

## The ONPAR Project

The Obtaining Necessary Parity Through Academic Rigor (ONPAR) projects in Math and Science, jointly being carried out by the Center for Applied Linguistics and the WIDA Consortium operating out of the Wisconsin Center for Educational Research at the University of Wisconsin, is investigating how to develop and defend the validity of dynamic, interactive, computer-based math and science assessment items in elementary and middle school. The intent is that the items and test cores constructed for them demonstrate comparability, at the test score level, to general scores from large-scale test cores used currently in state assessment systems. In particular, the focus of this project is to develop these items and test cores in such a way that they are valid for English language learner (ELL) students with the lowest proficiency in English, to give these students a reliable test that allows them to demonstrate the science and math knowledge they may have acquired from the educational experience in their home countries. The ONPAR items are being developed to be equivalent to general multiple-choice and constructed-response math and science items, although different approaches are being used that more appropriately address the needs of the ELL population, while still measuring the same content and cognitive complexity targets.

At this stage of the project, two alternative approaches to ONPAR item development are being developed and tested. Both approaches operate on the assumption that the language load of traditional items renders these items inaccessible to ELLs. In one approach, dubbed Low Language, the language of the traditional items is reduced following principles generally advanced by plain language and universal design advocates. In addition these items are, at the test taker's option, supported through limited use of the ELL's home language. The second approach, dubbed Very Low Language, reduces the language load even further by relying on the test taker's ability to infer the item's task demand through appropriate cues. Home language support is not available. A side investigation of both projects aims at explicating the approach taken in representing item content through a theoretically sound, psychometrically defensible framework informed by current research in linguistics, discourse studies, and multimodal semiotics.

The ONPAR Science project (EAG Grant #S368A060007 to the Rhode Island Department of Education) is building test items from secure test forms developed as part of the New England Common Assessment Program (NECAP), and the work is being supported by ongoing interactions regarding item content and documentation with the NECAP states (Rhode Island, Vermont and New Hampshire). Items will be trialed in controlled studies at two grades: 8th in Spring 2008 and 5th, with 4th grade items, in Fall 2008.

The ONPAR Math project (EAG Grant #S638A070001 to the Illinois State Board of Education) will select a range of states' released test forms as the basis for item development and build on knowledge gained from the ONPAR Science project. Iterative cognitive lab trials which will be held in early 2009 will inform the development process, and final items will be field tested with a large population of students in fall 2009. Both ONPAR Science and Math item pools will ultimately be specified in a common set of appropriate grade-level standards arrived at by alignments of the standards of a core set of states, national and international organizations, and professional advocacy associations.

The field tests for ONPAR Science will be conducted by CAL/WIDA staff in several sites using laptop computers loaded with the assessment software. Responses are stored locally using a data structure and file format that can easily be aggregated across individual student data. The ONPAR Math field test will emulate an operational test by utilizing the computer facilities and trained staff of participating districts.

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The test items will be administered over the Internet with responses sent to a central database server, which will also automatically score the items and prepare reports.

For both the ONPAR Science and Math projects, native English speakers and ELL students at three levels of English proficiency will be included in the cognitive labs and the field trials. The field test administration engages test takers in groups ranging from 10 to 20. Students are randomly assigned to one of three test forms: the traditional items form, the ONPAR Low Language form, or the ONPAR Very Low Language form. Data are collected on student performance on individual items of the test, and on three predictor variables. The first predictor, item accessibility, concerns student access to the test items with data gathered through a questionnaire students fill out for each item following the test administration, the second, student science or math ability in the items' targets, gathered through a questionnaire completed by the student's teacher, and third, a judgment of the students' English language proficiency. These data points: accessibility to items, ability in the item target, and students' language proficiency are used to interpret the performance of individual items. In addition, the fits of these variables within a set of probable explanatory models will be tested using structural equation modeling procedures. Student results will be compared across the three test forms to determine the extent to which the ONPAR items are a more a reliable measure of science and math knowledge for students with limited English language proficiency.

At each step in the development process, information gathered is integrated and addressed to inform subsequent item construction and piloting processes and data is analyzed to evaluate the defensibility of the products. The final aim of the project is to intelligently and productively guide the development of future operational forms of core items that can assess common content standards across states at appropriate levels of cognitive and linguistic complexity.

For additional information about the project, please contact the Principal Investigator, Rebecca Kopriva ([rkopriva@wisc.edu](mailto:rkopriva@wisc.edu)) or the Program Manager, Jim Bauman ([jim@cal.org](mailto:jim@cal.org)).