NOT ALL THAT COUNTS IS SAFE FOR COUNTING:

EMPIRICAL BARRIERS TO COLLECTING LEARNING DATA FOR ASSESSMENT PURPOSES

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WHAT IS THE PROBLEM?

- Problem - for the past 7 years, my experience is that efforts to enhance effective instruction, assessment and learning remains limited because we do not have reliable and valid psychosocial measures that assess core aspects of the learning process – student-teacher relationships.

- Analysis - collection of these data will allow us to redesign formative assessments that are psychologically relevant for students.

- Solution - without understanding the foundational student-teacher relationship, we cannot meaningfully improve our understanding of students' learning process, which includes assessment performance.

PROBLEM
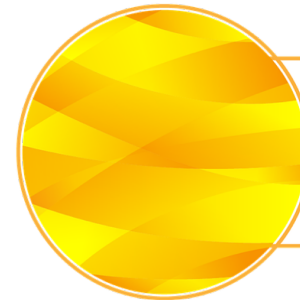
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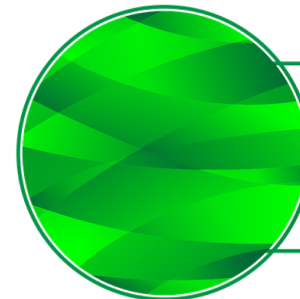
SOLUTION

WORKING PREMISES AND RESEARCH QUESTIONS

- Effective instruction, assessment and feedback need to be **responsive to student characteristics** to enhance learning (Bransford, Brown & Cocking, 2000).

- **Student-teacher relationships need to be supportive** to help motivate students to learn. This is true especially for at-risk students (Hughes, Wu, Kwok, Villarreal & Johnson, 2012; Pianta, 2016).

- A **key data source** for enhancing effective instruction and learning for all learners is to find out how students and teachers feel about each other. However, Hughes et al., (2012, p. 2) indicate "….it is surprising that few longitudinal studies have tested the effects of student-perceived teacher relationship quality on student motivation and achievement during the elementary grades."

  - What is the level of knowledge teachers have about their students in the instruction, assessment and feedback process?

  - What is the trust level students have toward their teachers in the instruction, assessment and feedback process?

AMERICAN PSYCHOLOGICAL ASSOCIATION (APA)

Instructional Climate/Learning Environment

Explicit discussion of learning process, value of training errors, productive failure; *creation of trust (pedagogical alliance) and empathic peer environment*

Little or no explicit discussion of learning process, value of training errors, productive failure; neither trust iscreated nor empathic peer environment

Creation of Trust Between Students and Teachers (Pedagogical Alliance)

Student Mental or 'Working' Models of Learning

Is learning environment trustworthy and empathic? Yes, I feel a sense of engagement and wellbeing to learn, show what I don't know and accept feedback.

Is learning environment trustworthy and empathic? No, I do not feel a sense of engagement and wellbeing to learn, show what I don't know and trust feedback.

Enhance Student Response to Instruction (Interventions)

FORMATIVE FEEDBACK

Student Learning and Assessment Performance

FECKLESS FEEDBACK

Performance is more transparent of misconceptions and errors; initially more errors in response to interventions & diagnostic, formative assessments but fewer errors on summative assessments

Higher level thinking, mastery goal orientation, innovation, creativity

Performance is less transparent of misconceptions and errors; initially fewer errors in response to interventions & diagnostic, formative assessments but more errors on summative assessments

Lower level thinking, performance avoidant goal orientation, less innovation, less creativity

- Learning Errors and Formative Feedback (LEAFF) model (Leighton, Chu & Seitz, 2013)

- Teacher-student relationships plays a foundational role in children's formative assessment and response to feedback (Pianta, 2016).

- Teachers have little formal training in child development and psychology:

  - American Psychological Association (Division 15 [Educational Psychology]) led committee in the 1990s to examine the role of educational psychology instruction in teacher education programs (Patrick, Anderman, Bruening, & Duffin, 2011).

  - In teacher education program in Alberta – a single 3-credit course and trained psychologist is not required instructor.

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SITUATING THESE QUESTIONS

- Starting in 2012, local and then nationally-funded research program designed to:

- Understand systems children embedded within - **school culture and corresponding assessment practices** (2012-2015).

- Develop **Formative Assessment and Instructional Strategies (FIAS)** to enhance teaching and learning in math and science at the elementary school level (children ages 5 to 11 years).

  - Facilitate teacher's self-awareness and understanding of children's perspectives as learners.

  - Facilitate teachers' insights of their instruction in math and science.

  - Facilitate the delivery and use of formative feedback by teachers and students, respectively.

  - Reduce children's negative emotions related to math and science.
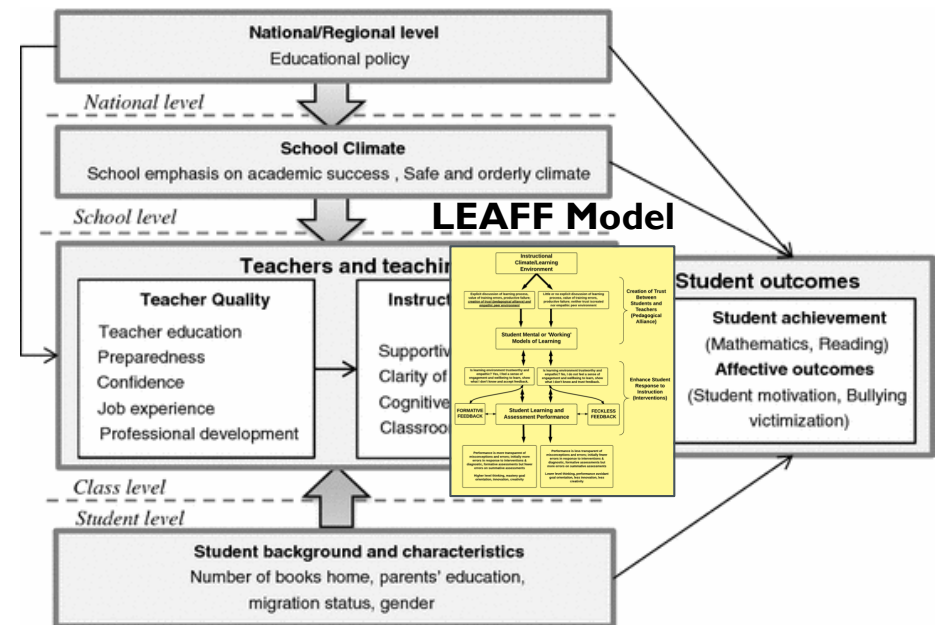
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WHAT IS THE SINGLE MOST IMPORTANT ASPECT OF ASSESSMENT FEEDBACK?

FACILITATE THE DELIVERY AND USE OF FORMATIVE FEEDBACK

- In a nutshell, what does formative feedback entail?

  - Teacher scaffolding within zone of proximal development (Vygostky, 1978).

  - During and after assessment activity, teachers observe, ask questions and discuss with child about what he or she is doing or has done.

  - Conversation designed to provide fine-grained information to help the child acquire skill or knowledge.

  - Formative feedback delivery and receptivity is **premised on open, trusting relationship between teacher and child.**

  - **Collect data from teachers and students about emotional bond, instruction, and feedback:**

    - **Focus group with teachers.**

    - **Adapted surveys with students** (Ali, Rose & Ahmed, 2015; Forsyth, Adams, & Hoy, 2011; Leighton, Tang, & Guo, 2015; Midgley, Maehr, Hruda, Anderman, Anderman, Freeman, Gheen, Kaplan, Kumar, Middleton, Nelson, Roeser, & Urdan, 2000).

TEACHER FOCUS GROUPS (LEIGHTON & QUALIE, 2019)

- First in Sept 2016 and second in Feb 2017 with 15 elementary school teachers (K-6; 11 female and 4 male).

- Years of practice (2-20 years) and undergraduate degrees in Elementary Education.

- Each session audio-recorded and lasting 4 hours.

- Independent RA transcribed all audio and reviewed transcripts for themes.

- Each identified theme required several examples of "verbatim" transcript evidence.

- First author reviewed all themes for finalization.

Number	Focus Group 1 Questions (Sept 2016)
1	Thinking about the program of studies in math and/or science, are there specific areas or topics that you find students have an especially difficult time understanding? Increased misconceptions?
2	If so, how do you prepare to teach these topics? What tools or techniques, if any, do you to help students better understand the content?
3	Are there specific tools or techniques that you consider to be "sure things" in helping students learn?
4	In thinking about your students in the classes you teach, how do you deal with different learning styles and learning rates?

Number	Focus Group 2 Questions (Feb 2017)
1	Imagine a student puts up his/her hand and shares an answer in class and it is wrong. What do you as a teacher say? Do you feel any discomfort with communicating to students that a solution and/or process that they produced is wrong? Privately? Publicly? Why?
2	Contingent on what you say in response to the student, what do you wish the student to feel and/or think in response to your language? Do you think you achieve this when you say what you do? How do you know? What do you wish you could say?
3	Consider the following: What kinds of language and responses characterize a learning environment that is caring and innovative and supportive of exploration and mistakes as part of the formative learning and assessment process? What kind of language would be most clear and least ambiguous to students? What implicit feedback is conveyed to students when the environment indicates freedom to explore and make mistakes but the language is apprehensive when mistakes are made? How do we facilitate?
4	What if we created a storybook with superhero characters that had special powers? What are your thoughts on materials – Mistakes, Tryhard, and Smarty?

RESULTS - MAJOR THEMES (LEIGHTON & QUALIE, 2019)

- Teachers use a variety of tools to help children learn, many of which involved *techniques to foster strong emotional bonds.*

- **Lack of awareness** about how children felt about feedback.

  - Teachers use *indirect and direct feedback language* to convey to children that they are on the wrong track.

- **Discomfort teachers felt about how best to respond to student mistakes** to avoid discouraging students

  - Teachers recognized that in some cases their **feedback language was indirect** and potentially ambiguous to students (mentioned in focus group 1).

  - Key mitigating factors were the *confidence level of the student, the timing and culture of the classroom and teacher experience.*

STUDENT SURVEYS – EMPIRICAL BARRIERS

- At two schools where a research focus was claimed as part of mandate, significant concerns arose over the wording of surveys for children.

- Although in several preparatory meetings, constructs such as trust, achievement orientations, mistakes and feedback were identified, it was upon seeing the directness of the items that concerns were verbalized.

- One school indicated that asking students about whether they trusted the teachers amounted to evaluation of teachers and therefore violated their union contracts; they terminated further participation.

- A second school indicated that asking students whether they felt dumb or stupid went against the allowable words used in school; survey items then required modification.

SECTION 4 (ACHIEVEMENT ORIENTATION)

1. I like to do my school work, even if I make a lot of mistakes, because I like to learn.
2. I like to learn new things at school

me think.

at it.

could answer the teacher's

am good in school.

sses.

other students.

an the other students in my class.

portant to me.

d in my class.

myself.

I am dumb.

umb.

look dumb.

SECTION 3 (FEEDBACK)

1. My teacher always tells me how I'm doing on my school work.
2. When my teacher tells me about my school work, it helps me to do better.

out my school work.

I'm learning.

w I'm learning because there is

m doing in my school work.

s me about my school work.

bout what my teacher says to

I feel sad sometimes.

ry to do something about it to

nd not so well in my school work.

hool work.

ork.

work help me a lot.

Adapted from Ali, N., Rose, S., & Ahmed, L. (2015)

Adapted from Midgley, C., Maehr, M. L., Hruda, L. Z., Anderman, E., Anderman, L., Freeman, K. E., Gheen, M., Kaplan, A., Kumar, R., Middleton, M. J., Nelson, J., Roeser, R., & Urdan, T. (2000)

SECTION 2 (MISTAKES)

1. When I answer a question wrong in front of my classmates, I am afraid they might laugh.
2. If I do or say something wrong in front of my classmates, I hope they won't

chool and I don't know what to say, I

swer when I'm in school.

school activity, I wonder why.

school, I don't give up.

l, I try again until I get it right.

school, I ask my teacher for help.

school, I try to practice until I get it.

t school, I try to do something about

now the right answer in school.

know the right answer at school.

wasting your time trying to learn it.

akes I make in school.

or do something wrong.

Adapted from Leighton, J.P., Tang, W., & Guo, Q. (2015)

SECTION 1 (TRUST)

1. My teacher is always ready to help me.
2. My teacher is easy to talk to.
3. I am well cared for at this school.
4. My teacher does everything to help me learn.
5. My teacher really listens to students.
6. My teacher is always honest with me.
7. My teacher does a terrific job.
8. My teacher is good at teaching.
9. My teacher believes all students can do well.
10. My teacher is too busy to help students.
11. Students at this school can believe what teachers tell them.
12. Students learn a lot from teachers at this school.
13. Students at this school can depend on teachers for help.

Adapted from Forsyth, P. B., Adams, C. M., & Hoy, W. K. (2011)

PILOT CLINICAL INTERVIEWS WITH CHILDREN

- Two interviewers conducted 27 individual clinical interviews with children from K – Grade 6 (one boy and one girl from each grade); when prompted about their assent, one child reported desire to stop the interview.

- Structured interview protocol designed to ask children about survey items to gauge their behavioral comfort, understanding of language and reaction to items to inform revision of items.

- Four findings and a conclusion:

  - Students, especially older students, appeared behaviorally uncomfortable responding to items about their teachers.

  - Students were not surprised by words such as dumb or stupid and recognized that these words were used in the playground.

  - Younger students indicated more confusion than older students with wording of items (e.g., I like to hear what my teacher tells me about my learning).

  - Most students (80%) quickly endorsed social desirable response options – however, remainder of students appeared more at ease indicating less desirable responses such as indicating that they did not want to make mistakes in class, that they sometimes feel sad when their teacher tells them how they are doing, and/or that they do not always feel special around their teacher.

  - *Surveys may be too blunt an instrument to gather data about how students' view and feel about their relationships with teachers*

ACCOUNTING FOR CONCERNS – EMPIRICAL BARRIERS

- Hughes et al. (2012):

  - Concerns that children below grade 4 may not be able to provide reliable or valid information about their relationship with teachers:

  - "Indeed, the relatively few studies utilizing both teacher and child reports of TSRQ among students in grades K-2 show **low correspondence between the two informants** (Henriccson & Rydell, 2004; Hughes et al., 1999; Mantzicopoulos & Neuharth-Pritchett, 2003; Murray, Murray, & Waas, 2008)." (p. 2)

  - "With children in grades 3–6, correlations between student and teacher reports of teacher support are significant but small (Gest, Domitrovich, & Welsh, 2005; Rey, Smith, Yoon, Somers, & Barnett, 2007; Skinner & Belmont, 1993). Furthermore, teacher reports of relationship support are more highly correlated with peer nominations of teacher-student relationship support than are child reports of relationship support (Li, Hughes, Hsu, & Kwok, 2012). **These findings suggest that child and teacher reports of the relationship are assessing different constructs."** (pp. 2)

  - "In a cross-sectional study of kindergarten students, only teacher reports of TSRQ predicted teacher-rated behavioral adjustment and achievement, whereas only **student reports predicted student liking for school** (Murray et al., 2008)." (p.2)
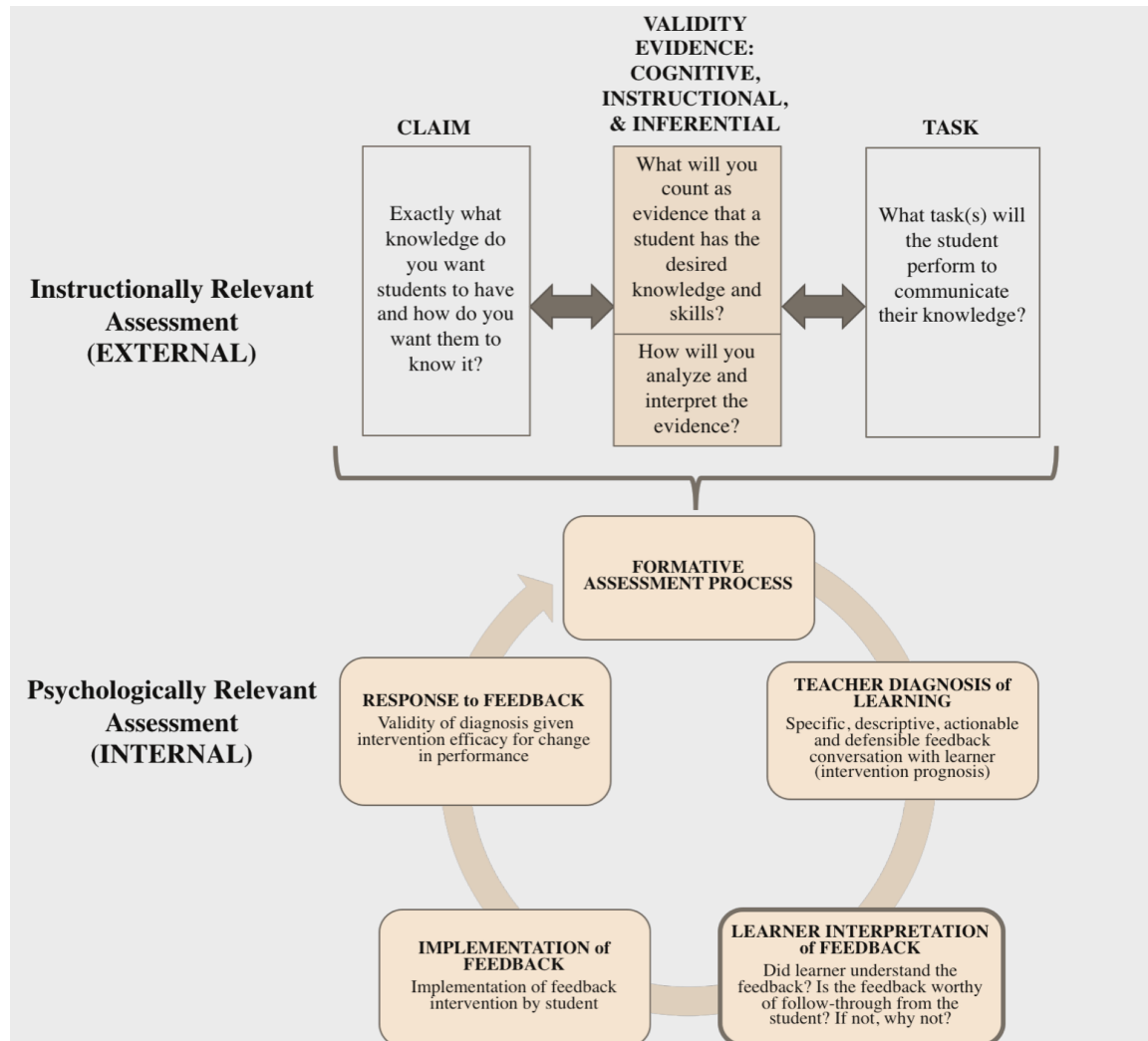
ACCOUNTING FOR CONCERNS – EMPIRICAL BARRIERS

- Child reports of their parental relationships also have **low correspondence with parent** reports (Pelegrina, Cruz Garcia-Linares, & Casanova, 2003). However, child reports are more predictive than parent reports about students' academic-related outcomes (Pelegrina et al., 2003).

- Likewise, adolescent reports of their social support account for changes in their psychosocial adjustment, even when these **reports are at odds with more objective data** (McElhaney, Antonishak, & Allen, 2008).

- What these data suggest is that **children's *perceived teacher support* may be as important** as enacted support to how students react to interactions and consequent academic outcomes.

Students' perceptions of teachers requires closer investigation to understand facets of the underlying construct and variables. Finer-grained methods must be used.

For example, students may think reporting confusion with what their teacher tells them will get them in trouble. Or students may think it is their fault that they feel nervous or lack motivation with assessment activities. Or students may think that saying they do not understand a concept after repeated tries will disappoint the teacher.

Instructionally-relevant assessment is different from psychologically relevant assessment for students (Leighton, 2019). A reliable and valid assessment is highly unlikely to resonate with a student unless the student can (a) trust the teacher to inquire about the feedback received, (b) feel at ease with the teacher to express cognitive confusion, and (c) and be behaviorally comfortable showing the teacher what has been understood during assessment.

Instructionally Relevant Assessment (EXTERNAL)

CLAIM
Exactly what knowledge do you want students to have and how do you want them to know it?

VALIDITY EVIDENCE: COGNITIVE, INSTRUCTIONAL, & INFERENTIAL
What will you count as evidence that a student has the desired knowledge and skills?
How will you analyze and interpret the evidence?

TASK
What task(s) will the student perform to communicate their knowledge?

FORMATIVE ASSESSMENT PROCESS

Psychologically Relevant Assessment (INTERNAL)

RESPONSE to FEEDBACK
Validity of diagnosis given intervention efficacy for change in performance

TEACHER DIAGNOSIS of LEARNING
Specific, descriptive, actionable and defensible feedback conversation with learner (intervention prognosis)

IMPLEMENTATION of FEEDBACK
Implementation of feedback intervention by student

LEARNER INTERPRETATION of FEEDBACK
Did learner understand the feedback? Is the feedback worthy of follow-through from the student? If not, why not?

# ACCOUNTING FOR CONCERNS – POLITICAL BARRIERS

- Why are measures not being developed to collect accurate information from children about their perceptions of instruction, assessment and feedback?

- We know data on how students perceive their teachers matter for understanding how they make sense of their learning and thus could be included in formative assessment plans, but it is curious we are not developing or collecting this information?

- Thus, another empirical barrier **may be a lack of political will** to allow for the development and collection of these data.

- Teacher professional organizations may not support such endeavors unless they are mandated by government and parental groups.

- We have created a research-practice partnership with schools to collect this information with limited success.

IMPLICATIONS

- Problem - for the past 7 years, my conclusion is that efforts to enhance effective instruction, assessment and learning will remain limited unless we are permitted to develop reliable and valid psychosocial measures that assess the core of the learning process.

- Analysis - collection of these data will allow us to design formative assessments that are psychologically relevant for students.

- Solution - without understanding the foundational student-teacher relationship, we cannot meaningfully improve our understanding of the learning process.
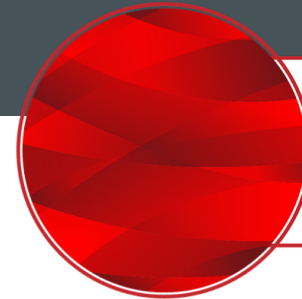
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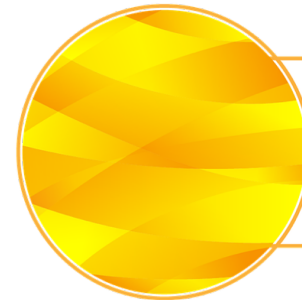
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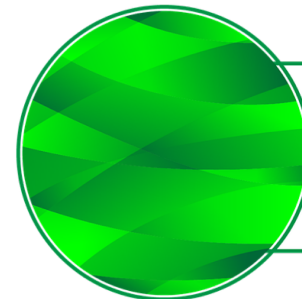
SOLUTION

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