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As the title implies, the authors have written a primer for traditionally trained research scientists interested in education research. The book serves as a map to guide these researchers through the intricacies of the scholarship of teaching and learning from experimental design, execution and data analyses to publication. It is a part of the “W.H. Freeman Scientific Teaching Series”, a collection of practical guides to help faculty become more proficient in teaching and learning science.

There are seven short, easy-to-read chapters, plus an appendix. The first few chapters introduce and explain the virtues of education research as compared to traditional scientific research. This is followed by chapters on the elements of good research design, with tips on formulating good research questions and a discussion of the five most important topic areas that the authors believe have shaped the scholarship of teaching and learning over the last 25 years. By providing this information, the authors give readers an overview of what is known in the field and possibly inspire them to tackle the unknown. It goes without saying that a comprehensive literature search would be in order before deciding on a research topic.

In simple, easy to understand language, Chapters 4 and 5 provide practical information on quantitative and qualitative methods of data analysis. From past experience, this is one area of research where many scientists struggle and I was very pleased at its straightforwardness. I even had an “aha” moment as I discovered a simple trick to help in some calculations of my own data. Chapters 6 and 7 focus on aspects of publishing, evaluation and action research, which is a more informal method of targeted change in the classroom.

The appendix includes “ready-to-go” assessments and information on working with human subjects. Unfortunately, the assessments are not quite as ready to go as one might wish; although the questions are included, no other information is provided (such as how to score the instruments). It would have been more helpful if this information was made available or if references were provided to support the documents. A quick Internet search for supporting documentation yielded more frustration than answers.

A nice feature throughout the book is the inclusion of very visible “OWLS”. These are boxes with a picture of an
are valuable tools to add to our teaching and learning toolkit. "deliberate silence", "think-share", and "one-minute papers" each chapter of the book. Strategies such as "wait-time", and case studies.

Other techniques include problem-based learning (PBL) exploration, explanation, elaboration, and evaluation in the "5E" learning cycle instructional model: engagement, assessment, processing period, and ending with instructor feedback. Write one minute papers, followed with short whole-class response period:

For the large classroom setting is the structured question format. "interrupted lecture" to move towards the adoption of active learning strategies for educators (from high school to university-level) wishing to offer opportunities for students to "actively process" the material being presented. Other methods to engage students in the learning process include: small group work, writing, and discussion. The authors are astronomy and physics education researchers and consequently, the book is sprinkled with numerous examples from those disciplines. Fortunately, while this is quite noticeable, they have attempted to broaden the audience base by including resources useful to scientists in other disciplines. Consequently, the book is suitable to other scientists besides physicists or astronomers.

Discipline-Based Education Research: A Scientist's Guide primarily serves as a basic introduction to the burgeoning field of education research. Overall, although this book may be of limited value to experienced education researchers, it is a simple, informative and valuable resource for faculty new to the world of education research. It offers practical, basic information that is applicable to education researchers across all science disciplines.

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