

# Contents

|                                   |       |
|-----------------------------------|-------|
| <i>Acknowledgements</i>           | xix   |
| <i>List of figures and tables</i> | xxi   |
| <i>List of abbreviations</i>      | xxv   |
| <i>About the editors</i>          | xxvii |
| <i>Notes on the contributors</i>  | xxix  |

## PART I: INTRODUCTION TO RESEARCH METHODS AND METHODOLOGIES IN EDUCATION

|          |  |          |
|----------|--|----------|
| <b>1</b> | <b>Introduction: how this book can help you</b>  | <b>3</b> |
|          | <i>James Arthur</i>  |          |
|          | Chapters and layout  | 3        |
| <b>2</b> | <b>The nature of educational research – exploring the different understandings<br/>of educational research</b> | <b>5</b> |
|          | <i>Robert J. Coe</i>   |          |
|          | Introduction   | 5        |
|          | Dimensions of difference: paradigms?   | 6        |
|          | What is a paradigm?  | 6        |
|          | Reconciling the different views  | 6        |
|          | Different aims for educational research  | 8        |
|          | Other ways of classifying different types of educational research  | 9        |
|          | Characteristics of research  | 10       |
|          | How is educational research different from other kinds of research?  | 11       |
|          | Research quality   | 12       |
|          | Questions for further investigation  | 13       |
|          | Suggested further reading  | 13       |
|          | References   | 13       |

|  |   |           |
|--|---|-----------|
| <b>3</b>   | <b>Finding your theoretical position</b>          | <b>15</b> |
|  | <i>Michael Waring</i>                             |           |
|  | Introduction                                      | 15        |
|  | Ontology, epistemology, methodology and methods   | 16        |
|  | The nature of paradigms – making sense of reality | 17        |
|  | Conclusion  | 19        |
|  | Questions for further investigation               | 19        |
|  | Suggested further reading                         | 19        |
|  | References  | 19        |
| <br>   |   |           |
| <b>PART II: BASIC PRINCIPLES AND PRACTICE IN CONDUCTING RESEARCH</b> |   |           |
| <b>4</b>   | <b>Design of empirical research</b>               | <b>23</b> |
|  | <i>Larry V. Hedges</i>                            |           |
|  | Introduction                                      | 23        |
|  | Problem formulation                               | 23        |
|  | Logic of enquiry                                  | 24        |
|  | Varieties of research designs                     | 25        |
|  | Validity considerations                           | 27        |
|  | Suggested further reading                         | 30        |
|  | References  | 30        |
| <b>5</b>   | <b>Planning your research</b>                     | <b>31</b> |
|  | <i>Laura Day Ashley</i>                           |           |
|  | Why is planning important?                        | 31        |
|  | Starting to plan early on                         | 31        |
|  | Managing your time and resources                  | 37        |
|  | The research proposal or plan                     | 38        |
|  | Planning as an ongoing activity                   | 38        |
|  | Suggested further reading                         | 40        |
|  | References  | 40        |
| <b>6</b>   | <b>Conducting your research</b>                   | <b>41</b> |
|  | <i>Robert J. Coe</i>                              |           |
|  | The importance of inference and interpretation    | 41        |
|  | Confusion over ‘validity’                         | 41        |
|  | Interpretation claims                             | 43        |
|  | Transfer claims                                   | 48        |
|  | Suggested further reading                         | 52        |
|  | References  | 52        |
| <b>7</b>   | <b>Research impact and dissemination</b>          | <b>53</b> |
|  | <i>Marilyn Leask</i>                              |           |
|  | Introduction                                      | 53        |

|   |    |
|---|----|
| Definitions   | 54 |
| Judging the impact of research  | 55 |
| Autonomy versus accountability – changes in the role of the university and the academic | 56 |
| E-tools supporting research impact and dissemination                                    | 58 |
| Practitioners' access to research and engagement of practitioners in research           | 58 |
| Commissioning research to underpin policy and practice                                  | 62 |
| Your stance on impact and dissemination?  | 62 |
| Conclusion  | 63 |
| Notes   | 63 |
| Suggested further reading   | 63 |
| References  | 64 |

## **PART III: KEY METHODS**

### ***DIMENSION 1: RESEARCH DESIGNS***

|           |   |           |
|-----------|---|-----------|
| <b>8</b>  | <b>Action research</b>                          | <b>71</b> |
|           | <i>Carol Munn-Giddings</i>                      |           |
|           | What is action research?                        | 71        |
|           | Research design                                 | 72        |
|           | Example: stress in the workplace                | 73        |
|           | The methodological approach                     | 73        |
|           | Note  | 74        |
|           | Suggested further reading                       | 74        |
|           | References                                      | 74        |
| <b>9</b>  | <b>Naturalistic research</b>                    | <b>76</b> |
|           | <i>Rob Walker</i>                               |           |
|           | Naturalistic enquiry                            | 76        |
|           | A brief history                                 | 76        |
|           | Methods of naturalistic enquiry                 | 77        |
|           | An example: the David Medd study                | 77        |
|           | Issues in naturalistic enquiry                  | 78        |
|           | Suggested further reading                       | 79        |
|           | References                                      | 79        |
| <b>10</b> | <b>Ethnographic and representational styles</b> | <b>80</b> |
|           | <i>Ghazala Bhatti</i>                           |           |
|           | Definition and brief history                    | 80        |
|           | Research question and paradigmatic location     | 81        |
|           | Methods, data collection and analysis           | 82        |
|           | An example: an ethnographic journey             | 82        |
|           | Other resources                                 | 83        |
|           | Suggested further reading                       | 83        |
|           | References                                      | 83        |

|           |  |            |
|-----------|--|------------|
| <b>11</b> | <b>Grounded theory</b>   | <b>85</b>  |
|           | <i>Robert Thornberg</i>  |            |
|           | Introduction   | 85         |
|           | Data collection and theoretical sampling   | 86         |
|           | Coding   | 86         |
|           | Memos  | 89         |
|           | Interplay between induction and abduction  | 91         |
|           | Conclusion   | 92         |
|           | Suggested further reading  | 92         |
|           | References   | 92         |
| <b>12</b> | <b>Visual methodologies</b>  | <b>94</b>  |
|           | <i>Jenni Karlsson</i>  |            |
|           | The visual turn  | 94         |
|           | Defining visual methodologies  | 95         |
|           | Methods of data collection and analysis  | 95         |
|           | Implementing two approaches to generating visual data  | 96         |
|           | Conclusion   | 99         |
|           | Notes  | 99         |
|           | Suggested further reading  | 99         |
|           | References   | 100        |
| <b>13</b> | <b>Case study research</b>   | <b>102</b> |
|           | <i>Laura Day Ashley</i>  |            |
|           | Case study research: an outline  | 102        |
|           | A multiple case study of private school outreach in India                                      | 103        |
|           | Suggested further reading  | 106        |
|           | References   | 106        |
| <b>14</b> | <b>Issues of truth and justice</b>   | <b>108</b> |
|           | <i>Ian Davies and Andrew Peterson</i>  |            |
|           | Truth and justice in educational research: fundamental considerations and practical influences | 108        |
|           | An example of a recent research and development project  | 110        |
|           | Conclusion   | 112        |
|           | Suggested further reading  | 112        |
|           | References   | 113        |
| <b>15</b> | <b>Surveys and longitudinal research</b>   | <b>114</b> |
|           | <i>Anna Vignoles</i>   |            |
|           | Longitudinal data and research designs   | 114        |
|           | Applications of longitudinal research designs  | 114        |
|           | Data   | 115        |
|           | Applications of longitudinal research  | 115        |
|           | Conclusion   | 118        |
|           | Note   | 118        |
|           | Suggested further reading  | 118        |
|           | References   | 118        |

|           |  |            |
|-----------|--|------------|
| <b>16</b> | <b>Statistical and correlational techniques</b>  | <b>119</b> |
|           | <i>Stephen Gorard</i>  |            |
|           | Introduction   | 119        |
|           | Statistical and correlational research   | 119        |
|           | An example: correlational research   | 120        |
|           | Suggested further reading  | 124        |
|           | References   | 124        |
| <b>17</b> | <b>Secondary data</b>  | <b>125</b> |
|           | <i>Emma Smith</i>  |            |
|           | Introduction   | 125        |
|           | What is secondary data analysis?   | 125        |
|           | The promises of secondary data analysis  | 126        |
|           | Using secondary data in mixed methods research   | 126        |
|           | Using secondary data to monitor trends over time   | 127        |
|           | Conclusion   | 129        |
|           | Suggested further reading  | 129        |
|           | References   | 130        |
| <b>18</b> | <b>Impact evaluation</b>   | <b>131</b> |
|           | <i>Steve Higgins</i>   |            |
|           | Evaluation of impact: a case study of the introduction of interactive whiteboards in schools in the UK | 131        |
|           | Evaluation rationale and aims  | 131        |
|           | Evaluation aims and methods  | 132        |
|           | Results of the evaluation  | 133        |
|           | Challenges for interpretation and evaluation design  | 134        |
|           | Suggested further reading  | 135        |
|           | References   | 135        |
| <b>19</b> | <b>Interventions: experiments</b>  | <b>137</b> |
|           | <i>Peter Tymms</i>   |            |
|           | Definition and outline of the key research design  | 137        |
|           | The kind of associated research questions  | 137        |
|           | Paradigmatic location  | 138        |
|           | Individual random assignment   | 138        |
|           | Clusters randomly assigned   | 138        |
|           | Suggested further reading  | 139        |
|           | References   | 139        |
| <b>20</b> | <b>A systematic review</b>   | <b>141</b> |
|           | <i>Mark Newman and Kelly Dickson</i>   |            |
|           | Definition and outline of the key research design  | 141        |
|           | Formulating the review question  | 141        |
|           | Searching and selecting studies  | 142        |
|           | Coding to describe studies   | 142        |
|           | Assessing study quality  | 143        |

|           |   |            |
|-----------|---|------------|
|           | Synthesis of evidence in the in-depth review        | 143        |
|           | What did the review find?                           | 143        |
|           | Different applications of systematic review methods | 145        |
|           | Note  | 145        |
|           | Suggested further reading                           | 145        |
|           | References  | 146        |
| <b>21</b> | <b>Mixed methods</b>                                | <b>147</b> |
|           | <i>Gert Biesta</i>                                  |            |
|           | Introducing mixed methods research                  | 147        |
|           | The nature of mixed methods research                | 148        |
|           | Different mixed designs                             | 148        |
|           | An example: the Learning Lives project              | 150        |
|           | Note  | 151        |
|           | Suggested further reading                           | 151        |
|           | References  | 151        |
| <b>22</b> | <b>Philosophical research</b>                       | <b>153</b> |
|           | <i>Richard Pring</i>                                |            |
|           | Introduction  | 153        |
|           | Doing philosophy                                    | 154        |
|           | The aims of education                               | 155        |
|           | Standards of performance                            | 156        |
|           | Learning  | 158        |
|           | Academic and vocational                             | 159        |
|           | Practical learning                                  | 159        |
|           | Conclusion  | 161        |
|           | Note  | 162        |
|           | Suggested further reading                           | 162        |
|           | References  | 162        |

## ***DIMENSION 2: DATA COLLECTION TOOLS***

|           |   |            |
|-----------|---|------------|
| <b>23</b> | <b>Observation-based research</b>   | <b>165</b> |
|           | <i>Michael V. Angrosino</i>   |            |
|           | Observation as a technique for data collection in social research: a brief introduction | 165        |
|           | Types of observation-based research   | 165        |
|           | Observational research in educational settings  | 166        |
|           | A checklist for doing observational research  | 166        |
|           | The ethics of observation-based research  | 167        |
|           | Some points for further consideration   | 168        |
|           | Conclusion  | 169        |
|           | Questions for further investigation   | 169        |
|           | Note  | 169        |
|           | Suggested further reading   | 169        |

|           |  |            |
|-----------|--|------------|
| <b>24</b> | <b>In-depth interviews</b>   | <b>170</b> |
|           | <i>Carolyn L. Mears</i>  |            |
|           | Introduction   | 170        |
|           | Interviewing: it's more than questions and answers                 | 170        |
|           | Conducting the interview   | 172        |
|           | Challenges and dispositions  | 173        |
|           | Standards  | 174        |
|           | Conclusion   | 175        |
|           | Questions for further investigation                                | 175        |
|           | Suggested further reading  | 175        |
|           | References   | 175        |
| <b>25</b> | <b>Techniques to assist with interviewing</b>                      | <b>177</b> |
|           | <i>Rosalind Hurworth</i>   |            |
|           | Introduction   | 177        |
|           | The use of still photographs and other images as stimuli           | 177        |
|           | Vignettes  | 179        |
|           | Props and prompts when talking (especially) to children            | 180        |
|           | Issues concerning the use of stimuli                               | 182        |
|           | Conclusion   | 182        |
|           | Questions for further investigation                                | 183        |
|           | Note   | 183        |
|           | Suggested further reading  | 183        |
|           | References   | 183        |
| <b>26</b> | <b>Focus groups and group interviews</b>                           | <b>186</b> |
|           | <i>Anita Gibbs</i>   |            |
|           | Introduction   | 186        |
|           | Strengths and weaknesses of focus groups                           | 187        |
|           | How to set up and run a focus group                                | 187        |
|           | Ethical dilemmas   | 189        |
|           | Cultural challenges  | 189        |
|           | Online focus groups  | 190        |
|           | Exemplars  | 190        |
|           | Conclusion   | 191        |
|           | Questions for further investigation                                | 191        |
|           | Suggested further reading  | 191        |
|           | References   | 191        |
| <b>27</b> | <b>Internet-based methods</b>                                      | <b>193</b> |
|           | <i>Rhona Sharpe and Greg Benfield</i>                              |            |
|           | Introduction   | 193        |
|           | Using online research methods to investigate learners' experiences | 195        |
|           | Challenges in learner experience research                          | 197        |
|           | Conclusion   | 199        |
|           | Questions for further investigation                                | 199        |

|  |            |
|--|------------|
| Notes  | 199        |
| Suggested further reading  | 199        |
| References   | 199        |
| <b>28 Doing blog research</b>                                    | <b>202</b> |
| <i>Axel Bruns and Jean Burgess</i>                               |            |
| Introduction   | 202        |
| The computational turn   | 203        |
| Combining quantitative and qualitative approaches                | 205        |
| Implications of the computational turn                           | 206        |
| Questions for further investigation                              | 207        |
| Suggested further reading  | 208        |
| References   | 208        |
| <b>29 Documentary methods</b>                                    | <b>210</b> |
| <i>Gary McCulloch</i>  |            |
| Introduction   | 210        |
| Personal documents   | 211        |
| The public record  | 212        |
| Archival documents   | 213        |
| Conclusion   | 214        |
| Questions for further investigation                              | 214        |
| Suggested further reading  | 214        |
| References   | 215        |
| <b>30 Systematic reviews</b>                                     | <b>217</b> |
| <i>Carole Torgerson, Jill Hall and Kate Light</i>                |            |
| Overview   | 217        |
| Introduction   | 217        |
| Detailed guidance on methods for undertaking a systematic review | 219        |
| Conclusion   | 229        |
| Questions for further investigation                              | 229        |
| Suggested further reading  | 229        |
| References   | 230        |
| <b>31 Questionnaires</b>   | <b>231</b> |
| <i>Peter Tymms</i>   |            |
| Introduction   | 231        |
| Purposes   | 231        |
| Formats  | 232        |
| Wording  | 234        |
| Administration   | 235        |
| Length of questionnaires   | 235        |
| Response rates   | 236        |
| Scales   | 237        |
| How many items are needed in a scale?                            | 237        |
| Conclusion and links to other methodology                        | 239        |



|  |            |
|--|------------|
| Questions for further investigation                  | 239        |
| Notes  | 239        |
| Suggested further reading                            | 239        |
| References   | 240        |
| <b>32 Measurement and validity</b>                   | <b>241</b> |
| <i>Ronald K. Hambleton</i>                           |            |
| Introduction   | 241        |
| Approaches to collecting data                        | 241        |
| Scales of measurement                                | 243        |
| Criterion-referenced vs. norm-referenced measurement | 244        |
| Score reliability                                    | 244        |
| Score validity                                       | 245        |
| Conclusion   | 246        |
| Questions for further investigation                  | 246        |
| Suggested further reading                            | 246        |
| References   | 246        |
| <br><b><i>DIMENSION 3: ANALYSIS METHODS</i></b>      |            |
| <b>33 Software and qualitative data analysis</b>     | <b>251</b> |
| <i>Graham R. Gibbs</i>                               |            |
| To use CAQDAS or not                                 | 252        |
| Setting up the project in NVivo                      | 252        |
| Units of analysis                                    | 253        |
| Security   | 253        |
| Coding   | 254        |
| Coding crisis  | 255        |
| Searching  | 255        |
| Searching for coded text and attributes              | 256        |
| Teamwork   | 256        |
| Resources  | 257        |
| Questions for further investigation                  | 257        |
| Suggested further reading                            | 257        |
| References   | 258        |
| <b>34 Statistical analysis tools</b>                 | <b>259</b> |
| <i>Paul Connolly</i>                                 |            |
| Introduction   | 259        |
| The quantitative dataset                             | 259        |
| Statistical analysis with Excel                      | 261        |
| Statistical analysis with SPSS                       | 263        |
| Statistical analysis in Stata                        | 266        |
| Statistical analysis with MLwiN                      | 268        |
| Conclusion   | 269        |
| Questions for further investigation                  | 270        |

|  |            |
|--|------------|
| Notes  | 270        |
| Suggested further reading  | 270        |
| References   | 270        |
| <b>35 Discourse analysis</b>   | <b>272</b> |
| <i>Elaine Vaughan</i>  |            |
| Introduction   | 272        |
| Approaches to discourse analysis   | 272        |
| Discourse analysis and teacher language: data and analysis                   | 278        |
| Questions for further investigation  | 280        |
| Suggested further reading  | 280        |
| References   | 281        |
| <b>36 Media analysis</b>   | <b>283</b> |
| <i>Michael Atkinson</i>  |            |
| Introduction   | 283        |
| Conducting media analysis  | 283        |
| Critiques  | 287        |
| Conclusion   | 288        |
| Questions for further investigation  | 288        |
| Suggested further reading  | 289        |
| References   | 289        |
| <b>37 Visual methodologies and social change</b>                             | <b>290</b> |
| <i>Claudia Mitchell</i>  |            |
| Introduction: visual methodologies   | 290        |
| Mapping the terrain of visual methodologies                                  | 291        |
| Applying the methods: a case for photovoice – the Friday Absenteeism Project | 293        |
| Conclusion   | 294        |
| Questions for further investigation  | 294        |
| Suggested further reading  | 295        |
| References   | 295        |
| <b>38 Grounded theory</b>  | <b>297</b> |
| <i>Michael Waring</i>  |            |
| Introduction   | 297        |
| (Re)interpretations of grounded theory                                       | 297        |
| Locating yourself as a grounded theorist                                     | 298        |
| What is grounded theory?   | 298        |
| The helix model: a framework for enquiry                                     | 300        |
| Theoretical sensitivity  | 300        |
| The heart of the matter – coding   | 301        |
| Writing a grounded theory  | 305        |
| Criticisms of grounded theory  | 305        |
| Conclusion   | 306        |
| Questions for further investigation  | 306        |

|   |            |
|---|------------|
| Suggested further reading                                       | 306        |
| References  | 307        |
| <b>39 Ethnography as epistemology</b>                           | <b>309</b> |
| <i>Judith L. Green, Andra Skukauskaite and W. Douglas Baker</i> |            |
| Introduction to educational ethnography                         | 309        |
| On ethnography as a logic-in-use                                | 309        |
| Exemplars of educational issues, topics and directions          | 311        |
| Principles of operation guiding the actions of the ethnographer | 312        |
| A telling case of a logic-in-use                                | 316        |
| Conclusion  | 318        |
| Questions for further investigation                             | 319        |
| Suggested further reading                                       | 319        |
| References  | 319        |
| <b>40 Biographical research methods</b>                         | <b>322</b> |
| <i>Michael Tedder</i>   |            |
| Introduction  | 322        |
| The appeal of biographical research                             | 323        |
| Conducting biographical research                                | 324        |
| Analysing and writing up biographical research                  | 325        |
| Exemplary studies   | 326        |
| Conclusion  | 327        |
| Questions for further investigation                             | 328        |
| Suggested further reading                                       | 328        |
| References  | 328        |
| <b>41 Statistical hypothesis tests</b>                          | <b>330</b> |
| <i>Michael Borenstein</i>                                       |            |
| Introduction  | 330        |
| Motivational example  | 330        |
| Significance tests  | 330        |
| NHST: the wrong framework for educational research              | 332        |
| Effect size estimation  | 333        |
| Effect size estimation addresses the question of interest       | 333        |
| NHST lends itself to mistakes of interpretation                 | 334        |
| In context  | 335        |
| Why does it work at all?  | 335        |
| Effect sizes and research synthesis                             | 335        |
| Statistical notes   | 336        |
| Conclusion  | 336        |
| Questions for further investigation                             | 336        |
| Suggested further reading                                       | 337        |
| References  | 337        |

|           |   |            |
|-----------|---|------------|
| <b>42</b> | <b>Analysis of variance (ANOVA)</b>   | <b>338</b> |
|           | <i>H. J. Keselman and Lisa Lix</i>  |            |
|           | Introduction  | 338        |
|           | Applications of ANOVA   | 338        |
|           | Considerations in applying ANOVA  | 339        |
|           | How it works/the basics   | 339        |
|           | Ancillary procedures  | 343        |
|           | Robust analogues to ANOVA <i>F</i> -tests   | 344        |
|           | Assessing ANOVA results reported in empirical research  | 345        |
|           | Conclusion  | 346        |
|           | Questions for further investigation   | 346        |
|           | Suggested further reading   | 347        |
|           | References  | 347        |
| <b>43</b> | <b>Multiple linear regression</b>   | <b>348</b> |
|           | <i>Stephen Gorard</i>   |            |
|           | Introduction  | 348        |
|           | Correlation and simple regression   | 348        |
|           | Multiple regression   | 351        |
|           | Basic assumptions   | 352        |
|           | Cautions and interpretations  | 353        |
|           | Conclusion  | 354        |
|           | Questions for further investigation   | 354        |
|           | Suggested further reading   | 355        |
|           | References  | 355        |
| <b>44</b> | <b>Multilevel analysis</b>  | <b>356</b> |
|           | <i>Michael Seltzer and Jordan Rickles</i>   |            |
|           | Introduction  | 356        |
|           | An illustration of multilevel modelling via analysis of the data from a multi-site<br>evaluation of the transition mathematics curriculum | 357        |
|           | Additional applications and examples  | 365        |
|           | Conclusion  | 366        |
|           | Questions for further investigation   | 366        |
|           | Notes   | 366        |
|           | Suggested further reading   | 366        |
|           | References  | 367        |
| <b>45</b> | <b>Effect size</b>  | <b>368</b> |
|           | <i>Robert J. Coe</i>  |            |
|           | Introduction  | 368        |
|           | Why do we need 'effect size'?   | 368        |
|           | How is it calculated?   | 369        |
|           | How can effect sizes be interpreted?  | 371        |
|           | What is the margin for error in estimation effect sizes?  | 373        |
|           | What other factors can influence effect size?   | 373        |
|           | Are there alternative measures of effect size?  | 375        |

|   |            |
|---|------------|
| Conclusion  | 375        |
| Questions for further investigation                           | 376        |
| Notes   | 376        |
| Suggested further reading                                     | 376        |
| References  | 376        |
| <b>46 Meta-analysis</b>                                       | <b>378</b> |
| <i>Larry V. Hedges</i>  |            |
| Introduction  | 378        |
| Why is meta-analysis necessary?                               | 378        |
| Effect sizes  | 379        |
| Procedures in meta-analysis                                   | 380        |
| Combining effect size estimates across studies                | 380        |
| Assessing heterogeneity                                       | 381        |
| Fixed versus random effects                                   | 381        |
| Analysis of variance and regression analysis in meta-analysis | 382        |
| Publication bias  | 382        |
| Example   | 383        |
| Conclusion  | 383        |
| Questions for further investigation                           | 383        |
| Suggested further reading                                     | 384        |
| References  | 384        |
| <i>Index</i>  | 385        |