participants who gave their consent are included.

Building Connections: The Online Communication Hub

The Committee's communication hub is hosted on the internal Department of Chemistry SharePoint. It familiarises staff and students with the Committee, sharing organised events, news, and providing access to external resources on decolonisation. It also includes a blog where posts on inclusivity, diversity, personal experience, and other topics, written by staff and students, are regularly uploaded.

Visual Reminders: Diverse Chemist Posters

The diverse chemist posters serve as an ongoing visual representation of diversity in chemistry. The posters (A4) are designed using Canva, printed, and displayed across the department in high-traffic zones (such as stairs and corridors leading to big lecture rooms) to maximise visibility. They are interactive and integrate QR codes, linking to websites containing more information on the highlighted chemist (such as Wikipedia or papers with their published work, if available). The posters rotate weekly to continuously represent an array of diverse chemists.

Internal Events as Platforms for Peer Learning

Over the years, the Committee has organised half-day or one-day events to celebrate national events such as Black History Month, or International Women's Day, for example, and feature underrepresented chemists. Potential participants (internal or external) were contacted via email. The events were advertised to the entire department via the internal email system, the communication hub, and social media. Registrations were managed through Eventbrite and Microsoft Forms.

Maintaining Student-Staff Dialogue: Drop-in Sessions

A vital part of the Committee is maintaining informal contact with students and staff for feedback and clarity. Monthly drop-in sessions are organised in a non-learning environment (such as the tearoom of the Department), and tea and coffee are provided to help create a relaxed atmosphere and encourage informal conversations on decolonising. They are advertised via the internal email system and sent to all students and staff. These sessions allow the Committee to communicate its goals while giving the student body an opportunity to voice its expectations and share what is most important to the different members of the department. This creates an active and responsive Decolonisation Committee.

Introducing the History of Chemistry Course

One of the primary outcomes of the Committee was the development of a "History of Chemistry" course, designed by student interns funded by the Faculty of Science, with staff guidance. This course aims to broaden the curriculum by including diverse perspectives and acknowledging the contributions of underrepresented scientists. The course was created through extensive research on alchemy and early chemistry using scientific databases such as SciFinder or PubMed, and collaboration with other departments at Durham University. Material spans five chronological one-hour lectures, from Ancient Chemistry to the Pre-Modern era. An interactive and participative class is implemented by encouraging discussion. Assessment is based on a 1500-word essay mid-semester so as not to overwhelm the students during their exam period and to emphasise critical thinking over memorisation. The expected learning outcome is deeper knowledge of chemistry's history and its social and cultural dimensions.

Results and Discussion

The main initiatives undertaken by the Committee in the 2022-2025 time frame, their goals, and their outcomes are summarised in Table 1. They will be discussed in the rest of this paper.

Initiative	**Goal**	**Outcome/Impact**
Surveys	Gather student/staff views	Informed committee priorities
Online Hub	Centralise resources and communication	Increased engagement and visibility
Poster Series	Highlight diverse chemists	Raised awareness, sparked discussion
Drop-in Sessions	Maintain open dialogue	Built trust, surfaced new ideas
Events	Connect with role models, celebrate diversity	Strengthened community, inspired action
History of Chemistry Course	Broaden curriculum content	Embedded diverse perspectives

Table 1. Summary of key initiatives, goals, and outcomes

The Surveys

Following a consent form and background questions for each participant, the survey asked about understandings of the term "decolonising the curriculum," perceptions of its necessity, and perceived challenges. The surveys were distributed to all students in the Chemistry Department. The Department had 716 students in 2021–2022 (including Natural Sciences students taking Chemistry) and 715 in 2023–2024. The student response rate was approximately 9% in 2022 (62 participants) and 5% in 2024 (34 participants). The lower rate in 2024 is likely due to the survey being less widely circulated, while in 2022 three tailored surveys were used for undergraduates, postgraduates, and staff, compared to a single combined survey in 2024. Such low response rates can limit the representativeness of the feedback. Nevertheless, the Committee used these responses as a framework for future work and as an opportunity to refine its initiatives.

For context, Black, Asian and Minority Ethnic (BAME) students represented 30.7% of the University's student population in 2020/2021. In both the 2022 and 2024 surveys, the majority of respondents identified as white (78% and 75%, respectively). This suggests that although all responses are valuable, the findings may not fully represent the perspectives of groups most directly affected by inclusion and diversity issues.

The 2024 survey asked similar questions to the original study but was modified to invite more reflective responses. In this later survey, 65% of students reported being familiar with the term "decolonising the curriculum." When asked to elaborate, common themes included acknowledging overlooked contributions from scientists outside the Western canon, broadening perspectives beyond Eurocentric narratives, and actively reflecting on and removing biases within the history of the discipline.

At the same time, early discussions revealed a recurring belief that chemistry, as a factual science, was not subject to colonial influences. This was reflected in the 2022 survey, where one participant commented that "chemistry…would be based on theories and evidence – making it immune to cultural biases." Such perceptions prompted the Committee to consider how best to communicate the relevance of decolonisation in a discipline often viewed as culturally neutral.

In terms of representation, 56% of students reported being satisfied with the diversity of perspectives, cultures, and voices represented in the current curriculum. Responses, however, were mixed: while some students felt the curriculum already offered adequate diversity, others wanted greater emphasis, and some had no strong view. One noted that departmental events had made a positive difference: "I feel that the curriculum offered in Durham University is very diverse as the teaching staff come from a wide range of backgrounds, and the events organised throughout the year helped raise awareness of diversity in the department."

When asked about the importance of embedding global and historical contexts into their studies, 44% of students felt this was important. One participant explained that while the core workload was already demanding, learning additional context would be welcomed if thoughtfully incorporated into lectures.

Students were also invited to comment on obstacles to decolonising the curriculum. Of the eight who responded, two suggested that diversification would be difficult because "most discoveries were made by affluent European men," or at least those were the figures most often highlighted in teaching. This reflects a common misconception and highlights the importance of decolonisation efforts, since such beliefs reinforce the notion that chemistry, and science more broadly, are culturally neutral. As later discussed in "The great impact of students on the Committee," challenging this assumption became a central motivation for initiatives such as the Diverse Chemist posters and co-created teaching modules.

Other barriers identified included varying levels of engagement, with some students and staff not considering diversification a priority. This was thought to be influenced by student demographics and by the fact that, for some, the issue did not feel personal. Several participants suggested creating more opportunities for open dialogue, or even making discussions mandatory to ensure wider participation. As one student reflected:

> *"Durham University has a couple of stereotypes attached to it. After coming here, I find it hard to dispute that there does indeed seem to be a large proportion of white students. This, to me, makes a strong, in your face, mandatory approach all the more important since perhaps otherwise there may be a slight dampening effect on the interest into the matter, due to the subject not being personal to many of the student body. Devoting an additional lecture to the exploration of diversity in the historical growth of each and every subject might not go amiss."*

Finally, 78% of survey respondents said they were aware of the Committee. This level of visibility, combined with the rich insights from the surveys, suggests that the group has succeeded in laying foundations for ongoing engagement, ensuring student voices continue to shape departmental change.

While this paper focuses exclusively on student responses, it is important to note that staff also participated in the surveys and shared their perspectives. Their feedback has not been analysed in depth here, since the project's primary aim is to amplify student voice. However, staff comments function as complementary internal feedback, helping the Committee situate student perspectives within the wider departmental culture. For example, several staff members admitted that they initially struggled to see the relevance of decolonisation to chemistry, before later acknowledging the value of initiatives such as the Diverse Chemist posters. These insights provided useful background context and underscored the importance of sustained engagement and visible interventions in shifting attitudes.

The Online Communication Hub

The online communication hub on the Department of Chemistry SharePoint proved to be a pivotal element in the decolonising project. This platform, featuring a blog and various resources, became an essential tool for engaging both staff and students in ongoing discussions about diversity and inclusion in chemistry education.

Billie's experience exemplifies the power of this communication hub. After attending a Race Equality and Migrants' Rights summit, she shared her insights on the blog; "Writing that blog post for the Durham University Chemistry SharePoint was incredibly fulfilling" Billie reflected. "It wasn't just about expressing my thoughts creatively; it was a way to spread awareness about our department's important work and inspire others to get involved."

Alex's involvement further underscores the hub's importance. "Working on our group's online presence was genuinely enjoyable," Alex shared. "It gave us a platform to spread the word about our initiatives, and the creative freedom we had was truly rewarding."

The hub also served as visual representation, featuring posters of chemists from underrepresented groups and diverse cultural backgrounds. As Litka explained, "By showcasing these posters on our SharePoint website, we provide an ongoing representation of diverse chemists, allowing students to engage with chemistry's rich history from multiple perspectives."

The growing readership and increasing engagement reflect the success of this communication strategy. The hub has become a virtual space where ideas are exchanged, achievements are celebrated, and the ongoing work of diversifying the chemistry curriculum is made visible to all, allowing the project to reach a wider audience and maintain consistent engagement.

Posters as Tools for Inclusivity

Posters highlighting diverse chemists emerged as a powerful tool in the decolonising project, serving as a visual reminder of the broad contributions to the field of chemistry. This initiative, born from collaboration between students and staff, exemplifies how collective efforts can yield tangible results that enhance the learning environment.

Elizabeth played a key role in this project. She reflects, "I assisted with the second series of Diverse Chemists posters. Each poster focused on an influential chemist from an underrepresented group, highlighting a key achievement from their career. We changed them every week to continuously represent an array of diverse chemists across the department".
This ongoing rotation of posters ensured that students and staff were consistently exposed to a wide range of chemists from various backgrounds, challenging the traditional narratives often found in chemistry education. More than just visual displays, the posters became catalysts for conversations about diversity in the field, encouraging students to engage with chemistry’s rich and multifaceted history.

The project underscored the value of student-led contributions to curriculum reform. By actively participating in efforts to diversify representation, students helped shape a more inclusive academic space that acknowledges and celebrates the full breadth of scientific achievements.

Drop-in Sessions to Keep Communication Open

The monthly drop-in sessions have been a vital communication channel to maintain an open dialogue between the Committee, the student body, and department staff. Gen noticed that the student contributions “really helped [the Committee] ground our decisions and focus on what was important and necessary to [the students], rather than what we thought was important.” For Gen, this initiative “echoed the first big eye-opening moment of [her] career when social science was introduced to [her]: maybe we need to ask students/the world what the problem is before coming up with a solution and trying to retrofit a problem to it.”

Each drop-in session had a suggested topic shared in advance to attract participants and focus discussion. Litka reflects that “initially we encountered challenges due to a lack of understanding about the project's purpose”. This mirrors Elizabeth reflected that, before attending any drop-in sessions, she was “unconvinced about the need for such a committee,” believing that chemistry, as a science, would be based on fact and reason and therefore “immune to cultural biases.” As highlighted earlier in the survey responses, this perception was not uncommon, and the drop-in sessions became an important space to begin unpicking this assumption (Bhambra et al., 2018; Held, 2023). To address this, the approach was reframed by asking, "Is chemistry diverse?" This question prompted reflection, as many realised that while chemistry itself is diverse, the teaching methods were predominantly Eurocentric with few diverse examples (Notman, 2021.; Uleanya et al., 2023).

An important feature of the drop-in sessions was the informal setting and relaxed atmosphere. Elizabeth remembers “the informal style made the drop-in sessions very approachable. It was a space to listen to the conversations and opinions of others with no pressure to contribute to topics [she] knew little about.” Both Sophie and Elizabeth became involved in the Committee through first attending drop-in sessions, highlighting the value of open communication and engagement.

Students working on diversifying projects or interested in the diversifying and decolonising project can also discuss their work or express ideas on how to diversify the curriculum (Beattie, 2012) during the “Meet the Student” events. These informal meetings are open to all staff members and students. Student presenters can prepare slides or share their stories with or without aids, followed by audience questions. This provides students with a platform to voice their ideas, showcase their projects, and develop their presentation skills (Race et al., 2022).

Events to Connect with Role Models

To enhance the project's impact and pursue a broader perspective, the Committee organised events such as guest lectures, symposiums, or informal meetings to connect with scholars from diverse and often underrepresented ethnic and professional backgrounds. These events covered various themes including Black History Month, Celebrating Diversity in Chemistry, Chemistry Through Women’s Eyes, LGBTQ+ in Science and Academia, and Breaking Down Barriers. The overarching objective was to highlight potential role models, facilitate discussions, address pertinent issues, and explore viable solutions. The Committee actively sought input from staff and student representatives to ensure diverse perspectives were represented. The gatherings provided encounters with inspiring figures, allowing attendees to delve into their career paths, understand how challenges were overcome, and celebrate their

successful journeys. The influence of these role models has significantly impacted the shared values of the department, enriched academic discourses, increased representation and visibility of diverse scholars in the curriculum, strengthened connections and networks, raised awareness of diversity issues, enhanced appreciation for diverse perspectives, and fostered a long-term commitment to diversity and inclusion.

Within the Chemistry Department at Durham University, representation of individuals with a Black background in the student body is less than 3%, with none among the staff. Addressing this disparity was a priority for the Committee. A significant historical event coinciding with Black History Month was organised, featuring speakers from Black backgrounds in industry and academia, including Durham University graduates. Their presentations aimed to share valuable career insights and initiate conversations about increasing Black representation, motivating individuals from Black backgrounds to pursue chemistry, and diversifying the curriculum. Notably, this event marked a milestone as Durham University's first of its kind, setting a precedent for annual events across the campus. Despite thorough promotional efforts, undergraduate attendance for specific talks rarely surpassed 5%, although these events generated substantial interest among postgraduate students (50%) and staff (45%). To enhance undergraduate participation in department-organised talks and activities, the Committee utilised social media platforms including Twitter, Facebook, and Instagram. Additionally, collaboration with the Chemistry Society fostered joint efforts to encourage students to engage, share their perspectives, and actively participate in decolonising and diversifying initiatives.

Additionally, with the support of Chemistry Department staff members, Elizabeth successfully organised departmental events as part of the Global Women's Breakfast 2023 and 2024. This annual international event, led by IUPAC in conjunction with the International Day of Women and Girls in Science, aims to "establish an active network of people to overcome the barriers to gender equality in science". The events gathered students and staff predominantly from the Chemistry Department, as well as from other science departments, to connect informally over coffee and watch livestreamed talks broadcast by the Royal Society of Chemistry. Beyond professional networking, these events facilitated connections among individuals with diverse research interests, fostering personal relationships and strengthening departmental community ties. Elizabeth highlighted this as a prime example of the Committee's strength in addressing topics identified by students, thereby enhancing student engagement and maintaining open dialogue.

Feedback collected indicated that low participation among undergraduates was primarily due to workload constraints, suggesting that mandatory integration of these initiatives into the curriculum could improve student engagement. As Billie reflected on attending the Leeds Runnymede We Move: A Race Equality and Migrants' Rights Summit: "This event allowed me to network with researchers and activists from across the UK, enriching my understanding of decolonial approaches in academia." Similarly, Alex expressed that chairing the Black History Month event provided "a great sense of accomplishment," highlighting the profound impact and personal growth derived from participation in such initiatives. Elizabeth noted the importance of adapting events to meet the distinct schedules and commitments of PhD students, stating that shorter events and detailed timetables helped "make our events more attractive and engaging to wider audiences". Exe emphasised the transformative potential of

these events, remarking, "One of the most rewarding aspects has been witnessing the empowerment of students. By providing them a platform to voice their ideas and engage with diverse perspectives, this project enriched both participants and the department". Likewise, Gen acknowledged the critical influence of student involvement: "Having students participate in the Committee's activities really helped us ground our decisions and focus on what was important and necessary to them". Overall, these events have fostered a vibrant community dedicated to diversifying the curriculum, significantly influencing departmental culture and creating lasting momentum for continued progress.

The History of Chemistry Course to Build New Foundations

Discussions with the group and other people in the department revealed that there may have been a void in the curriculum that could be occupied by a lecture course inspired by decolonising – providing historical context and differing perspectives to the contemporary science that is taught in the wider degree course. To do so, the interns, Alex and Billie, collaborated with other student interns from other departments at the university such as the philosophy department and the university library, making it a University-wide initiative. From this point they developed the scope of the teaching material, choosing to focus on four time periods throughout history and putting an emphasis on highlighting work, technology, and scientists that wouldn't usually be seen in an undergraduate chemistry curriculum.

The course is structured chronologically, beginning with the scientific and technological practices of ancient civilisations such as Egypt, Mesopotamia, and Greece. Far from being simplistic, these innovations were both sophisticated and influential, providing the foundations for what later became recognised as metallurgy, chemistry, astronomy, and engineering. The narrative then follows the development of alchemy, with particular attention to parallel traditions in Greece, China, India, and the Middle East. In each case, emphasis is placed on how cultural context and societal needs shaped the trajectory of scientific knowledge. The course proceeds to examine the transmission of alchemical ideas into medieval Europe, illustrating how these encounters paved the way for the emergence of modern chemistry and physics, before concluding with case studies from more recent history. Delivered across five lectures, the course is designed for first-year students and seeks to foster critical reflection on the diverse origins of chemical knowledge. It is offered as an optional module within the chemistry programme and simultaneously contributes to an interdisciplinary open module available to all first-year students across the university.

Furthermore, through highlighting the foundational contributions from underrepresented groups, the course aims to encourage students to understand the origins of chemical understanding whilst providing broader representation. A study conducted at Lyon College (Nawarathne, 2019) investigated the effects of creating an inclusive organic chemistry classroom by embracing diversity. The course involved understanding how diverse organic molecules are formed and how the slightest change in framework leads to significant variations in the properties of those molecules. This was then extended to discussing the importance of human diversity in society. During the classroom discussions there was a significant improvement in student participation, instructor–student communication, and peer-to-peer understanding. The Committee hopes to emulate this with the 'History of

Chemistry Course', which will be taught under the 'removed for peer review' module in the 2025/6 academic year. Following its implementation, it is planned to evaluate its impact and continue to utilise student feedback to further improve the course content.

Alex and Billie found the internship rewarding and the research enjoyable. Both interns said the module would add value to the curriculum and depth to chemistry studies. Billie noted that the opportunity enhanced her written-communication and research skills, which are indispensable skills that she has employed whilst doing her master's research project. They both hope that this module will educate and inspire future students to engage with the decolonising community—not only as a support system but also as a platform for fostering student-led, innovative ideas to further enrich the Chemistry Department at X University.

The Impact of Student Participation on the Committee

Amplifying student voices in curriculum transformation has been a central focus of this collaborative journey in the Department of Chemistry at Durham University (Dessent et al., 2022; Mitra 2008). Initially, the Committee encountered challenges due to a lack of understanding about the project's purpose and a prevailing belief that chemistry, as a science, was not subject to colonial influences (Bhambra et al., 2018; Held, 2023). As one survey participant remarked, "chemistry … would be based on theories and evidence – making it immune to cultural biases."

Listening to student voices when designing curriculum is crucial for several reasons. Firstly, it ensures that the curriculum resonates with the student body, leading to more inclusive, equitable, and culturally responsive learning environments (Adams & Bell, 2007; Cook-Sather, 2012). Secondly, it empowers students as active participants in their education, fostering a sense of ownership and engagement (Quaye et al., 2019). Thirdly, it provides valuable insights into the lived experiences of students, which may not be readily apparent to staff members (Conner et al., 2024; Gillett-Swan & Baroutsis, 2024; Ngussa & Makewa, 2014).

As also reflected in the earlier survey findings, the persistence of a prevailing belief that chemistry is culturally neutral posed an ongoing challenge. One respondent argued that "for a science subject I think the content of the course is more important than who created it," while another expressed scepticism, stating that chemistry teaching "would be based in fact and reason … making it immune to cultural biases." These views illustrate why continual student involvement and visible interventions such as the Diverse Chemist posters were so important in challenging such assumptions and situating chemistry within broader historical and social contexts.

Incorporating diverse voices in the curriculum is essential for creating a more holistic and representative educational experience. It challenges the traditional Eurocentric worldview, acknowledges the contributions of underrepresented groups, and prepares students for a globalised world (Bhambra et al., 2018). Moreover, a diverse curriculum has been shown to improve achievement across social groups, including different ethnic and cultural backgrounds (Schneider & Preckel, 2017).

It started with forming a diverse group, emphasising strong student representation to voice opinions and drive changes (Ngieng et al., 2024). Establishing a diverse group was crucial for this decolonising and diversifying project because it ensured a wide range of perspectives and experiences were represented. This approach aligns with the principle that those most affected by educational decisions should have a say in shaping them (Cook-Sather, 2012). Starting with five staff members and four undergraduate students, the group soon expanded to 15 members, including postdocs, PhD students, and more undergraduates. Group discussions led to an initial survey, providing insights into departmental perceptions. The initiative was also renamed the "Diversifying and Decolonising the Curriculum Group" to clarify the goals of making the curriculum more diverse and accessible to all.

With support from Durham University, two student interns were employed for 150 hours (2 x 75 hours) to work on the project. Initially, recruitment presented challenges as students were uncertain about the project's relevance to their skill development and had limited familiarity with the concept of decolonising the curriculum (Sunasee, 2023). Through personalised outreach and detailed explanations of the project's objectives, potential outcomes, and the valuable skills they could acquire, two interns were successfully engaged. These interns made significant contributions by helping to prepare and analyse the survey, conduct interviews with international staff, and create informative posters showcasing chemists from diverse backgrounds (Wickham, 2022).

These posters became a powerful tool in making the curriculum more dynamic and inclusive (Mintz, 2021). Featuring chemists from underrepresented groups and various cultural backgrounds, they help students connect with chemistry's rich history through a multifaceted lens. This approach aligns with research showing that involving students in curriculum development can lead to increased engagement and better learning outcomes (Bovillet al., 2009; Cariniet al., 2006). By participating in this project, students gained valuable experience in research methods, data analysis, and cultural competence, skills that are increasingly valued in both academic and professional settings (Jagersma & Parsons, 2010; Small et al., 2018).

As awareness of the Committee’s work grew through surveys, drop-in sessions, and events, student engagement increased. Students were continuously encouraged to provide input through various channels, including emails, the SharePoint site and blog, events, drop-in sessions, group meetings, coffee mornings, intern projects, and informal discussions.

The intern students now collaborate with staff members on modules, producing case studies and examples that incorporate diverse perspectives and global examples in chemistry concepts (Whitaker, 2023). This ongoing collaboration between students and staff has been instrumental in amplifying student voices and creating a more inclusive and diverse curriculum in higher education chemistry.

Litka expressed “working with students on this project has been an incredibly rewarding experience. Their fresh perspectives and enthusiasm have challenged my own assumptions and broadened my understanding of the curriculum. I have been consistently impressed by their creativity, critical thinking, and commitment to making positive changes. This collaboration has not only enriched our project but has also contributed significantly to my own professional development as an educator”.

Challenges, Lessons Learned, and Limitations

Decolonising the curriculum in Durham University's Chemistry Department has been a transformative journey, marked by both challenges and valuable lessons. The key learnings can be understood through five interconnected themes that emerged during this process. Alongside these reflections, it is crucial to acknowledge the limitations of this practice-based study to contextualise the findings.

Defining the Committee's Identity and Purpose

Initially, some Committee members found the conceptualisation of the role of the Committee to be quite challenging. As a new entity and initiative, with very little model to get inspired by, the Committee struggled to find its voice and its place. Was it an offshoot of the EDI project focusing more on diversity and representation, or was it to have the ambitions task of driving change through the department by reviewing and rewriting the curriculum? This question was answered with time and many discussions between Committee members, but it was not until undergraduate students joined that the real driving thread was found, as they guided the Committee towards what was important to them.

Overcoming Barriers to Student Engagement

One of the main challenges was low student engagement in surveys and events, often due to a lack of understanding of the project's goals. To address this, the Committee focused on clearer communication and demonstrated how decolonisation connects to students' academic priorities (Dessent et al., 2022). A related lesson was that framing decolonisation in terms of skill development and career readiness increased student engagement (Small et al., 2018).

Challenging Misconceptions about Diversity in Chemistry

The Committee also worked to address misconceptions about the diversity of contributions to chemistry, such as the belief that most discoveries were made by affluent European men. To challenge this, the Committee introduced posters and global case studies highlighting diverse chemists, past and present, which effectively broadened perspectives (Akintayo et al. 2024; Tuhkala et al. 2021). Visual representation proved especially powerful, with the diverse chemists' posters making abstract concepts more tangible and accessible to the community.

Embedding Change for Long-Term Sustainability

While institutional support was strong, implementing systemic change required overcoming administrative hurdles. A crucial lesson learnt was that embedding these efforts into the core curriculum, rather than treating them as additional work, made them more sustainable (Abu Moghli & Kadiwal, 2021). For instance, the "History of Chemistry" module explores

contributions from underrepresented groups and the socio-political influences shaping modern chemistry, enriching students' understanding of the subject and integrating decolonisation into existing academic structures.

Trusting Students as Leaders of an Evolving Process

Perhaps the most important lesson learned is that students need to be trusted more. They are the leaders of change, as they are the main stakeholders of these changes. Academic staff need to learn how to better listen to students and to follow their lead, all the while still providing a structure and guiding them through what is possible. This collaborative approach ensures the project continues to evolve; regular reassessment of goals and strategies has been key to maintaining momentum and ensuring the approach remains relevant (Takhar, 2024). By continuing to refine these efforts, decolonisation will remain a dynamic and integral part of the Chemistry Department's academic identity, creating a more inclusive and equitable learning environment.

Limitations of the Study

It is important to acknowledge the limitations of this practice-based study to contextualise its findings. A primary limitation is the low response rate to the departmental surveys, which was approximately 9% in 2022 and 5% in 2024. Such rates are not uncommon for internal surveys, but they do mean that the quantitative and qualitative data gathered may not be fully representative of the entire student and staff body. Furthermore, the demographic data of the survey participants presents another limitation. In both surveys, the majority of respondents self-identified as white (78% in 2022 and 75% in 2024). This highlights that the perspectives of students from ethnic groups disproportionately affected by a non-diversified curriculum may be underrepresented in the feedback collected. While all feedback is valuable, the insights are skewed towards the majority demographic, which was a motivation for many of the qualitative, in-person initiatives designed to broaden the channels for student voices to be heard. Finally, as a case study conducted within a single chemistry department at one university, the specific initiatives and outcomes may not be directly generalisable to all higher education institutions or disciplines. However, this work serves as a valuable and transparent account of a collaborative journey, offering transferable lessons and a potential framework for other departments embarking on similar decolonisation work.

Conclusion

The primary aim of this project was to amplify student voices in the ongoing decolonisation and diversification of the higher education chemistry curriculum at Durham University, by fostering collaborative student–staff partnerships. Through targeted initiatives, including departmental surveys, an online communication hub, diverse chemist posters, drop-in sessions, and the "History of Chemistry" course, the project sought to create a more inclusive and culturally responsive learning environment.

These efforts show that meaningful curriculum change is possible when students are engaged as active partners. Collaboration empowered students to share their perspectives and encouraged staff to reflect on and adapt their teaching. As a result, the department has taken steps toward broadening the range of voices and experiences represented in chemistry education.

While progress has been made, challenges remain, such as sustaining engagement and embedding these changes into departmental culture. Creating a more inclusive curriculum is a continuous process that requires regular reflection, adaptation, and commitment from everyone involved (Dessent et al., 2022; Takhar, 2024).

The partnership between staff and students in this initiative is a strong example of how universities can create more welcoming and supportive environments. These efforts not only improve academic experiences but also contribute to wider conversations about equity and inclusion in education (Uleanya et al., 2023).

While tangible curriculum changes have been achieved, such as the History of Chemistry module and visible role models through posters and events, some enduring beliefs about the neutrality of science remain. These perspectives highlight that while structural change can be enacted relatively quickly, deeper cultural shifts, in both student and staff perceptions, require sustained dialogue, evidence, and trust-building.

As this project illustrates, decolonising the curriculum is a shared responsibility that requires active participation from all members of the academic community. By embracing collaboration and maintaining a commitment to reflection and adaptation, institutions can ensure that their efforts remain impactful and sustainable.

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