

Key issues in my professional practice

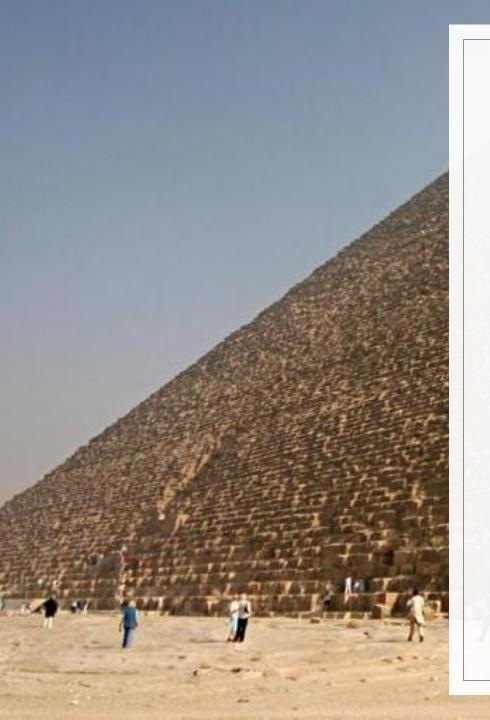
My own professional trajectory / journey:

As a secondary school mathematics teacher, I taught for 10 years before entering initial teacher education in universities where I have been working with student teachers for the last 15 years. The motivation for my project stems from classroom **experience** where pupils became more engaged and interested when learning about historical and cross-cultural roots of mathematics. There was more classroom talk and pupils discussed links to other areas including their home and other languages.

As a result, every year, I have taught PGCE mathematics students a session on 'Historical and cross-cultural roots of mathematics' with contributions such as Chinese Tangrams, Vedic (ancient Indian mathematics), Multiplication tables in different languages and Symmetry and African patterns in art / crafts / textiles. Student teachers work in groups to plan lesson activities, for example, 'The Game AYO', 'Yoruba Number System', 'Towers of Hanoi', 'Crop Circles' and 'Tangrams, Sudoku and Kenken'. The purpose of engaging with such activities includes teaching pupils that mathematics has contributions from all over the world, over many centuries.

Last summer, I taught the same session with my PGCE mathematics students and followed this with a second session after the death of George Floyd and global protests against structural racism. I shared a paper by Peggy McIntosh on White privilege and a paper by Vini Lander and Heather Jane Smith about student teachers' and ethnicity which generated rich discussion.





Evidence - student feedback

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.

'I was really surprised to see how high the percentage of White British teachers (who) are entering the profession is (Smith & Lander, 2012), 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.'

Student discussions

Due to the timeliness, PGCE mathematics students reflected on the implications on their classroom teaching with pupils, in relation to:

- 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.
- Unconscious bias in society which is as damaging as overt racism and we need to discuss how it can be addressed and challenged.
- 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, including those from BAME backgrounds, to society and
 the world. Reading lists across all higher education faculties should reflect such
 contributions.

Student teachers discussed their knowledge of the Civil rights movement, the Native American Indian experience and history of colonialism.



York St. John University Padlet activities

In the wider context:

Padlet 1 was created for the <u>first YSJ</u> workshop on '**Anti-racist and decolonial practice**' on 17.2.21 by staff and students across the 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. The YSJ Padlet is live and any member of the Teams group can add to it:

https://padlet.com/yorksj/decol

ITE Padlet was created for colleagues in Initial teacher education at YSJ. Colleagues add to this Padlet and share ideas with student teachers in teaching sessions and partnership school colleagues.

https://padlet.com/mjagdev1/mg0v0wrwvjr4v7ai



Proposed research

Driving research questions

- 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?

<u>Aims</u>

As an experienced secondary school mathematics teacher and now teacher educator, we aim to work with ITE colleagues, student teachers (mathematics and other subjects), (primary and secondary school) mentors, class teachers, pupils and parents in partnership schools 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, racism and false information, creating a better and fairer society with equal opportunities for all.

Methodological choices

- 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). We draw from post colonial and decolonial thought (Fanon, 1961) 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 / class teachers and student teachers to be analysed. For long-term and coherent experiences we will use stories and revisit ideas throughout the year, increasing the level of engagement, countering fear and anxiety in mathematics (Boaler, 2015). We choose to tell rich, sensitive and credible stories in the complexity of this social world (O'Reilly, 2012).
- From a structuralist perspective, our research approaches include narrative enquiry and discourse analysis, with strategies of interviews with students and class teachers / mentors and documentary data formats such as lesson plans, video recordings of lesson observations, reflection, evaluation and pupils' reflections (verbal and written). In this emic research, we are insiders, immersed and integrated in the natural setting of the classroom, where key participants have reflective and descriptive abilities, who have thick descriptions of culture. Knowledge and meaning is socially constructed; reflexivity is important and I am aware of how my identity impacts and influences the research through power relationships between myself as researcher and the participants.
- Since this enquiry is purposeful, multi-perspectival, personalistic, situational, experiential and interpretative, our research aims 'to demonstrate the complexity, texture, nuance involved in how individuals and groups experience themselves and their worlds.' (Kamberelis and Dimitriadus, 2005). Our work involves time and investment in developing positive relationships with participants in their daily lives over pro-longed periods of time.
- 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.

Who, what, why, how?

- The impact of our 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 with colleagues, student teachers, partnership school teachers, pupils and parents 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 / dialogue across students, teachers and pupils in line with the Ubuntu philosophy of 'I am because you are' and other global philosophies on practice, education and being.
- The different groups of **beneficiaries include stakeholders** such as pupils, ITE colleagues, student teachers, partnership school teachers, parents, the wider community, the wider profession including subject associations, journals and research organisations. **Kanter** *et al.* (1992) argue that the first step to implementing change is building coalitions of stakeholders.
- 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.
- The concrete evidence of influence includes the ITE Padlet of resources which is being added to by colleagues and being used to plan teaching sessions. This is creating a culture where the impact is a beneficial change of anti-racist and decolonial practice in learning and teaching. This creates a vision, through communication, empowerment of people and building teams to make the vision happen.



Barriers to change - questioning and challenging policy

- Citizenship 'Human values' versus 'British values'
- Assumptions underpinning governmental agenda
- Rhetoric and language used in national curricular
- Curriculum prescriptiveness and Core Content for initial teacher education
- Power and control: 'We know' so you 'Will know'
- Challenging 'narrow' curriculum with a broader, global perspective
- Disjoint between pupil voice and knowledge in curriculum

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.

Organisational change and impact

- Kotter (1996) produced an 8-step model for managing change: 1. Establishing a sense of urgency 2. Creating a guiding coalition 3. Developing a vision and strategy 4. Communicating the change vision 5. Empowering employees for broad based action 6. Generating short term wins 7. Consolidating gains and producing more change 8. Anchoring new approaches in the culture. We help others to see the change by bringing together groups to guide, provide a vison 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.
- **Three levels for managing change include**: 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 Teams pages; Directly changing the organisational climate through the read / watch group (Lashunda, 2010).
- The changes within universities and schools reflect changes in the wider social, economic, political 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: https://www.theguardian.com/education/2021/mar/26/schools-england-anti-racist-curriculum
- Change management literature indicates that change isn't a single, continuous process, but is broken down into a
 number of different steps. It is important that we aware of other changes that are also occurring such as the current
 Covid pandemic, with implications on children, teachers, parents, schools and higher education, and acknowledge that
 the changes in our areas of research may be overwhelmed by the complexity of these other changes taking place.

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, it is hoped that our work will influence English curriculum and policy: Black history lessons to become mandatory in Welsh schools |
 Education | The Guardian
- School-based colleagues' participation in this project as curriculum co-creators **impacts** their professional development.
- Empowering the next generation of children to become critical thinkers in order to solve the global problems that the world faces such as climate and racial justice issues. These two are interlinked by practices of colonists / imperialists 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 for pupils such as mathematics linked to Mazes, Fibonacci, Roman Mosaics, Algebra, Egyptian Pyramids and using hooks such as a short animations to discuss colonisation in history as a context for further work:

https://www.youtube.com/watch?v=HDvQjWmV9mc

Thank you.

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