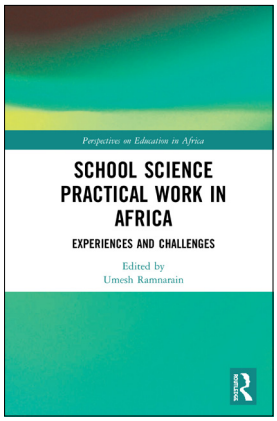
BOOK TITLE:
School science practical work in Africa: Experiences and challenges



EDITOR:
Umesh Ramnarain

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REVIEWER:
Marissa Rollnick[1]

AFFILIATION:
[1]School of Education, Wits University, Johannesburg, South Africa

EMAIL:
Marissa.rollnick@wits.ac.za

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A predictable picture of the state of practical work in science education in Africa

Reading this book, *School Science Practical Work in Africa*, reminded me of an invitation I had to write a chapter 'Teacher Education in Africa' for a special issue of the *Journal of Science Teacher Education* for each of the inhabited continents on the globe. One of the greatest challenges was how to face this daunting task given the paucity of accessible literature on the subject.[1] My co-author thus hit on the idea of getting in touch with many of his contacts on each continent requesting an account of teacher education in their country. From the resulting correspondence and a meta-analysis on our part, we were able to construct an article based on responses from role players in 12 African countries.[2]

A similar challenge faced the editor of this book and he responded to the challenge by making use of the many foreign nationals residing, working and studying in South Africa, as well as the networks that have been established through the Southern African Association for Research in Mathematics Science and Technology Education (SAARMSTE). The book consists of nine chapters written by 16 authors focusing on nine Anglophone African countries – five in the SADC region (South Africa, Zimbabwe, Zambia, Malawi and Namibia), three in East Africa (Kenya, Uganda and Tanzania) and one in West Africa (Nigeria).

The book is claimed to be of interest to academics, researchers, and postgraduate students in the fields of science education and educational policy. In fact, the chapters are a mixture of commentaries, literature reviews, single pieces of research and accounts of projects. One drawback of the book is that it is very expensive for local buyers, just under ZAR2000 for a hard copy or just under ZAR600 for the ebook.

Ramnarain's initial chapter is an account of inquiry-based learning in South Africa and its possible place in the South African curriculum. Asheela et al. report on an intervention with 21 Namibian in-service teachers to give them more confidence to do hands-on and minds-on practical work in schools, co-authored by master's degree supervisors, Ngcoza and Seery. Mvuru and Dudu follow with an account of inquiry-based practices in Zimbabwean schools. This is followed by an account by Upahi and Oyelekan on the role of practical work in the teaching of science in Nigerian schools. Next is a well-conceived empirical study by Nampota et al. looking at pedagogical orientations of Malawian science teachers towards practical work. Miheso follows with an account of enactment of practical work in Kenyan schools followed by Kibirige's empirical investigation into practical work in two elite schools in Uganda. Chabalengula and Mumba then provide a rigorous and well-written analysis of Zambian integrated science materials for science and engineering practices. Finally, Semali provides an account of i-SPACES – a project aimed at undertaking relevant practical projects in Tanzania, but which needs support from science, technology, society and environmental literature (e.g. Pedretti and Nazir[3]).

What emerges from the book is a predictable picture of the state of practical work in science education in Africa, characterised by a lack of resources sometimes illuminated by initiatives that make a difference. Despite the book's intention to decolonise, the literature is heavily laden with international references. As a reader I would have appreciated a closer look at the context of the education systems and their challenges in each of the countries. Although this book was largely written in the pre-COVID period, it would also have been interesting to assess the extent of Africa's adaptation to ICT in practical work.

As intimated in the introduction to this review, there are some issues regarding the references, some of which, in my view, could have been overcome. One problem is that the authors have cited many well-known overseas references on practical work, but have not always chosen the best of these references. For example, eight references by Millar are used, including one high-quality article that was used by six of the nine authors, suggesting that a common international literature review may have helped both the writers and readers. Of the other seven, only three can be judged to be of high quality. Another negative factor regarding referencing is several instances of the use of articles from predatory journals, a problem which should have been resolved by the publishers. Finally, I was surprised by the age of the references used to describe the current state of affairs of curricula and resources in each country, such as a reference to the latest curriculum in Nigeria dated 2009.

One flaw in the book is the lack of a common understanding of what is meant by practical work and how it relates to inquiry. Some articles claim to be about inquiry, but mostly deal with practical work. In my understanding, inquiry is far broader than practical work and may or may not include practical work. It would have been a good idea for the authors to agree on a common understanding before embarking on the book, and would have enabled the editor to clearly indicate the boundaries between what was to be included and excluded.

In general, however, this book is to be welcomed as an addition to the literature of African science education. Its worth will be measured by the extent to which it is cited in the literature. I encourage university libraries to buy the book.

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