Review

Researching Technology Education Methods and Techniques

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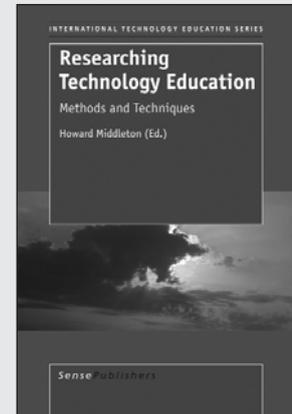
Educational researchers are spoilt for choice with a wide range of text books supporting those who are starting out with their first a research project or more seasoned researchers using complex tools for collecting and analysing data. Most give clear explanations of research methodology and many researchers seem to have their favourite authors. **Researching Technology Education Methods and Techniques** is different. The difference is that while the usual research textbooks have a wealth of information on research tools and method this book is how those methods have been applied in research projects within technology and design and technology (D&T) education. The editor brings together the work of several internationally known researchers in one volume that demonstrates the wealth of experience and particularly the creativity in implementing research projects within technology and D&T education. While this is a strength it also results in a variation in the way each contributor presents their material thus some chapters are easier to read than others. However the editor has been skilful in ensuring there is consistency in the use of appropriate educational research terminology and each chapter follows a basic outline. There is also consistency in the way each contributor describes the research tools used within a particular research project and, in some cases, how methodologies have been adapted or developed to meet the requirements of the project.

In the introduction the editor states his belief that *'using the correct research tools is as important to achieving the research aims for technology education as researching the right topics'.* This important point is made in the context of the international development of technology and D&T education as well as the recent and *'positive developments in research methodologies'.*

Research books are not usually the sort of book read from cover to cover, most researchers seem to dip into sections which interest them, often using the index as guidance. After reading the first two chapters of this book I found myself doing just this. Initially I was drawn to the chapter on the *Repertory Grid Technique* as some years ago I spent a couple of afternoons with a colleague who was using this method, frankly I did not fully understand how this was being applied in a product design research project. However, reading the chapter by Lars Björklund clarified my understanding as in his explanation he uses examples from Swedish schools that are clear and easy to follow. The supporting diagrams are excellent.

My next choice was the chapter by Ivan Chester with his explanation of research into *Expertise Development*, in this case using CAD software. The application of *'think-aloud'* protocols followed by *data segmentation and coding* are described concisely. I found myself smiling as I read the table illustrating verbal protocol and the analysis. It conjured up an image of recorder and subject working through using an example of CAD software with all the 'language' associated with such an activity. This chapter is complemented by that dealing with *Capturing Knowledge and Activity* by John Stevenson. I moved on to case studies which, in my view, are particularly interesting in technology and D&T research so the two chapters dealing with this methodology and presentation, particularly *Classroom Case Studies*, did not disappoint me. This chapter, by Robert McCormick, introduces each section as a question, for example *'What is a case study?'* and *'Why carry out case Studies?'* followed by a clear answer. Further sections deal with important issues for the researcher such as *'Quality of research design'*, *'Construct validity'*, *'Role of the researcher'* and *'Ethics'.* All issues of importance to the new researcher but also serve as a reminder to those involved in educational research about our responsibilities. The second chapter on case studies by Frank Banks illustrates how an initial research project about *'Developing*

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Professional Thinking for Technology Teachers' grew into an international collaborative venture between several universities. Both present strong messages about careful data collection and the importance of ensuring the validity of data. Bradley Walmsley's contribution on *Using Stimulated Recall Techniques* tackles a research question that is at the nub of D&T education, that is *'teaching and learning skills pertinent to the development of higher order thinking processes'.* This carefully designed research uses video data capture and analysis techniques to build up evidence of what actually happens in the classroom. I found this compelling reading.

Other chapters deal with *'Cultural-Historical Perspectives'*, *'Design Performance: Digital Tools'*, *'Comparative Analysis'*, *'Observation Techniques'* and *'Design Thinking'* each by a researcher with an international reputation for their work. They are all of similar high level of interest. So I worked my way through this book fascinated by the content and the way it is presented. As expected in a book of this quality each chapter is well referenced and the index is an example of good practice. The editor has helpfully provided pages with headers with the name of the contributor and chapter title. Unfortunately errors have resulted in some confusion rather spoiling this useful facility.

This book is for everyone interested in educational research, particularly those whose focus is technology or D&T. Experienced researchers are likely to find it a fascinating compilation that encapsulates the breadth and depth of research in our subject area. Teachers, post-graduate and undergraduate students studying research methods or embarking on their first research project will find that this book is likely to dispel much of the mystique associated with education research methods. Howard Middleton and his contributors have provided us with an excellent practical guide to research methods with an insight into how international technology and D&T researchers have adopted, adapted and developed strategies appropriate to our subject.

This book is a valuable educational research resource.