The overall aim of this reader-friendly book is to enable current and prospective teachers as well as other education professionals to improve practice, leading to more successful learning for all students. Drawing on her extensive experience as both a high school teacher and a university professor, Inez De Florio provides an evidence-informed and value-based approach to teaching and learning that takes the personality and the accountability of teaching professionals into account. Students’ needs and interests are the primary focus of an evidence-informed teaching model, the MET (Model of Effective Teaching), which is described and exemplified in detail. In order to allow for informed decisions and suitable applications of the steps of the MET, the book furthermore provides a succinct and comprehensible introduction to the main features and types of educational research, especially newer findings of evidence-based education such as presented in John Hattie’s research.

Inez De Florio is a professor in the Department of Humanities at the University of Kassel.
Effective Teaching and Successful Learning

BRIDGING THE GAP BETWEEN RESEARCH AND PRACTICE

Inez De Florio

University of Kassel
Science is simply common sense at its best, that is, rigidly accurate in observation, and merciless to fallacy in logic.

THOMAS HUXLEY
Contents

Preface ........................................................... page xi

Introduction ......................................................... 1
  1. Premises ..................................................... 1
  2. Aims ......................................................... 2
  3. Structure .................................................... 2

1 Main Features of Scientific Research on Education .......... 8
  1.1 A Conference Talk .......................................... 8
  1.2 Science and Research ........................................ 10
  1.3 Jean Piaget (1896–1980): Major Contributions to Developmental Psychology ........................................ 12
  1.4 Lev Vygotsky and Jerome Bruner: Going Beyond Piaget .... 16
    Lev S. Vygotsky (1896–1934) .................................. 16
    Jerome Bruner (born 1915) ..................................... 19
  1.5 Educational Science and Educational Research ............. 22
    Review, Reflect, Practice ..................................... 25

2 Important Types of Scientific Research on Education ........ 27
  2.1 Main Types of Research: Description and Explanation ...... 27
  2.2 Theories, Hypotheses, and Models .......................... 28
  2.3 Research Design and Methodology ........................... 32
  2.4 Psychometrics ............................................... 35
  2.5 Experiments (RCTs), Quasi-Experiments, and Correlation
    Studies ......................................................... 37
  2.6 A Presentation of John Dewey’s Main Ideas ................. 41
    Review, Reflect, Practice ..................................... 43
Main Features of Evidence-based Research on Education ........ 45
3.1 Evidence-based Medicine and Evidence-based Education .... 45
3.2 A Question of Age ........................................ 47
3.3 Essential Features of Evidence-based Research ............... 49
3.4 Potential and Pitfalls of Randomized Controlled Trials ........ 51
3.5 The Measurement of Interventions in Teaching and Learning .. 54
3.6 Assumptions about What Works ............................ 56
3.7 How to Deal with Results of Evidence-based Research ........ 58
Review, Reflect, Practice ........................................ 62

Meta-Analyses on Education ........................................ 63
4.1 Meta-Analyses and Effect Sizes ............................... 63
4.2 A Critical Look at Research on Teaching Effectiveness ...... 69
4.3 Thinking without Thinking ................................... 71
4.4 A Theory-based Meta-Analysis of Research on Instruction .. 73
Review, Reflect, Practice ........................................ 77

A Synthesis of Over 800 Meta-Analyses Relating to Achievement .. 79
5.1 Hattie’s Study Visible Learning ............................... 80
5.2 “Know Thy Impact” .......................................... 83
5.3 Shortcomings of Visible Learning ............................ 84
5.4 Hattie’s Resource Book Visible Learning for Teachers ........ 87
5.5 An International Guide to Student Achievement ............ 90
Review, Reflect, Practice ........................................ 92

Scaffolding Effective Teaching and Successful Learning ........ 94
6.1 Hattie’s Model of Direct Instruction (DI) ....................... 95
6.2 Links between Facts and Values ................................ 100
6.3 Premises of Effective Teaching ............................... 102
6.4 MET – A Model of Effective Teaching and Successful Learning ........................................ 110
6.5 Research Evidence and Teacher Expertise .................... 113
Review, Reflect, Practice ........................................ 117

Planning and Starting the Lesson ................................... 118
7.1 A Thoughtful Review of Effective Teaching .................... 119
7.2 Planning the Lesson ............................................. 121
7.3 The Realm of the Smartest .................................... 128
7.4 Starting the Lesson ............................................... 130
Review, Reflect, Practice ........................................ 136
Contents

8 Presenting Knowledge and Skills—Assertive Questioning .......... 137
  8.1 Classroom Management and Classroom Climate ................. 139
  8.2 Presenting Knowledge and Skills ..................................... 143
  8.3 The Impact of an Expert Peer ........................................... 149
  8.4 Assertive Questioning and Interactive Dialogue ................. 151
  Review, Reflect, Practice ................................................. 155

9 Guided and Independent Practice ........................................... 157
  9.1 Summary of the Preceding Steps of the MET ...................... 157
  9.2 Types of Practice .......................................................... 158
  9.3 Planning Guided Practice ................................................ 164
  9.4 Even Good Things Can Be Improved .................................. 170
  9.5 Independent Practice ........................................................ 170
  9.6 All’s Well that Ends Well .................................................. 173
  Review, Reflect, Practice ................................................. 174

10 Cooperative and Project-based Learning .................................. 175
  10.1 Cooperative vs. Collaborative Learning ......................... 175
  10.2 The Message of John Dewey ............................................ 176
  10.3 Basics of Learning in Small Groups ............................... 178
  10.4 Newer Research into Cooperative Learning ..................... 179
  10.5 Major Forms of Cooperative Learning ............................ 182
  10.6 A Joint Venture: Othello .................................................. 190
  10.7 PBL—Project- and Problem-based Learning .................... 191
  10.8 Newer Research into Problem-based Learning ................... 195
  Review, Reflect, Practice ................................................. 196

11 Feedback—Reciprocal and Informative .................................. 198
  11.1 Newer Research into Feedback ......................................... 199
  11.2 The Feedback Model of Hattie and Timperley ................... 202
  11.3 Feedback Given by Teachers to Students ......................... 204
  11.4 Peer Feedback .............................................................. 208
  11.5 Love is Not Always Blind ................................................. 211
  11.6 Feedback Given by Students to Teachers ......................... 212
  Review, Reflect, Practice ................................................. 214
  Concluding Remarks: Standards Need More Evidence ................ 215

References ................................................................. 221
Index ................................................................. 231
Preface

During the past years, I have dedicated much time to gaining better insights into educational research and the implementation of its results. Among other things, I read many scientific research studies on education and the social sciences, watched a great amount of videotaped teaching, tried to make sense of lesson transcripts, and consulted textbooks as well as lesson plans. More and more the picture of a land of milk and honey came to my mind.

Even though a host of scientific studies on education, as well as research textbooks and teacher guides, do not meet the criteria of serious scientific endeavor, educators can draw on a rich and helpful body of literature in their field – at least in the English-speaking countries. The more my readings and my searches proceeded, the more I began asking myself questions like the following:

- How may busy teachers find the time to read at least the most important studies regarding their teaching context?
- How can they evaluate the quality of educational research?
- According to which criteria will they decide whether an intervention program or a teaching strategy is adequate for their students?
- Furthermore, by which means are they enabled to adapt science-based interventions to their classroom, as they are always confronted with the warning that the evaluated “tools” don’t work in every context in the same way?
- How will they be able to distinguish useful research-based teacher guides from the recipe books of self-proclaimed education gurus?

As time went by, another association crossed my mind: I saw Pieter Bruegel the Elder’s well-known painting of the Land of Cockaigne before my inner eye. The protagonists on the ground show in a striking manner
what it means to cope with abundance. In my opinion, the fact that even countries with a remarkable body of education research don’t perform well in international achievement studies may depend to a certain degree on the plethora of advice which is lavished on teachers. To avoid misunderstandings, international studies such as TIMSS or PISA are only one small indicator for the proper functioning of a school system, and other factors, for example teacher training and opportunity standards such as public funding, are of even greater importance than the overabundance of scientific findings.

For all these and many other reasons, my overall aim is to provide teachers in training and in service, as well as other education professionals, with a comprehensible, concise, and critical overview of current scientific research on education. I don’t focus on a particular country but rather address teachers all over the world who are willing to improve their everyday practice to the benefit of all their students. My aim is to help teachers find their way to a more reflective practice on their own or in interaction with colleagues without further resources. This will be made possible by looking at scientific research and the implementation of its findings through the eyes of teachers.

Inez De Florio