SECOND EDITION

RESEARCHING MEDICAL EDUCATION

EDITED BY
JENNIFER CLELAND ▪ STEVEN J. DURNING

ASME
amee
An International Association for Health Professions Education
WILEY Blackwell

Contents

List of contributors, vii
Foreword, xi
Foreword from ASME, xiii
Foreword from AMEE, xv
Preface, xvii
Words of Recommendation, xxi

Part I Developing your practice as a health professions education researcher

1 Exploring, measuring or both: considering the differences between qualitative, quantitative and mixed methods research, 3
Jennifer Cleland

2 Theory in health professions education research: the importance of worldview, 15
Wendy McMillan

3 Constructivism: learning theories and approaches to research, 25
Anna MacLeod, Sarah Burm and Karen Mann

4 Widening access to medicine: using mid-range theory to extend knowledge and understanding, 41
Sandra Nicholson, Kirsty Alexander, Maeve Coyle and Jennifer Cleland

5 Developing the research question: setting the course for your research travels, 53
Juanita Bezuidenhout, Champion N. Nyoni, Rhoda Meyer and Susan C. van Schalkwyk

6 Researching technology use in health professions education: questions, theories, approaches, 61
Rachel H. Ellaway

7 Power analyses: planning, conducting and evaluating education research, 71
R. Brent Stansfield and Larry D. Gruppen

8 Navigating health professions education research: exploring your researcher identity, research area and community, 77
Janneke M. Frambach, Muhammad Zafar Iqbal, Pim W. Teunissen and Susan C. van Schalkwyk

9 How to tell compelling scientific stories: tips for artful use of the research manuscript and presentation genres, 87
Lorelei Lingard and Erik Driessen

Part II Methodologies and methods for health professions education research

10 What is known already: reviewing evidence in health professions education, 101
Morris Gordon

11 Qualitative research methodologies: embracing methodological borrowing, shifting and importing, 115
Lara Varpio, Maria Athina Martimianakis (Tina) and Maria Mylopoulos

12 Attuning to the social world: ethnography in health professions education research, 127
Simon Kitto, Janet Alexanian and Joanne Goldman

13 Visual methods in health professions research: purpose, challenges and opportunities, 139
Sayra Cristancho, Kori LaDonna and Emily Field

14 Critical discourse analysis: questioning what we believe to be 'true', 153
Morag Paton, Thirusha Naidu, René Wong, Cynthia Whitehead and Ayelet Kuper

15 Functional and corpus linguistics in health professions education research: the study of language in use, 163
Abigail Konopasky and Brett A. Diaz

16 Challenging epistemological hegemonies: researching inequity and discrimination in health professions education, 175
Saleem Razack, Andrea McKivett and Marco Antonio de Carvalho Filho

17 Educational neuroscience: current status and future opportunities, 187
Anke Sambeth, Steven Durning, Minna Huotilainen and Anique de Bruin

Part III Theory informing health professions education research

18 Sticking with messy realities: how 'thinking with complexity' can inform health professions education research, 199
Alan Bleakley and Jennifer Cleland

19 Getting active: using activity theory to manage change, 209
Jenny Johnston and Helen Reid

20 Attuning to materiality: sociomaterial research in health professions education, 219
Rola Ajjawi, Margaret Bearman and Anna MacLeod

21 Social cognitive theory: thinking and learning in social settings, 229
Dario Torre and Steven J. Durning

22 Learning and participatory practices at work: understanding and appraising learning through workplace experiences, 241
Stephen Billett, Linda Sweet and Christy Noble

23 Health behaviour theories: a conceptual lens to explore behaviour change, 251
Francois Cilliers, Christina St-Onge and Cees van der Vleuten

24 Self-regulated learning in health profession education: theoretical perspectives and research methods, 267
Anthony R. Artino, Jr., Adam Gavarkovs, Ryan Brydges and Larry D. Gruppen

25 Emotions and learning: cognitive theoretical and methodological approaches to studying the influence of emotions on learning, 279
Meghan McConnell and Kevin W. Eva

26 Research on instructional design in the health professions: from taxonomies of learning to whole-task models, 291
Jimmy Frerejean, Diana H.J.M. Dolmans and Jeroen J.G. van Merrienboer

27 Cognitive load theory: researching and planning teaching to maximise learning, 303
Adam Szulewski, Tamara van Gog, Fred Paas and John Sweller

28 Deliberate practice and mastery learning: origins of expert medical performance, 315
William C. McGaghie and Theresa Kristopaitis

29 Closing comments: building and sustaining capacity, 325
David Taylor and Trevor Gibbs

30 Conclusion, 331
Jennifer Cleland and Steven J. Durning

Index, 335

26 Research on instructional design in the health professions: from taxonomies of learning to whole-task models

Jimmy Frerejean, Diana H.J.M. Dolmans and Jeroen J.G. van Merrienboer

Inez Delores became the educational director of an undergraduate programme in health professions education about one year ago. Now, she is confronted for the first time with the results of the regular annual programme evaluation. Students seem to be quite satisfied with the quality of their teachers and courses. That is good news. Yet, what worries her is the common complaint of students that they experience the whole programme as a rather disconnected set of topics and courses, with implicit relationships between them and unclear relevance to their future profession. Moreover, both programme alumni and workplace supervisors report difficulties with applying the acquired knowledge and skills at the workplace. Inez wonders if action needs to be taken and, if so, what she could do about the situation.

This situation is representative of the kinds of problems that are studied in the field of instructional design. This field of study aims to develop guidelines and models for the design of instruction, ranging from the design of particular instructional materials, via lessons and courses, to complete curricula. It covers the entire continuum of education; thus, in health professions education, it includes undergraduate and graduate programmes as well as continuous medical education. The guidelines and models developed in the field of instructional design help educators in health professions education to make instruction more effective, efficient and attractive. Effectiveness relates not only to learning outcomes but also to translational outcomes such as safer patient care and better patient outcomes. Efficiency relates to optimising the balance between outcomes and investments in terms of time, effort and money. And attractiveness relates to increasing students' motivation to learn.

For example, the above-mentioned complaint of the students that they experienced their programme as a disconnected set of topics and courses prompted the initial interest in 'integrative goals'.[1] Such goals are frequently encountered when instruction must reach beyond a single lesson or course; for example, when professional competencies or complex skills are taught. This shift towards integrative goals had important consequences for research on instructional design: 'Whole tasks' rather than distinct learning goals became the basis for the design and development of educational programmes.

The main aim of this chapter is to discuss research themes that are pertinent to the field of instructional design. First, a brief description will be provided of the ADDIE model that characterises the main phases in instructional design: Analysis, Design, Development, Implementation and Evaluation. Second, for the analysis phase, it will be described how research is moving away from an atomistic view that breaks down tasks into individual elements with corresponding learning goals and is moving towards a holistic view that focuses on 'whole tasks' and the relationships between their elements. Third, for the design and development phases, the main research themes for designing components of 'whole' task programmes and the use of media are described. Fourth, for the implementation and evaluation phases, research on how whole-task models affect the preparation of stakeholders and evaluations in educational organisations is described. The chapter ends with a summary of the main conclusions and future research directions.

The ADDIE model

Figure 26.1 presents the five phases in the ADDIE model:[2] (a) the analysis of fixed conditions and desired learning outcomes, (b) the design of instructional strategies, (c) the development of instructional materials, (d) the implementation of the developed instruction in the educational organisation and (e) its evaluation aimed at continuous improvement. Though the model appears to be

Researching Medical Education, Second Edition. Edited by Jennifer Cleland and Steven J. Durning.
© 2023 The Association for the Study of Medical Education (ASME). Published 2023 by John Wiley & Sons Ltd.