Assessing Student Learning of the Next Generation Science Standards

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Center for Assessment

#RILS2017 Reidy Interactive Lecture Series

Portsmouth, NH

September 28-29, 2017

Center for Assessment

The Reidy Interactive Lecture Series

Named for a famous Kentucky educational leader, Ed Reidy, RILS brings together **participants** with a range of expertise to wrestle with difficult challenges in search of practical solutions or promising approaches. Participants are **encouraged** to **participate**!

Who's Here? Lots of RILS veterans & newcomers!

- **States**
  - CT, DE, KY, LA, ME, MA, MI, MT, NE, NH, NM, OR, RI, WY
- **Districts**
  - Goffstown, NH; Gwinnett Co., GA; New York, NY; SAU 39, NH
- **Teachers and Principal**— Newmarket and Rye, NH
- **Assessment Companies**
  - AIR, DRC, ETS, GA Center for Assessment, KU-CETE, KU-DLM, Measured Progress, NWEA, Pearson, WestEd
- **Consulting Firms/TA Providers/Advocates**
  - Achieve, Center for Assessment, EdCount, HumRRO, Maine Math/Science Alliance, NSTA, Next Gen Consulting
- **Universities/Research Institutions**
  - Boston College, NORC, SRI, University of Colorado, University of Kentucky, University or Oregon
- **Center for Assessment Board of Directors**
  - Mark Musick, Laurie Wise, Henry Braun, Peter McWalters
- **Retired**!

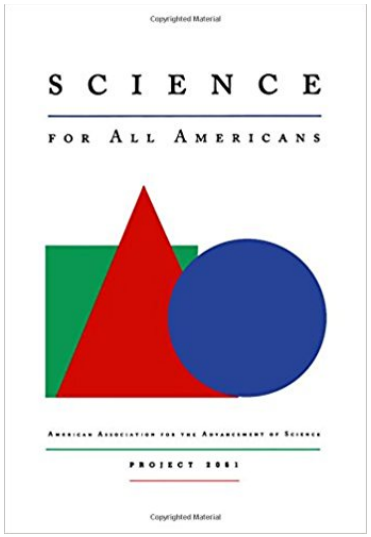
It Takes a Village!

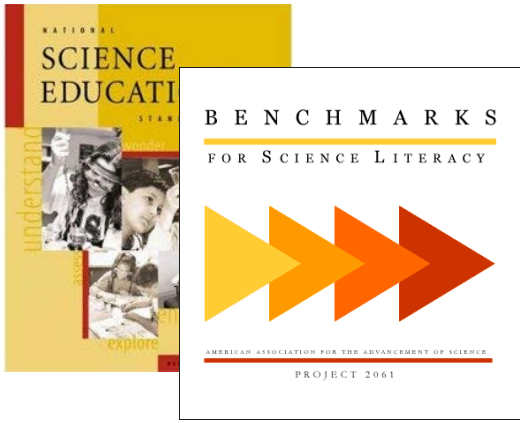
- Nathan Dadey
- LauraLee McGuane & Sandi Chaplin
- Center associates and staff
- Presenters, panelists, facilitators, and many participants
- The Center's Board of Trustees

2017 Program in the Edward F. Reidy, Jr. Interactive Lecture Series

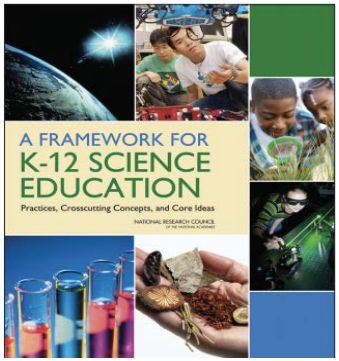
Assessing Student Learning of the Next Generation Science Standards

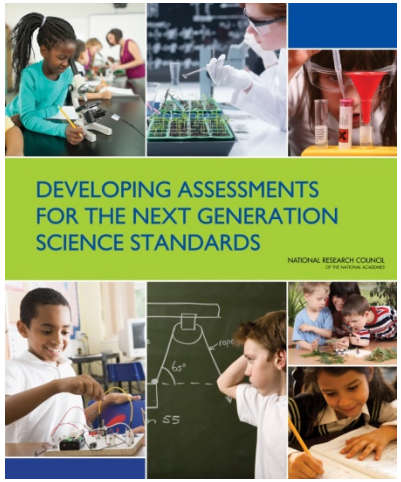
How did we get here?





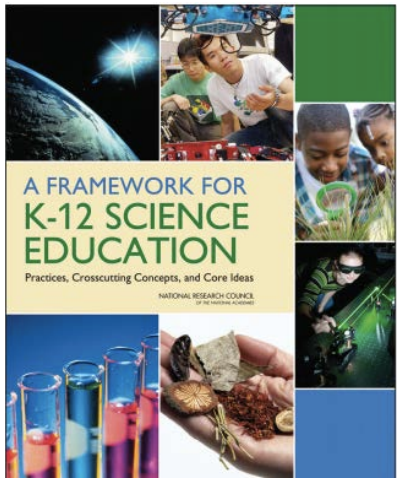
Late 1980s – 1990s

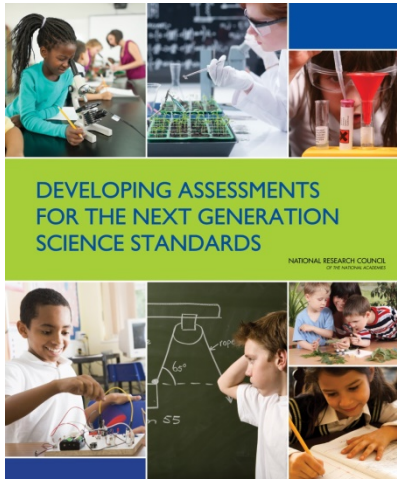




2010 – 2015

Expanding our focus for RILS



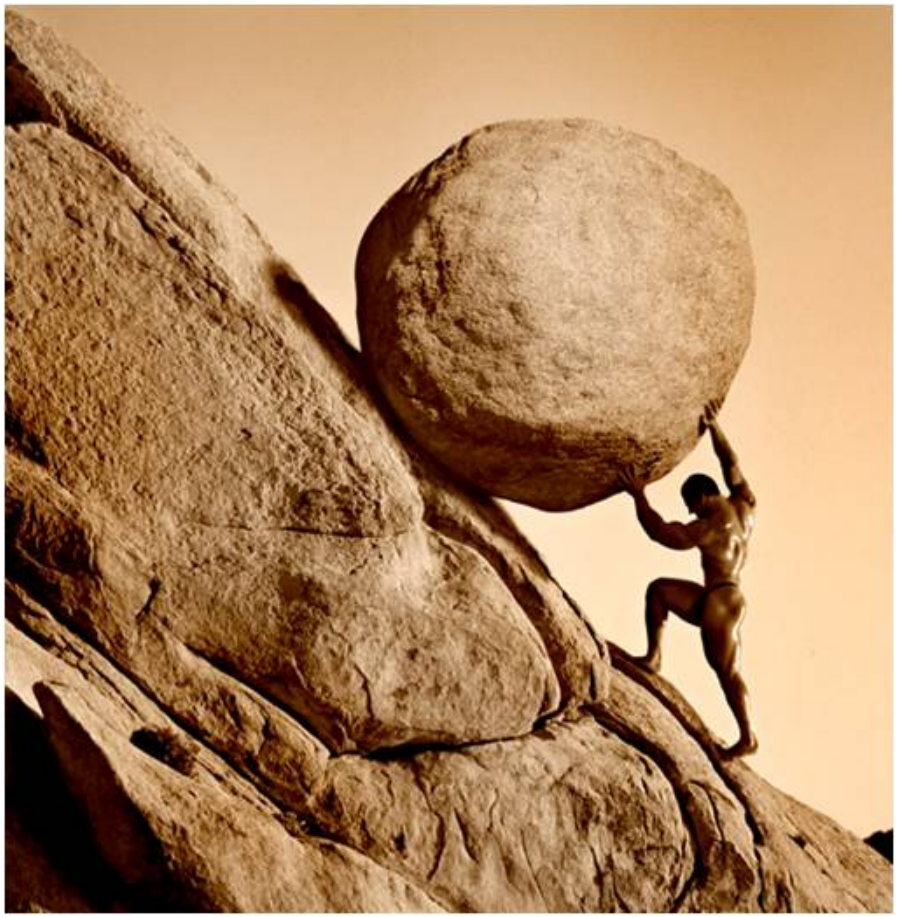


Much of the early NGSS work focuses on **classroom & district assessment**.

Much of the recent work on NGSS assessments focuses primarily on **district & state assessment**.

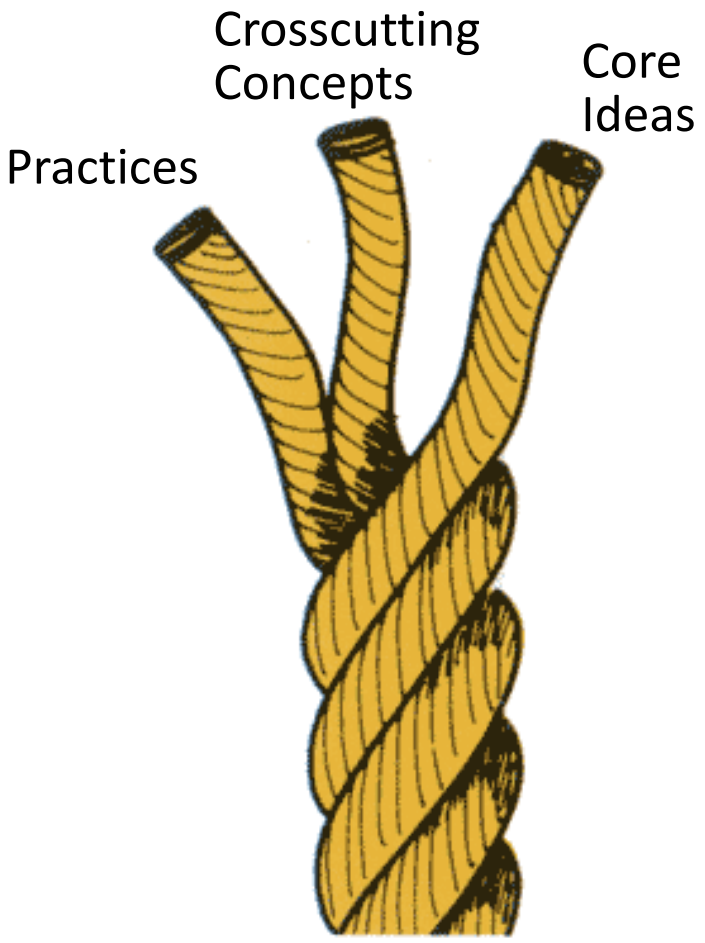
Now we're here…

- How many of you designing new science assessments feel like Sisyphus?
- Solving one problem often opens up new challenges…
- Nathan and I felt similarly challenged when designing this program—every topic could be the subject of a week-long conference!



New insights from the NGSS…

- Bill and TJ will help us dive into the NGSS…
- This will re-ground us in the three-dimensional structure of the standards using a phenomenon-based unit
- This 3D structure opens up instructional possibilities, but also creates measurement challenges…



Claims, Constraints and Requirements

- All assessment design is a case of optimization under constraints
- This richness of the NGSS makes these constraints (e.g. time, money) seem especially tight
- First, Brian, April, Kevin, and Kathleen will discuss how states have developed their major claims and blueprints that the assessment must support
- Next, Nathan, Jon, Kevin, and TJ will lead us through an activity to think about subclaims and what we want to report to our stakeholders

Items and Tasks

- We'll get to do a little window shopping after lunch
- Several participants have graciously agreed to share their items and tasks for us to examine

*If you want to know what a test measures, look at the items**

*Not exactly true, but a good indicator

Alignment

- Alignment is a “deal-breaker” criterion for U.S. Department of Education’s peer review process
- The NGSS are big! Trying to represent the NGSS on a summative assessment in order to meet typical alignment criteria appears to be a considerable challenge
- Some question whether current alignment methods are capable of allowing fair evaluations of the alignment of NGSS assessment

Aneesha, Sara, Chris, TJ, Jan, and Sean will help us think about these challenges in conceptual, methodological, and practical ways

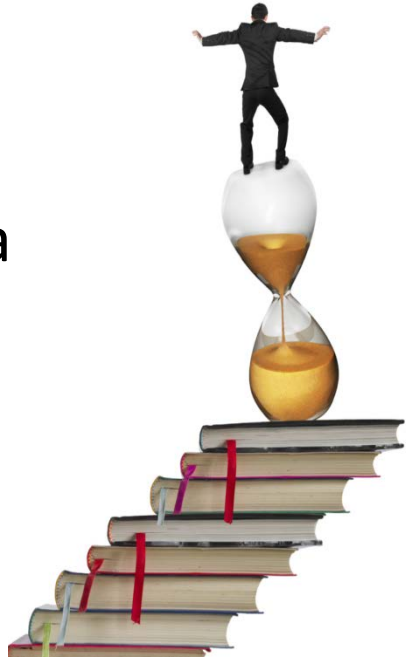
Measurement

- Many assessment leaders have been focused on initial development tasks (e.g., item-development, blueprints, alignment), but there are some critical measurement issues lurking just below the surface
- Joseph, Leslie, Jon and Kathleen will help us consider a few key measurement issues related to NGSS assessments

Systems of Assessment

Bill and I will discuss the committee's (Kathleen was also a member) recommendations and discuss opportunities for assessment systems with April and Sean

The National Research Council's committee that produced *Developing Assessments for the Next Generation Science Standards* strongly recommended developing a balanced systems of assessments to support the multiple uses a purposes



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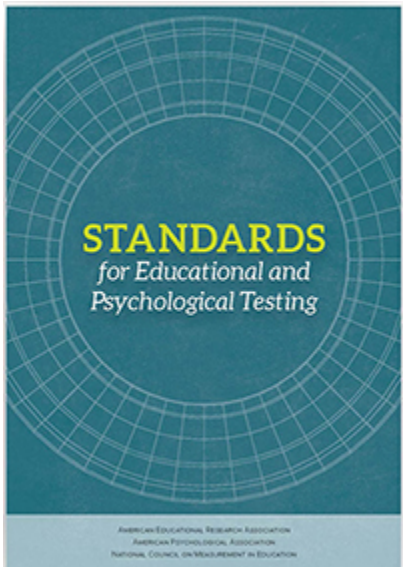
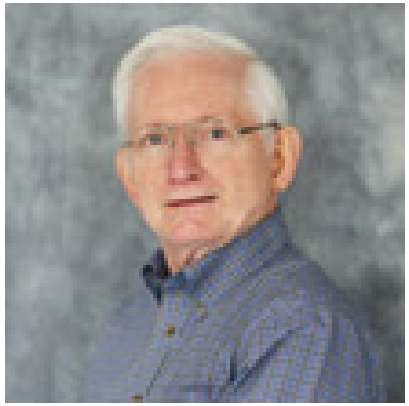
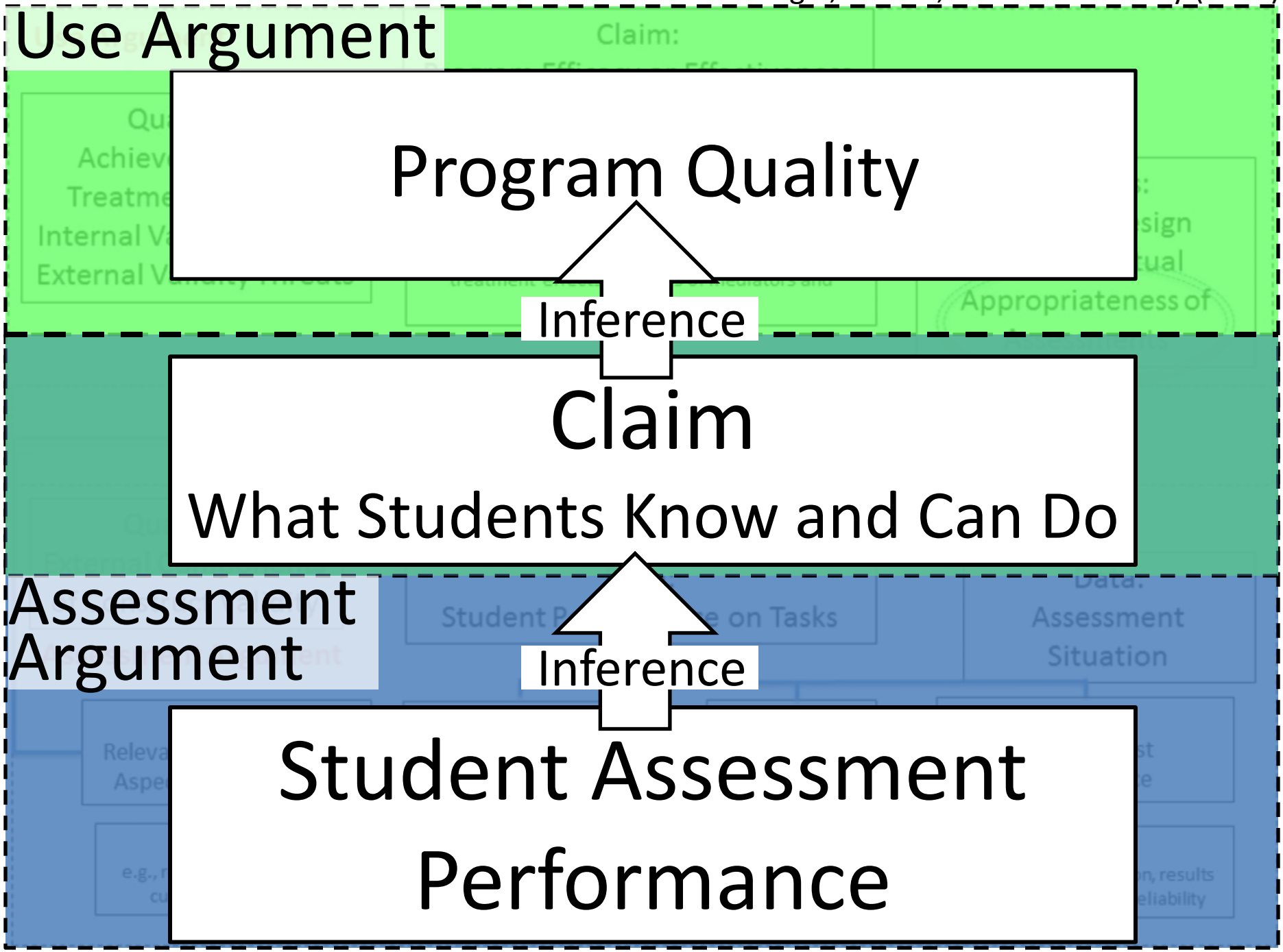
Validity Considerations



- It's all about validity!
- The entire conference is focused on the degree to which our items and tests support inferences about what students know and can do in terms of the NGSS
- While we do not have a separate validity session, it will be one of focal topics in our last session of the conference
- As a preview of the complexity, we offer some insights from work by DeBerger (along with our colleagues Bill and Chris)



From: DeBarger, Penuel, Harris & Kennedy (2015).



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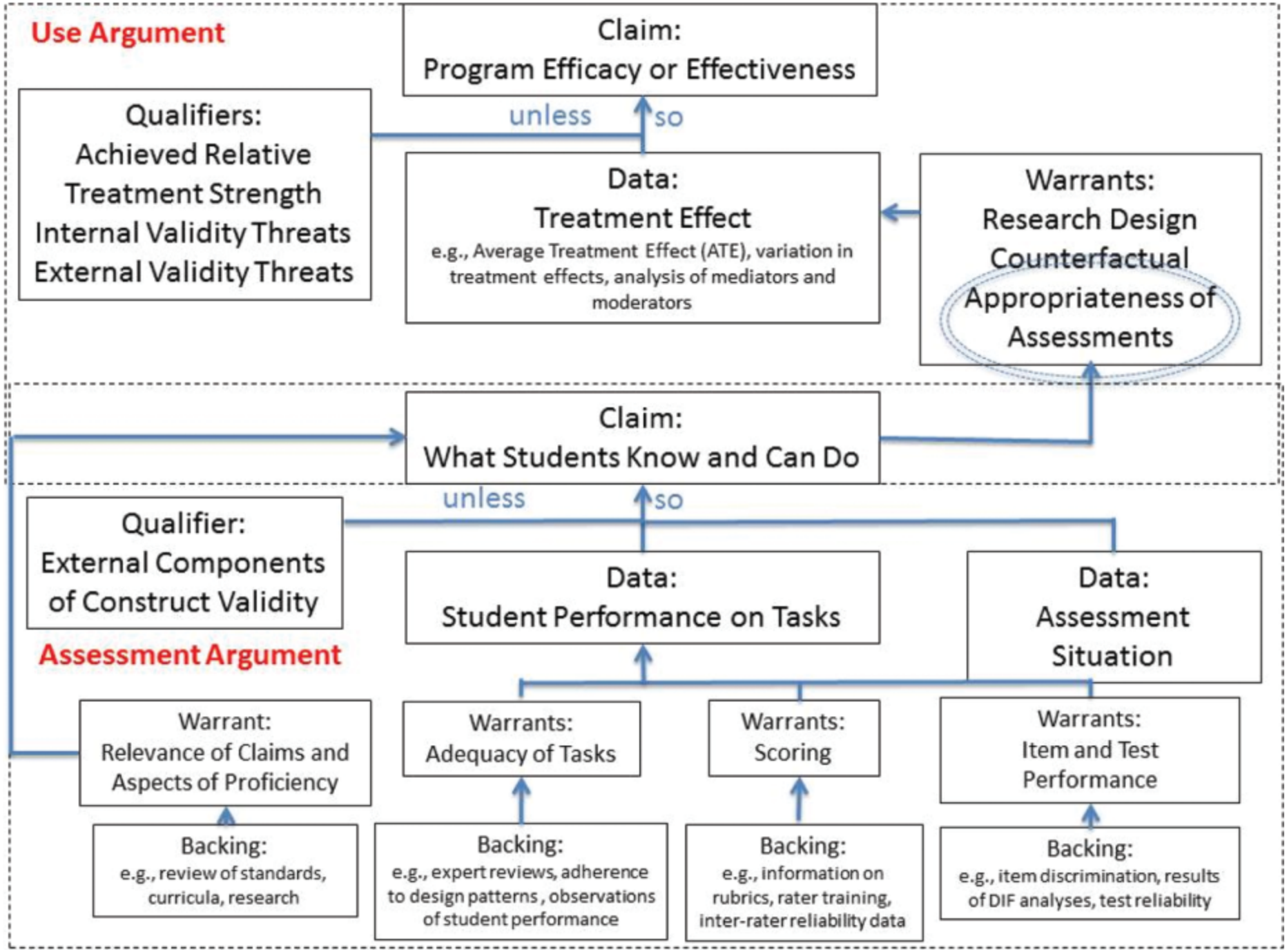

Validity

A lot to think about, but try to keep in mind:

- *What is the evidence and logic to support the claims about what the assessment results can tell us about what students know and can do in terms learning 3D science standards?*

Breakfast Tables Friday Morning @7:30

1. Measurement models and scale maintenance
2. ESSA's Innovative Assessment Pilot: The Potential for Science Assessment
3. The state of standard setting
4. Measuring writing in response to text – does this require reading comprehension, essay writing, or a different construct of "analysis"
5. Evaluating accountability systems for identification and continuous improvement

Join us for reception this evening at 5:30

Assessing Current and Future Challenges

- Respond to survey at the end of the day today to help us dynamically create groups for our last session of the conference

Media

- Live tweeting #RILS2017 @NCIEA1
- Photos
- Video

join THE CENTER FOR ASSESSMENT

for our **20th Anniversary Celebration and Edward F. Reidy, Jr. Interactive Lecture Series**

September 26-28, 2018

A Look Back and a Look Ahead at Educational Assessment and Accountability

Center for Assessment