



A Practitioner's Guide to Growth Models

Katherine E. Castellano & Andrew D. Ho
Review written by James A. Gullen

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In A Practitioner's Guide to Growth Models¹, Katherine Castellano and Andrew Ho have crafted a summary and explanation of the currently available growth models for student achievement that is accessible to most educators. Drs. Castellano and Ho are qualified to author such a book based on their work and research interests. Dr. Castellano worked on the Final Report on the Evaluation of the Growth Model Pilot Project². Dr. Ho is an Assistant Professor in the Harvard Graduate School of Education. His research interests include educational accountability metrics.

The first part of A Practitioner's Guide describes what growth in an educational context is and how it relates to other ways of looking at student achievement data such as status and improvement. A framework for looking at growth models is then presented. This framework is based on six questions:

1. What primary interpretation does the growth model best support?
2. What is the statistical foundation underlying the growth model?
3. What are the required data feathers for this growth model?
4. What kinds of group-level interpretations can this growth model support?
5. How does the growth model set standards for expected or adequate growth?
6. What are the common misinterpretations of the growth model and possible and unintended consequences of its use in accountability system?¹ (p.18)

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It can be clearly seen from this framework, that thinking about student growth in terms of educational achievement is a bit more complicated than thinking about growth in other aspects of children's lives, like height or weight.

The second part of the book presents seven chapters, each dedicated to a different currently available growth model. The growth models that are included are:

- Chapter 1: The Gain Score Model
- Chapter 2: The Trajectory Model
- Chapter 3: The Categorical Model
- Chapter 4: The Residual Gain Model
- Chapter 5: The Projection Model
- Chapter 6: The Student Growth Percentile Model
- Chapter 7: The Multivariate Model

The models are presented in an increasing order of complexity. Each chapter begins with an introduction and explanation of the particular growth model. A statistical background is not assumed and the explanations and examples do not require advanced mathematics to follow. The examples are quite simple but explanatory. Graphical elements are crafted to help make important points and are easily read.

Once the growth model has been introduced and developed, it is then reviewed in terms of the six questions presented as the framework for thinking about growth models. It is in these discussions that practitioners will find, I think, the true value in this book. In these discussions the authors present some of the characteristics of these (sometime quite complex) statistical models in the context of an accountability system. From this context comes appropriate issues to think about and concerns to raise for each growth model. These come not as recommendations or reasons to not use the models, rather, if you are interested in this type of growth model, here are things you need to be concerned about in terms of implementation and interpretation. This is "high-level" discussion and does not get bogged down in great detail. This helps make the book very readable.

A Practitioner's Guide is an easily readable, well thought out and organized review of student achievement growth models that are currently being considered in the field. Readers of this book will come away with a conceptual understanding of the seven growth model types as well as issues that arise when each one is used. It is often the case that it is the details that determine the ultimate fate of any initiative. Student achievement growth modeling is no different. Reading A Practitioner's Guide will allow people to ask better questions about the details of implementing any of the included growth model. Addressing better questions allow for a better implementation of the system. In Michigan, where the legislative expectations and requirements have outpaced the technology of student achievement growth modeling, the conversation would be greatly advanced if all interested parties, whether policy makers, educators, or technicians/researchers, came to the table having head this book for background. I highly recommend this book for anyone who wants to know more about student achievement growth models.

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Notes:

¹Castellano, K.E. & Ho, A.D. (2013). A Practitioner's Guide to Growth Models. CCSSO.

Available at:

ISBN# 9781482510058.

http://www.ccsso.org/Resources/Publications/A_Practitioners_Guide_to_Growth_Models.html²

Available at:

<http://www2.ed.gov/rschstat/eval/disadv/growth-model-pilot/index.html?exp=0>