Book Reviews

Douglas Young, Julie van der Vlugt, Siyalo Qanya, Lydia Abel, Aarnout Brombacher, Jonathon Clark, Di Donaldson, Peter Johnston, Yusuf Johnson, Case Rijsdijk, Corrie Schoeman and Gail Solomons. 2010. ***Understanding Concepts in Mathematics and Science, Volume Two***: ***A Multilingual Learning and Teaching Resource Book in English, isiXhosa, isiZulu, Afrikaans***. Cape Town: Maskew Miller Longman, 432 pages. ISBN 978-0-636-09859-6 (hardback).

Understanding Concepts in Mathematics and Science Volume Two (UCMS2) continues the pioneering work which was firmly established in 2005 with the publication of the first volume of UCMS. Both volumes are the brainchild of the Concept Literacy Project based at the University of Cape Town, in collaboration with Rhodes University and the University of KwaZulu-Natal.

The thrust of these two volumes is to promote literacy around key mathematical and scientific concepts. While UCMS1 focused on 56 concepts in the General Education and Training (GET) band, UCMS2 progresses to the Further Education and Training (FET) band where 68 key concepts from Mathematics, Physics, Chemistry, Geography and Life Sciences are outlined using a contextualised and multilingual approach.

As with the first volume, the fundamental philosophy underpinning UCMS2 is that learners and educators who are able to understand critical concepts in their own language will be able to transfer this understanding to learning and teaching contexts where English is the medium of instruction. Accordingly, each of the 68 key concepts is described in 4 different languages – English, Afrikaans, isiXhosa and isiZulu.

UCMS2 is an attractive hard-cover book and is robust both in terms of structure and content. The main content of the book is sub-divided into 68 units, each dealing with a particular key concept. UCMS2 is also extensively illustrated with explanatory diagrams and photographs. These illustrations, along with the compactness of each short unit, give the book an appealing and accessible feel. As such, UCMS2 is an excellent resource for both teachers and learners and would be a valuable addition to any classroom.

The prologue to UCMS2, entitled "How to use this book", gives a helpful overview of the different sections and the underlying intention behind each section. This is a useful guide to navigating through the book and using each of the sections to maximum effect. Throughout the book there is a strong emphasis on the role of language in teaching and learning complex concepts in Mathematics and Science, and both volumes of UCMS provide teachers with appropriate resources to support and foster knowledge formation in these learning areas.

In addition to being a useful resource for conceptual development, one of the main contributions of UCMS is its valuable input to the discourse surrounding the development of standardized registers for Mathematics and Science in indigenous languages. In this regard, the second volume of UCMS has strayed a little from the utility of the first volume. Volume One concluded with an extremely useful multilingual equivalence list in which words relating to key concepts were presented in all four languages. This provided a quick and easy means of looking up and translating specific words. No such equivalence list (other than a Contents Table of the 68 key concepts) is provided with Volume Two, and while it is understood that UCMS is not a dictionary I believe that the inclusion of a multilingual index would have enhanced both the convenience and usefulness of the book.

The emphasis of Volume Two seems to be in the description and illustration of the key concepts. However, the discussion around these key concepts is largely in English, and as such the multilingual nature of the book tends to take something of a backseat. To use an extreme case as an example, the unit on functions is thirteen pages long while only six *lines* in the entire unit are devoted to each of isiXhosa, Afrikaans and isiZulu. Thus, while the concept of a function is broadly outlined in four different languages, not much support is offered to allow learners and teachers to discuss the concept in an indigenous language. This aspect of the book was better handled in Volume One where many of the units were subdivided into multiple key concepts, each of which was described in four different languages.

The two volumes together raise a number of interesting linguistic issues and have certainly opened my eyes to the challenges to conceptual development that exist in a language that lacks a standardized register for Mathematics and Science. By way of example, the isiXhosa word *unxane* can mean either a *quadrilateral* or a *parallelogram*. To have a single word which can represent, in a hierarchical system, both the parent group and a subdivision of the parent group opens up a veritable minefield of misunderstanding and shaky conceptualisation.

In conclusion, the strength of these two volumes lies in their multilingual approach to concept literacy, and I believe that this is the arena in which UCMS has the potential to contribute both meaningfully and dynamically. The translation of key concepts into indigenous languages by no means gives a definitive lexicon. Indeed, this is just the beginning of the process, but the well-researched translations contained within UCMS provide a valuable contribution to the debate around the standardization process. This is the aspect that I believe should gain focus as UCMS branches out into other indigenous languages, as this will ultimately enhance the primary focus of the whole enterprise – the multilingual promotion of concept literacy.

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