Beyond the Design of Assessment Tasks: Expanding the Assessment Toolkit to Support Teachers' Formative Assessment Practices in Elementary Science Classrooms

Sania Zahra Zaidi, Samuel Arnold, Elizabeth M. Lehman, & Carla Strickland

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Introduction

Formative assessment practices are important in advancing student learning but teachers can find them difficult to implement. We sought answers to the question:

What do elementary teachers need from resources designed to assist them in making sense of student responses on 3-dimensional science assessments?

Findings are framed within these **strategies for successful formative assessment** (William & Thompson, 2007).
1. Clarifying learning intentions & criteria.
2. Discussions to elicit evidence of student understanding *(focussed on task implementation)*.
3. Providing feedback to students.
4. Students as instructional resources.
5. Students as owners of their learning.

Methods

Sample. Five teachers who collaborate with us on a larger project. All teachers use NGSS-aligned instructional materials, and had at least 5 years experience teaching elementary grades.

Data Sources. (1) a **survey** about making sense of assessment information by using resources such as rubrics, (2) a **focus group** on what teachers find important and useful, and the barriers they face in using resources designed to make sense of assessment information in science, and (3) individual **interviews** to gather feedback on an initial rubric design.

Analysis. We examined the data for emerging themes that would help identify key resources for teachers. We enacted an open coding approach followed by focus coding in order to develop themes from our data (Maxwell, 2013). This process was followed by the creation of conceptual categories in which claims were grounded in data (Emerson, Fretz, & Shaw, 2011).

Key Teacher Needs / Resources to Address Needs

Strategy 1: Clarifying and Sharing Learning Intentions and Criteria for Success

Key Teacher Needs	Resources to Address Needs
1. Information about 3-dimensional learning being assessed by a given task and how that builds towards a given standard (e.g., PE).	**Educative Tool** with two types of information: 1. Task's link to a standard (e.g., PE): A resource that unpacks the standard and outlines which aspects of the standard are addressed by a given task. 2. Task Specific: Resource that highlights the dimensions assessed in the task, how they are integrated.
2. Information for students about the criteria for evaluation while they work on the task.	Co-design with teachers a **student**-facing **resource** that highlights **criteria** for success.

Strategy 3: Providing Feedback That Moves Learners Forward

Key Teacher Needs	Resources to Address Needs
3. Quick application of criteria on student responses (e.g., must not include too many qualifiers). 4. Criteria accompanied by grade appropriate examples that showcase different levels of student proficiency. 5. Determining student progress on more than one dimension, giving more information that can be used to adapt instruction. 6. A multi-level scale of proficiency. 7. Scope in rubrics for adding additional criteria based on classroom needs and expectations. 8. Guidance on next steps based on levels of proficiency.	**Analytical Rubric** with the following features: 1. Provides information on multiple integrated components of the learning target. 2. Separates evaluation of student responses from the determination of the level of proficiency. 3. Has multiple levels of proficiency (whenever possible). 4. Contains example responses highlighting how a criterion might be met. **Next Steps Resource** through a practitioner virtual learning community (VLC) where teachers are able to gain insight from their peers into multiple ways of adapting next steps in instruction.

Strategy 4: Activating Students as Instructional Resources for One Another
Strategy 5: Activating Students as the Owners of Their Own Learning

Key Teacher Needs	Resources to Address Needs
9. A student-facing resource about criteria in grade appropriate language for peer and self-review.	A **student-appropriate rubric** for **self and peer review.**

Example Resources

Participate in discussions — Understanding PROGRESS in Science

References

Emerson, R. M., Fretz, R. I., & Shaw, L. L. (2011). *Writing ethnographic fieldnotes*. University of Chicago Press.

Maxwell, J. A. (2012). *Qualitative research design: An interactive approach*. Sage Publications.

Wiliam, D., & Thompson, M. (2007). Integrating assessment with instruction: What will it take to make it work? In C. A. Dwyer (Eds.) The future of assessment: shaping teaching and learning (pp. 53-82). Lawrence Erlbaum Associates.

Next Steps

1. We will continue to solicit feedback from teachers on the format of the rubric, as well as other resources we develop to address these needs.
2. We will develop student facing resources in collaboration with teachers for all assessment tasks.
3. The VLC will be continually updated as resources are redesigned or created.