

Linking FSA 2008 Grade 4 Reading Results to PIRLS 2006 Determining PIRLS School Level Performance Based on School FSA Scores

A. Aligning Skills and Content

Aligning scores from two reading assessments is possible only if the same skill or content is being measured. Teachers with Grade 4 reading assessment experience were asked to review both assessments (FSA and PIRLS). They established the following commonalities:

- The construct of reading and its definition are aligned.
- The process of comprehension from FSA and PIRLS table of specifications are parallel as are the weighting of each process as reflected in both assessments.
- Both assessments reflect reading for information and reading for the literary experience (purpose).
- Both assessments have multiple-choice, short answers and extended answers.

The reviewers concluded that the two reading assessments measure similar reading skills.

B. Aligning Scores

A three-step process to align FSA 2008 Grade 4 Reading scores with the PIRLS 2006 international scale scores was undertaken:

Step 1:

Each FSA 2006 score gets a corresponding PIRLS 2006 score through a linking procedure described below using the results of the 3,674 BC students who wrote both FSA 2006 and PIRLS 2006.

Linking FSA 2006 Scores to PIRLS 2006 Scores

A common sample of students who wrote both PIRLS and FSA in 2006 is identified.

- First, the distribution of PIRLS 2006 scores was compared with the distribution of FSA 2006 scores. The shape of the two distributions being different, an equipercentile method, instead of a linear method, was chosen to link scores from both assessments.
- Secondly, data from the common sample was fit into the beta distribution to produce a smoothed distribution before implementing the equipercentile linking to reduce linking error caused by discontinuity of test scores in the original distribution.
- Thirdly, equipercentile linking was performed and every student with a valid FSA score was assigned a PIRLS equivalent score.

Step 2:

FSA 2008 IRT scores were equated to FSA 2006 IRT scores using a set of common items. The purpose of equating FSA 2008 results to FSA 2006 is to align FSA 2008 results to PIRLS 2006, and not for comparing FSA results over time.

Equating FSA 2008 scores to FSA 2006 scores

A common sample of items used in FSA 2008 and FSA 2006 was identified.

- All FSA items are calibrated using Item Response Theory (IRT). IRT uses mathematical models to define a relationship between an unobserved measure of student performance and the probability of getting a dichotomous item correct or of getting a particular score on a polytomous item.
- After items are calibrated, they are defined by a set of parameters.
- Once the item parameters are known an estimated ability for each student can be calculated.

Through common items, results from FSA 2006 and FSA 2008 can be placed on the same scale.

Step 3:

Each FSA 2008 IRT score gets a corresponding PIRLS 2006 score. The average PIRLS equivalent score for each school is computed and compared to the PIRLS Intermediate International Benchmark (IRT score of 475). The PIRLS Intermediate International Benchmark is used to classify schools into two categories: at or above the Intermediate International Benchmark or below the Intermediate International Benchmark.

The *FSA School Summary Report* provides an indication for schools who have performed at or above the International Benchmark on PIRLS.

Equated scores are valid when results are used to make inferences about groups of students and not appropriate to be used at the individual level.

More information on FSA is available at www.bced.gov.bc.ca/assessment/fsa/

More information on PIRLS 2006 is available at www.bced.gov.bc.ca/assessment/nat_int_assess.htm

More information on linking provincial student assessments with national and international assessments is available at <http://dissemination.statcan.ca/english/research/81-595-MIE/81-595-MIE2003005.pdf>