Beyond the Testing Paradigm: Towards New Assessment Measures in Knowledge Building Environments

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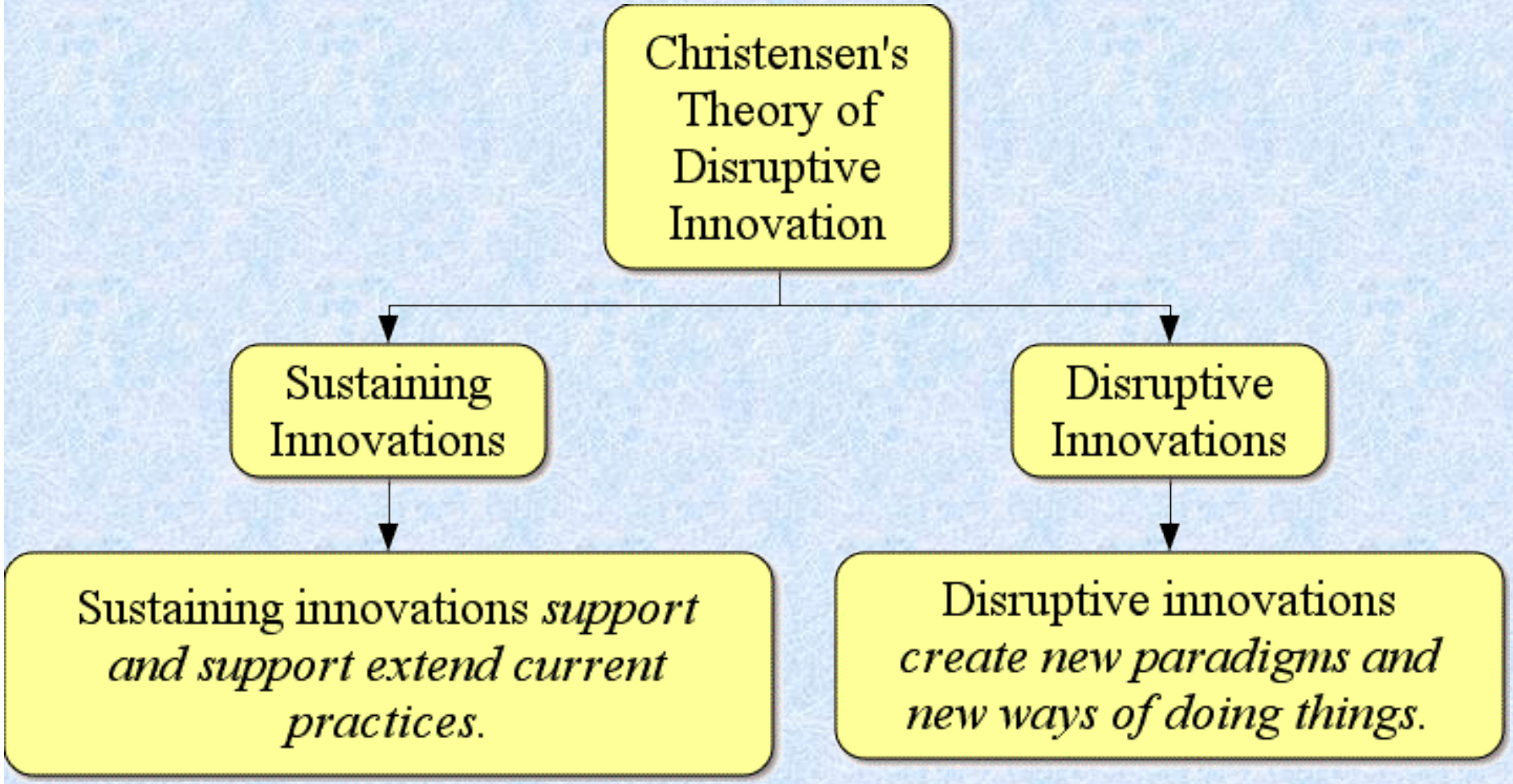
Program of this Presentation

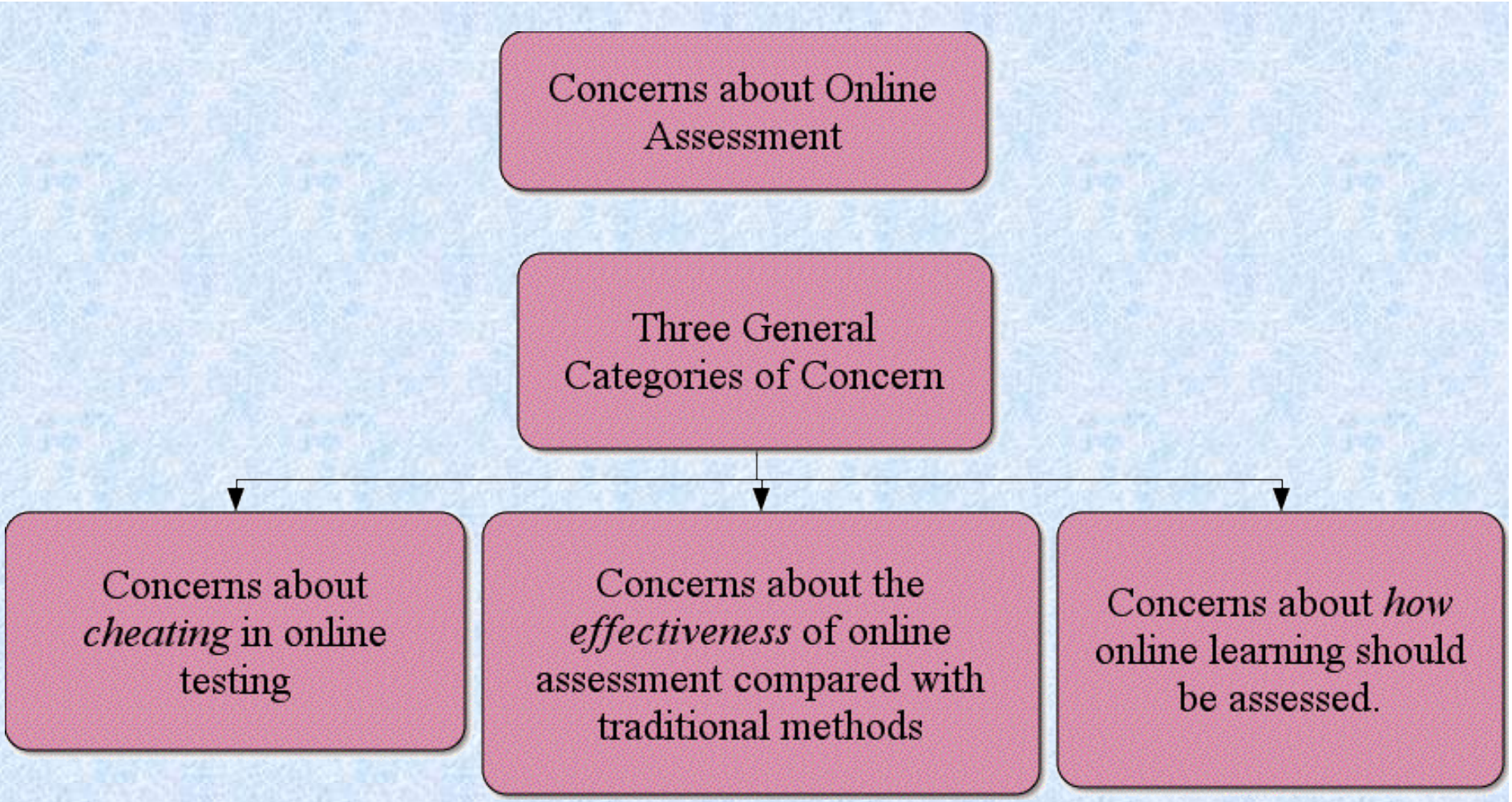
- We explore some considerations of assessing online work, and present some candidates for new forms of assessment in online environments:
  - We start with *Christensen's Theory of Disruptive Innovations*;
  - We move to some considerations of online assessment, including *performance based assessment*;
  - We then introduce the new assessments with examples.



Christensen, C. M., Horn, M. B., & Johnson, C. W. (2008). *Disrupting Class. How disruptive Innovation will change the way the world learns*. New York: McGraw Hill.

Why Disruptive Innovations Fail

- Christensen et al. (2008) introduce the concept of *cramming*.
- In cramming, disruptive innovations are inserted into an existing system to co-exist with current practice.
- Often this causes a disruptive innovation to become a sustaining innovation.
- They note that the educational system is frequently the victim of cramming.



Overall however, most authors are positive about online assessment.

Beyond Testing

- Although many authors can't seem to get past the idea that assessment equals testing, a number suggest that we can go beyond this:
  - Bennett (2002, p. 4) notes that, "As technology becomes more central to schooling, assessing students in a medium different from the one in which they typically learn will become increasingly untenable."
  - Jonassen suggests (1996) that we are obligated to assess constructive outcomes (performance) rather than reproductive learning.

Performance Based Assessment

- Performance based assessment is a disruptive innovation– a new paradigm of assessment.
- Performance based assessment is used for assessment in a variety of situations outside of the educational system, the most prominent being sports in which things like batting averages, etc. are common.
- The University of California has developed a system for generating performance based metrics.
- Using data mined from online environments, we can create performance based metrics for our students.

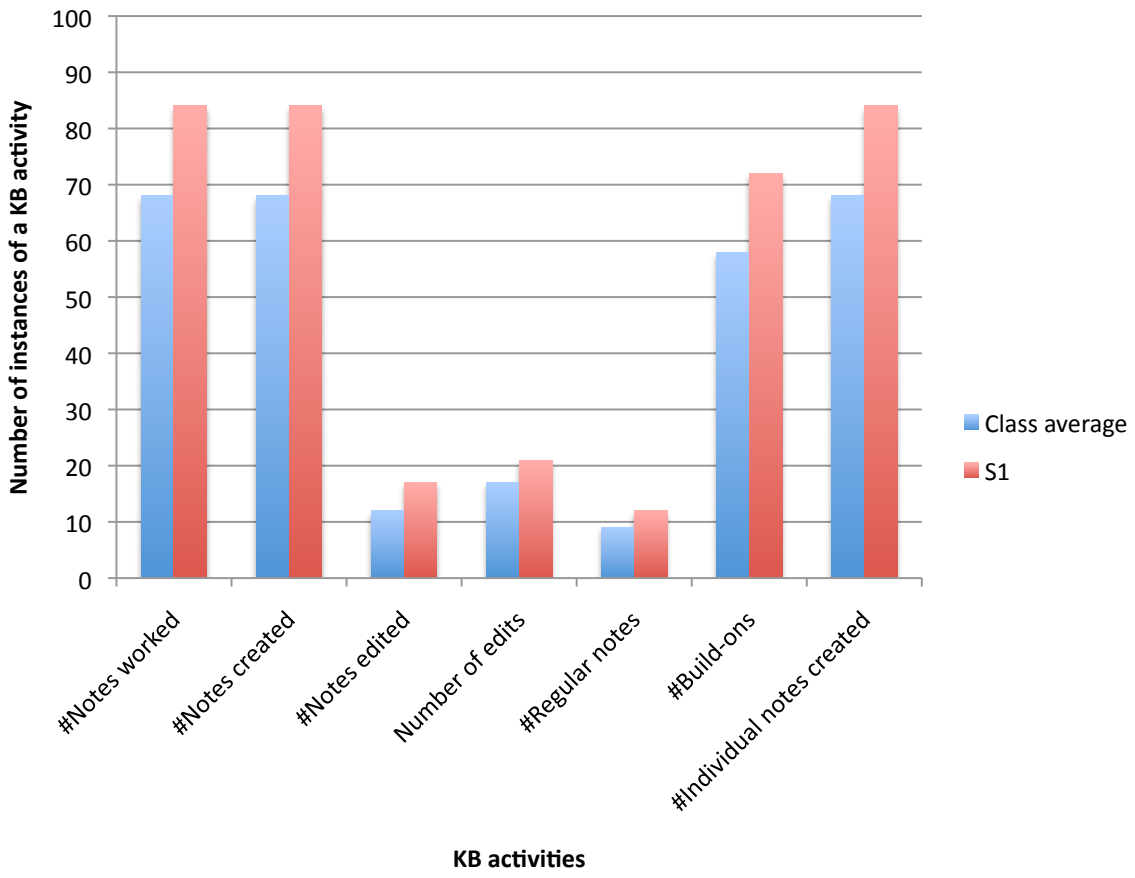
Proposed Assessment Metrics

- A Knowledge Building Profile
- A Build-On Tree Profile
- Concentric Social Network Displays of Influence, Outreach, and Importance

Methodology

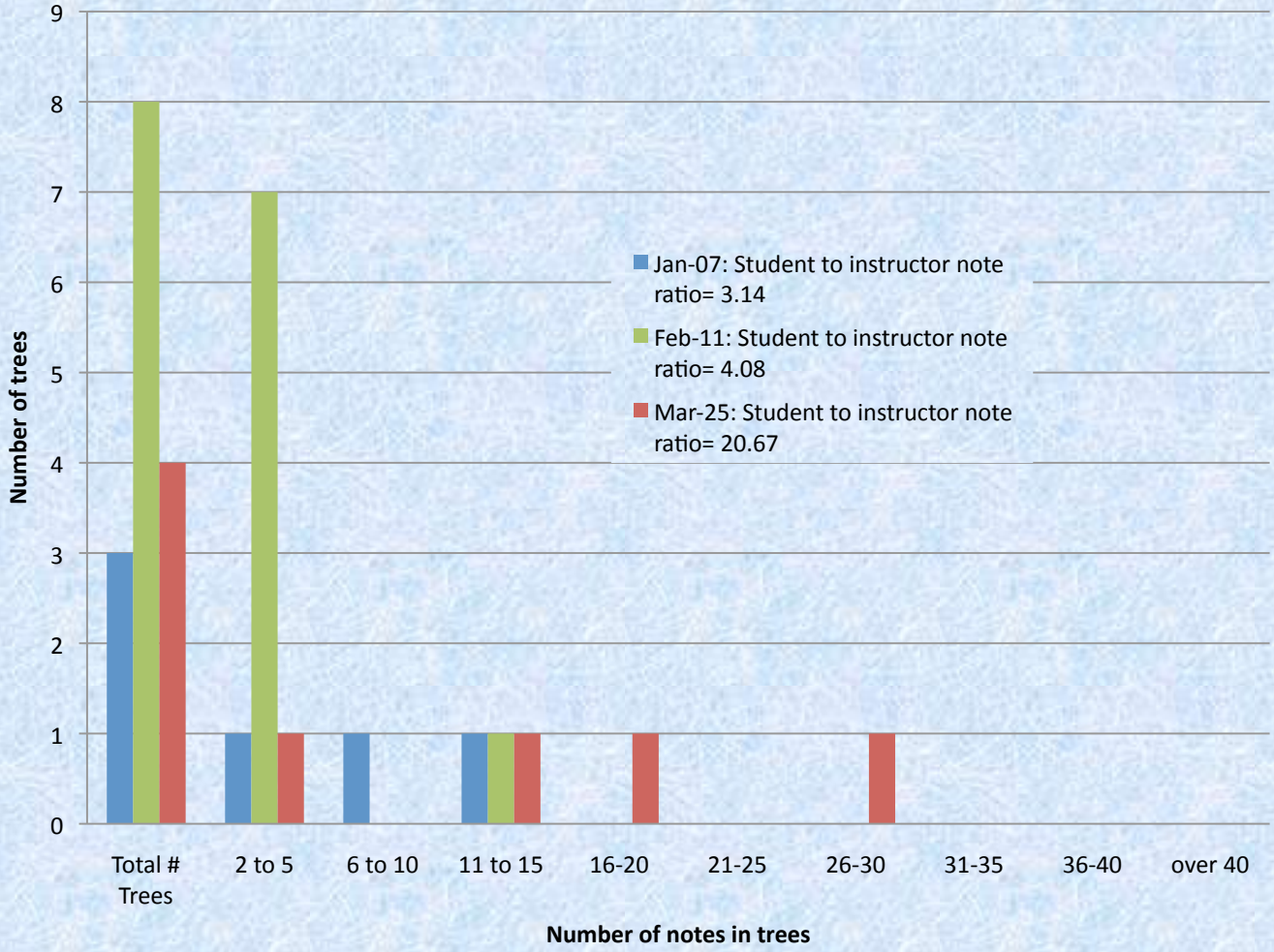
- We used the ATK (analytic toolkit) to obtain data on the performance of students in a third-year university course for science students who are considering a science education career.
- The course was the second section of a two-part course; most students had not used online learning in any form prior to taking the first section of the course and so were relative newcomers.
- We used data from these students to create examples of the metrics we are introducing.

Knowledge Building Profile



The KB Profile takes the student's scores on a number of common KB behaviours, and compares them to the class average for the same measures. These results are presented graphically. The class average is in blue; student data are in pink.

Build-On Tree Profile–A group metric



This graph shows a comparison of the number of build-on trees of various sizes in three weekly views.

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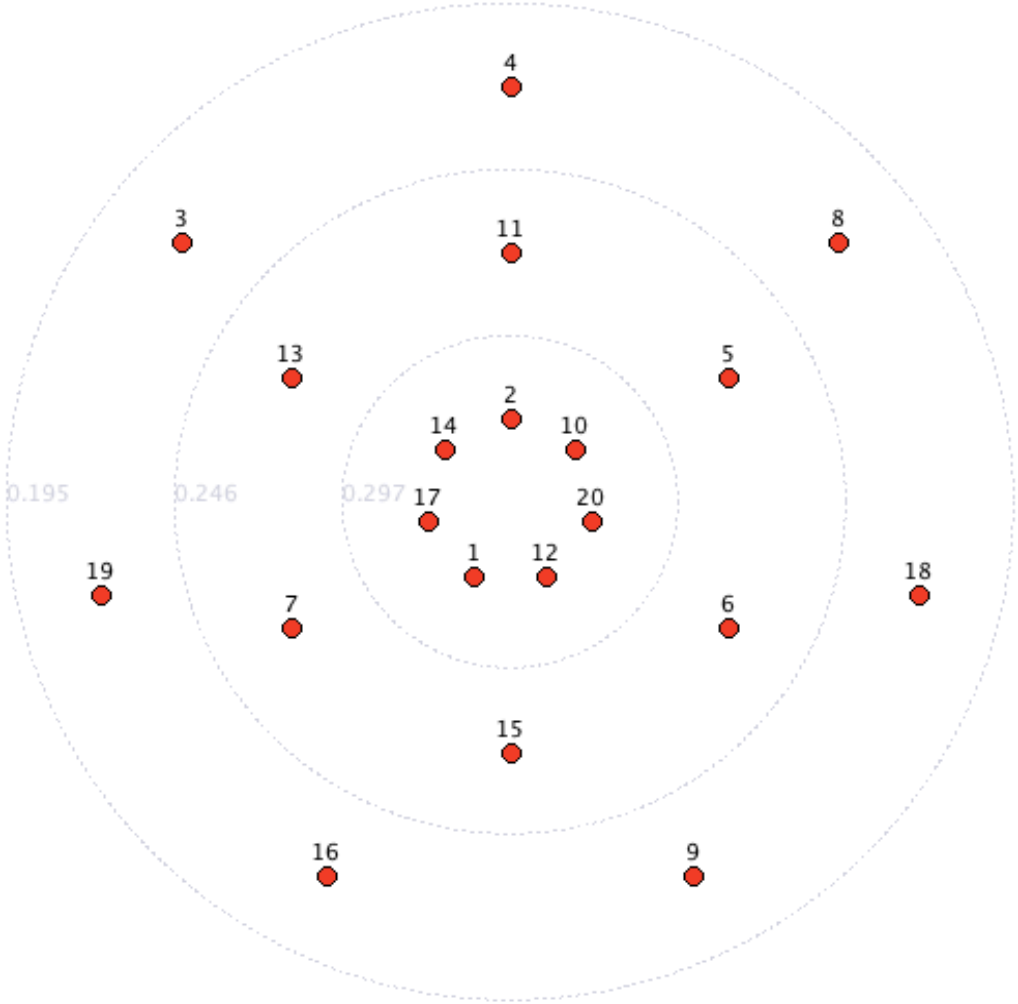
Social Network Concentric Display



Social network ***importance*** (Eigenvector) data are arranged in a set of three concentric circles. Students in the centre ring are more important overall to the group than students in the medial or peripheral groups.

In combination with other data, this can help identify maladaptive patterns.

Conclusions: Sustaining vs. Disruptive Assessment

This study was not exhaustive and more research is needed to determine the utility of the measures presented.

A key consideration in developing metrics such as those proposed is to avoid allowing them to be converted into sustaining innovations. We need to contextualize any new metrics in terms of knowledge building and knowledge building classes, and not compare them to traditional classes and measures. Online assessments and performance based metrics are disruptive innovations and should be treated as such or they will fail.

Questions?