Formative Assessment as a Response to Standards Reform Movement

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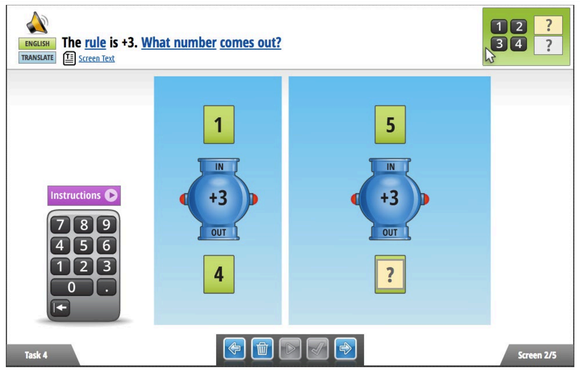
Abstract

ONPAR is a U.S. Department of Education funded project, developing computerized classroom assessments to support teaching and assessing students' knowledge of complex mathematics and science These assessments integrate into existing classroom curriculum, and are appropriate for use with all students, using engaging multi-media content to greatly reduce accessibility-barriers for English learners and other students who struggle with language-heavy traditional tests. ONPAR is designed using the latest college and career readiness standards, including the Common Core State Standards for Mathematics, Next Generation Science Standards, and Framework for K-12 Science Education.



Background

- ONPAR is a methodology established to explicitly improve academic score meaning of non-native speakers as well as others.
- Drawing from linguistics and semiotic theory, ONPAR capitalizes on the affordances of different modalities to create a multi-semiotic 'grammar' of assessment design.
- ONPAR questions measure a variety of skills and depth of knowledge conventionally assessed through tasks requiring substantial language.
- ONPAR tasks utilize representations such as simulations, animations, image rollovers, sound, interactive sequences, and some L1 and L2 text and oral support to convey to students what is being asked in the items.
- Within ONPAR tasks, students are asked to respond by building, modeling, assembling, categorizing, or producing relational or inferential explanations using screen stimuli.
- There are approximately 20 different types of response spaces currently used in ONPAR tasks.
- Underlying algorithms capture and score responses, conceptual threads and screen interactive processes and strategies in real time and individualized student reports are available immediately.

Methods and Materials

Participants: . In January and February, 2017, large-scale tryouts of some math and science tasks began in Wisconsin and Nevada. There were 580 students and four teachers that took part in the tryouts of 2 math tasks, and 697 students and six teachers that took part in the tryouts of a science task.

Objectives:

(1)Quality control of the technology

(2)Determine the accuracy of the task-level and language algorithms as they are applied to a wide range of student and classroom reports.

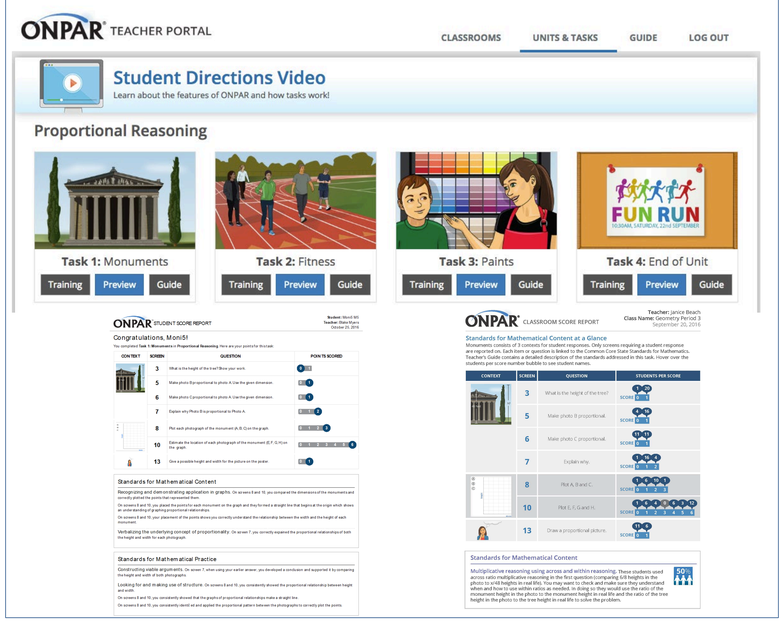
(3) Investigate how well teachers implement the tasks.

(4)Establish in-person online educator trainings and WebExes work for the teachers, observe comfortable-ness of the teachers, and address feasibility, usability and content concerns and questions as they arise.

Procedure:

- Research team periodically meets with participating teachers and administrators via WebEx to provide professional development and review ONPAR materials.
- Research team conducts site visits to participating schools to assist teachers in implementing tasks and observe usability.
- Participating teachers complete three online performance tasks and a corresponding end-of-unit test.
- Participating teachers complete review of items and task materials and a student ability survey.

Materials:



Results

Quality control of the technology

- Technology was functional across major internet browsers.
- Bandwidth and firewall issues occurred in some locations.
- Different IPADs versions led to problems for some response items.

Accuracy of the task-level and language algorithms

- A preliminary evaluation of the algorithms and language populating the reports showed tens of hundreds of lines of language per task per student were generally populated correctly for the range of students and on both the student and classroom reports.
- Classroom report links to particular student names at different scores and with different codes generally worked, as did linking from student names to their individual reports.

Investigate how well teachers implement the tasks.

- Teachers were enthusiastic and frequently asked questions prior to and after implementing the tasks.
- Some teachers lack familiarity with technology such as uploading their classroom rosters.
- There was difficulty maintaining high cognitive demand of the tasks.
- Some teachers used the portal and teacher guides to setup the tasks and debrief with students.

Establish trainings and address feasibility and usability

- Teachers liked the level of challenge, the content, the digital nature.
- Students generally loved the digital nature, and both teachers and students liked and seemed to use the oral English and the oral Spanish (as relevant), as well as rollovers etc.
- Students found the tasks challenging.
- Professional developments were useful for teachers and administrators.

Summary and Next Steps

- The large-scale recruitment of participating pilot sites where the repeated measure trials of the tasks and materials will be conducted Spring 2017.
- Student and teacher data will be gathered within classrooms, and standardized state/district data on student status, and state test data will be collected.
- Data will be collected surveying teachers about usability to identify the potential and constraints of the items to improve and meet the needs of teachers and students.

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