Modeling Growth Using Many-faceted Rasch Measurement

Summary
This presentation will demonstrate the use of Rasch analysis to model growth across repeated classroom assessments. Textbook based target vocabulary was tested for several consecutive weeks. Substantively large learning growth was measured across the semester, with high reliability indicating extremely precise measurement and well-ordered gains observed across each week of the course. Although this presentation focuses on simple vocabulary review tests, the principles can be applied to any classroom assessment that is administered repeatedly.

Abstract (240 words)
Classroom assessment ideally focuses on formative development, part of a set of practices termed assessment for learning (AFL). Dynamic assessment (DA), which focuses on students? progress (Gu?rdia, Crisp, & Jurnet, 2016) is a widely practiced form of AFL, but there is a conceptual tension between DA and institutional requirements to provide summative grades and also with the desire to monitor the effectiveness of learning tasks in promoting growth.
This presentation will demonstrate how many-faceted Rasch measurement (MFRM) can model learning growth across assessed tasks administered repeatedly. Vocabulary review quizzes were administered each week, with target words from each textbook unit tested for several consecutive weeks. The target words were then incorporated into a final test. This design allowed growth across time to be analyzed as a measurement facet in a MFRM analysis. The Time facet showed a substantively large learning gain of 0.90 logits, with a reliability coefficient of .99 (for Time) indicating extremely precise measurement. More importantly, well-ordered gains were observed across each week of the course, consistent with an effective learning task.
Although this presentation focuses on simple vocabulary review tests, the principles can be applied to any classroom assessment that is administered repeatedly, such as in a DA model, including assessments of performances such as writing or speaking assignments. In addition to modelling learning, I will discuss the potential of Rasch analysis for the diagnostic analysis of students who diverge from the average learning trajectory of the group.

References

Gu?rdia, L., Crisp, G., & Jurnet, I. (2016). Trends and Challenges of E-Assessment to Enhance Student Learning in Higher Education. In E. Cano & G. Ion (Eds.), Innovative Practices for Higher Education Assessment and Measurement (pp. 36-56). Hershey PA: IGI Global.

Abstract 2 (174 words)
This presentation will demonstrate how many-faceted Rasch measurement (MFRM) can model learning growth across assessed tasks administered repeatedly. Vocabulary review quizzes were administered each week, with target words from each textbook unit tested for

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Although this presentation focuses on simple vocabulary review tests, the principles can be applied to any classroom assessment that is administered repeatedly, such as in a dynamic assessment model, including assessments of performances such as writing or speaking assignments. In addition to modelling learning, I will discuss the potential of Rasch analysis for the diagnostic analysis of students who diverge from the average learning trajectory of the group.

Abstract 3 (166 words)
This presentation will demonstrate the use of Rasch analysis to model growth across repeated classroom assessments. Textbook based target vocabulary was tested for several consecutive weeks. A 4-faceted analysis investigated the facets of Persons, Time, Item Position, and Item difficulty. Estimation of the time facet was found to be highly reliable (r = .99) and well-fitting (average mean-square = 1.00, S.D. = 0.09), and a substantively large effect size of 0.83 logits was observed. However, item position was found to vary by a substantively and statistically significant amount (r = .80), with item placement later in the test contributing to an increase in difficulty, indicating that test speededness was a factor. Although this presentation focuses on simple vocabulary review tests, the principles can be applied to any classroom assessment that is administered repeatedly, such as in a dynamic assessment model. I will also discuss the potential of Rasch analysis for the diagnostic analysis of students who diverge from the average learning trajectory of the group.