

Research Briefing Nº 94

School science teaching for social justice: opportunities and challenges for practice

This research explores the opportunities for incorporating political literacy in science teaching and learning.

Key words: scientific literacy; political literacy; social justice; UK; Brazil

Image: See footnote¹

Key findings

Findings are of interest to teachers, teacher educators, policy makers, parents and those who have a stake in the science curriculum. In Brazil the focus was an analysis of science teacher education policy which generated ideas for the UK research. In the UK researchers studied the practice of experienced science teachers. Our findings in the UK show that teachers who have commitments to social justice prosper in the following circumstances:



Image title: "Trojan horse consumerism"

- working in schools which allow autonomy for teachers;
- collaborative methods of teaching and learning in the science department;
- management support for adventurous teaching;
- teacher acknowledgement of conflicts between their own and students' aspirations. For example, a teacher in the study wanted to broaden historical perspectives in science for students who were very narrowly focused on examination success. By taking the time to explain his teaching approach to students, he was able to allay their fears about studying ideas outside the confines of the examination syllabus;
- teacher preparedness to make explicit to their students the underlying ways in which science knowledge is socially produced;
- teacher involvement in curriculum development both at the school level and beyond, i.e. at national level.

A teacher explains how students worked on a shampoo container. While the container on the outside lists all the positive qualities of the shampoo, the students', through their research, identified damaging chemicals as parts of the ingredients, hence 'Trojan horse'. The teacher's explanations of how he led the children's research can be found at <http://goo.gl/9EqE8v>.

In Brazil, the analysis of science teacher education curricula demonstrated:

- there is an explicit articulation of science knowledge with values, attitudes, ethics and theories of teaching;
- there are recommendations for the integration of science knowledge with political knowledge;
- that the intended perspectives above allow for new meanings in the relationships between science education and education for citizenship (political literacy) to be developed, including those which can subvert the original intentions of policy makers;
- the policy text for science teacher education has elements such as social demands for strengthening democracy in Brazil linked to ideas from science education curriculum studies; however, practice in teacher education does not fully reflect this or the other aims above.

What we did

The research came about following an academic visit to Brazil by the UK principal investigator (PI). While leading masters and doctoral sessions in Brazilian universities, he was struck by the conflicts experienced by activist teachers of science and environmental education as they faced urgent issues in their schools such as the pollution of local watercourses. The conflict was: How do teachers help children to critically question what they learn in science without destabilising the normal school curriculum and their positions as teachers in the school? Since an engagement with scientific literacy is core to both Brazilian and UK contexts, the research question arose as to how science teachers deal with socio-political issues and how that might help to develop political literacy with their students. Findings will be taken forward to inform pre-service science teacher education.

This research was funded by the British Academy International Partnership & Mobility Award and took place between September 2012 and September 2013. The research focused on commonalities and differences between Brazil and the UK curricula and teacher education policies.

How we did it

The research focus is 'Political literacy as a component of science teacher training: opportunities and challenges for practice.'

The research in the UK focused on narrative accounts from three experienced science teachers in negotiating their way through the science curriculum. The teachers each had over 10 years' teaching experience, had distinct commitments to social justice in their teaching and conceptualisations of political literacy, and were well-respected by their colleagues and students. Interviews started from a personal history approach such as 'Tell me how you came into teaching . . . Summaries of the transcripts were sent to the teachers asking them to check interpretations and they took part in a second interview to further develop questions which were raised. Interview data were interpreted independently by the team of researchers identifying and comparing themes which arose from the interviews.

A content analysis was carried out on the Brazilian teacher education policy documents through a policy-making device which develops a means of comparing curriculum production in different contexts.

Further information

A series of articles emerging from the research are planned for a special edition in the journal *Cultural Studies of Science Education* in 2014/15 and has been accepted by the editorial board. A book based on the research is being submitted as an invited proposal to Routledge.

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