Anti-racist and decolonial practice in teacher education

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PGCE mathematics students work in groups to create lesson plans and resources about the historical and cross-cultural roots of mathematics, with written reflections on celebrating diversity. Last years' lesson activities included: 'The Game Ayo', 'Yoruba Number System', 'Towers of Hanoi', 'Crop Circles' and 'Tangrams, Sudoku and Kenken'. The students reflected on the implications on their classroom teaching with pupils, relating to unconscious bias and decolonisation of the national curriculum. At the summer BSRLM workshop 2021, ideas were shared from colleagues and students at York St. John university and for classroom teaching. BSRLM colleagues contributed to the Padlet for initial teacher education. Collaborative curriculum development practice with teachers in schools is envisaged. This will involve planning and teaching mathematics topics, interviews, lesson observations and conversations. Learning about contributions to mathematics from people from around the world, can help pupil engagement and interest, whilst addressing diversity, inclusion and social justice issues.

Keywords: anti-racism; decolonial practice

Professional practice

Prior to my work in higher education, I was a secondary school mathematics teacher for 10 years, working in British comprehensive city schools in England. I have worked in initial teacher education with student teachers for the last 15 years. My motivation comes from classroom experience where pupils become more engaged when learning about historical and cross-cultural roots of mathematics. There were higher levels of classroom talk and children made links to other areas including languages.

As a result, every year, I have taught a session on the historical and cross-cultural roots of mathematics, with PGCE mathematics students. Contributions include Chinese Tangrams, Vedic mathematics, Multiplication tables in different languages; Symmetry and African patterns in art / crafts / textiles, Students work in groups to plan lesson activities. The purpose of engaging in such activities includes to teach pupils that mathematics has contributions from all over the world, over many centuries.

Last summer, I followed this with a second session following the death of George Floyd. I shared a paper by McIntosh (1989) on White privilege and a paper by Smith and Lander (2011) about student teachers' and ethnicity which generated rich discussion. In an online session, the PGCE mathematics students discussed the issues of White privilege, unconscious bias and decolonising the curriculum. One student reflected:

> 'I began thinking about what racism is, and where it comes from. It's a primal instinct to want to fit in and integrate into what we deem to be the 'normal' culture that surrounds us, that we know. If that culture isn't very diverse then it's easy to see how racism can arise when people/norms/traits from other cultures are

> introduced, and don't fit the 'normal' model that has been built up in people's minds. This made me realise how important diversity is in growing up, so children grow into adults with a healthy idea of what normal is, and have an appreciation of all nations, cultures and races.
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> 'I was really surprised to see how high the percentage of White British teachers (who) are entering the profession is (Smith & Lander, 2011), and I wondered why this may be. I feel teaching is a profession which many people are inspired to explore as a result of their time spent in school as students. One of the key ingredients here are the role models students are exposed to. I wonder, if ethnic minorities in Britain were more fairly represented in the teaching profession, whether students from a variety of ethnic backgrounds would see the profession as one they could more closely relate to, or see themselves taking part in. A subconscious barrier may be being created among students that dissuades them from considering a career in teaching, as they do not fit the teacher stereotype that this unfortunate imbalance of ethnic representation has created. This is a vicious cycle, and one that will take years to alter.'

Due to the timeliness, PGCE mathematics students reflected on the implications on their classroom teaching with pupils, in relation to the following, and discussed their knowledge of the Civil rights movement, the Native American Indian experience and history of colonialism:

1. White privilege across society and, in education (primary, secondary, and tertiary levels); we need to encourage more people from Black, Asian and minority ethnic (BAME) backgrounds into education, as teachers across these sectors.
2. Unconscious bias in society is as damaging as overt racism and we need to discuss how it can be addressed and challenged.
3. Decolonisation of the national curriculum from primary, secondary to tertiary education; children, from the beginning of their formal education, should learn about contributions from all people to society and the world. Diversity in reading lists across all higher education faculties should reflect such contributions.

Padlet activities

Padlet 1 was created for the first workshop, on 'Anti-racist and decolonial practice' on 17.2.21 by staff and students across our university departments and schools. This was a flipped session with music, poetry, lived experiences and contributions from students and staff, and a guest speaker, Dr. Gurnam Singh. This is ongoing and any member of the Teams group can add to this Padlet. This Padlet was shared during the BSRLM summer conference workshop, for colleagues to view.

Padlet 2 was created for and by colleagues in initial teacher education at York St. John University. Colleagues across many subjects, add to this Padlet and share ideas with student teachers in teaching sessions, for use in placement schools. This Padlet was shared in the BSRLM Summer conference and attendees made further contributions such as 'Hidden Figures Young Readers' edition' (Shetterly, 2016), 'Multicultural mathematics' (Nelson, 1993) and 'Crest of the Peacock' (Joseph, 2010).

Proposed future research

This work aims to bring together ITE colleagues, student teachers, school mentors, pupils and parents to co-create knowledge and activities based on anti-racist and decolonial practices. This research aims to benefit children and adults so that they are

more able to deal with inequality, bias and false information, creating a better and fairer society with equal opportunities for all. The research questions include:

1. How can mathematics teachers decolonise mathematics national curriculum in England?
2. What are the implications, for student teachers and partnership school colleagues, embedding anti-racist and decolonial practices in teaching?
3. Why is it important to bring decolonial practices and anti-racist perspectives to children's learning of mathematics?

We are on a long intersection of journeys to inform knowledge in which we recognise cultural and social capital including race, class, and 'other' voices. This is a flexible and adaptable process where different types of knowledge are shared and valued, leading us to further develop as reflective practitioners in education.

We need to consider teaching critical citizenship through mathematics and challenge British values as human values across the globe. We need to question the assumptions underpinning governmental agenda, including the language, prescriptiveness and associated notions of power and control used in national curricular. We can challenge this 'narrow' curriculum with a broader, global perspective to highlight pupil voice and knowledge in curriculum.

Organisational change and impact

Lashunda (2010) outlines three levels for managing change. For this work it means changing the individuals who work in the organisation including ITE colleagues; changing organisational structures and systems through the sharing of good practice via the Padlets and Microsoft Teams pages; and directly changing the organisational climate through the read / watch group which meets at the end of every month.

The changes within universities and schools reflect changes in the wider social, economic, politics and technological environment, and organisations we need to respond to those changes. This is already happening at a grass-roots level with students and teachers changing the curriculum. It is important that we are aware of other changes that are also occurring such as the current Covid pandemic, with implications on children, teachers, parents and higher education, and acknowledge that the changes in my areas of research may be overwhelmed by the complexity of these other changes taking place.

Reminiscent of the eight-step model of change (Kotter (2012), we can help others to see the change by bringing together groups to guide, provide a vision in as many ways as possible to engage in conversation, keep the level of morale high over time, outline short-term benefits and empower voices, promote voices of under-presented groups and keep up the motivation to create and consolidate a new culture.

Methodological choices

We are working collaboratively to understand decolonisation of the curriculum as a practical enterprise and promote the practitioners' voice in this process by placing them in a central position as decolonial curriculum makers (Priestley & Biesta, 2013). This professional learning of a collaborative design is linked to problem-solving in mathematics lessons, mastery and Japanese lesson study ideas (Swan et al., 2015). I draw from post-colonial and decolonial thought (Fanon, 2001) and critical race theory (Crenshaw, 2011)

The process of deconstructing and reframing the mathematics national curriculum is an essential feature of the decolonising process which will give teachers

the confidence to be creative and innovative. Pupils can learn through stories and discussions, with feedback from children, mentors and student teachers. We will use stories and re-visit ideas throughout the year, increasing the level of engagement, countering fear and anxiety in mathematics (Boaler, 2015). I choose to tell rich and credible stories in the complexity of this social world (O'Reilly, 2012).

From a structuralist perspective, research approaches include narrative enquiry and discourse analysis, with strategies of interviews with students, class teachers, mentors and documentary data formats such as lesson plans, video recordings of lesson observations, reflection, evaluation, from mentor, student teacher and pupils' reflections. This enquiry is purposeful, multi-perspectival, personalistic, situational and interpretative, and aims to demonstrate the complexity involved in how individuals and groups experience themselves and their worlds. (Kamberelis & Dimitriadus, 2005). In this abductive process, which is open to possibilities, we to- and fro- between theory and data as a result the situation and break-down stemming from racial injustices. As a traveller on a journey of development, we are engaging in a creative, evolving, exploratory process which is inter-disciplinary and multi-faceted.

The impact of this project is to change the national curriculum in primary and secondary schools and classroom teaching practice. The reason for this is because we believe that hearing and listening to the voices of under-presented groups will lead to greater understanding between different groups of people for social justice. By tapping into knowledge of pupils, teachers, educators and wider community, this project aims to empower people to make positive changes in society to ensure that people are not judged by the colour of their skin but by their talents.

Embedding decolonial practice is collaborative through work to co-create knowledge and activities for use in school, after-school clubs and at home. It is a less hierarchical and more of a bridge of conversation and dialogue in line with the other form of knowledge.

Kanter et al. (1992) argue that the first step to implementing change is building coalitions of stakeholders. The different groups of beneficiaries include stakeholders such as pupils, ITE colleagues, student teachers, partnership teachers, parents, the wider community, the wider profession including subject associations and research organisations. The locus of change includes raising of the awareness of a multicultural society including in geographically predominantly white areas where whiteness can be seen as the norm. This creates a culture where the impact is a beneficial change of anti-racist and decolonial practice in learning and teaching (Batty et al., 2021).

Pathways to change

In the same way that young adults have influenced the changes to the Welsh national curriculum to make Black history lessons mandatory (Morris, 2021), it is hoped that our work will influence English curriculum and policy. School-based colleagues' participation in this project as curriculum co-creators impacts their professional development. We are empowering the next generation of children to become critical thinkers to solve the global problems that the world faces such as climate and racial justice issues. These two are interlinked colonialism and imperialism such as 'othering', extraction of resources, leaving nations poorer and now dealing with devasting effects of environmental problems.

We should discuss the ethics of teaching mathematics by using real world examples such as Covid, global warming, pollution of the environment, health and mortality figures from around the world, statistics on gender and race inequalities to

show the impact of models, measures and mathematisation (Ernest, 2021). We can co-create materials with pupils such as mathematics linked to Mazes, Fibonacci, Roman Mosaics, Algebra, Egyptian Pyramids and using hooks such as animations to discuss colonisation in history as a context for further work.

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