The cure for early grades assessment difficulties? Take a tablet.
Monitoring educational development in the early years of schooling is vital if practitioners, and policy makers, are to support students’ learning, but the assessment of student achievement in developing countries can be a logistical headache. Maurice Walker reports on an innovative approach to assessment using tablets that is addressing that.

ACER’s tablet-based literacy and numeracy assessments in the early years of schooling track progress in student learning in developing countries, and enable educators to monitor the impact of their teaching on individual students and the efficacy of their programs at the classroom, school and system levels.

Delivering early grades literacy and numeracy assessments via standalone tablets alleviates many of the logistical headaches of assessment, such as data entry, assessment security and mountains of paper. They are also fun for young learners.

ACER has added offline tablet assessment tools to its computer-based assessment platform. The offline nature of the assessment and transportability of android tablets allows systems to monitor learning in even the remotest of populations.

The assessment, designed to monitor reading literacy and numeracy in the early grades, has been trialled successfully in Afghanistan and Lesotho in 2014. Afghanistan will implement the tablet assessment across the country in 2015.

**Content coverage**

The literacy assessments address the five key elements identified by Catherine Snow, Susan Burns and Peg Griffin in their report for the United States Committee on the Prevention of Reading Difficulties in Young Children as international best practice in teaching reading literacy, which have been widely used as a standard ever since:

- phonemic awareness
- phonics
- fluency
- vocabulary, and
- reading and listening comprehension.

All mathematics areas are represented in the numeracy content:

- number
  - place value and operations
  - fractions
  - patterns with digits and objects
  - money
- measurement
  - length
  - capacity
  - mass
  - time
- geometry and location, and
- statistics and probability.
Efficiency

An advantage of the tablet over one-to-one interview assessments is their relative efficiency. Our recent study comparing an interview-based method with tablet assessments found that on average it took about 80 minutes to assess a single child for both literacy and numeracy with the interview method, but only 45 minutes to assess the literacy and numeracy of six children simultaneously with the tablet method.

Audio prompting

Audio cues are provided for all elements of the assessment that are not directly related to assessing the student’s ability to read a specific word, sentence or longer text. All elements, including the response option, carry associated audio prompts. Each student is equipped with a pair of headphones to maximise sound quality, minimise background noise interference during group assessments and enable students to repeat the prompt as many times as they require.

Standardisation

A further advantage of the tablet over one-to-one interview assessments is their standardisation. All students receive exactly the same audio scripts in the same voice, and the same opportunities to explore and trial answers. In a one-to-one interview, the assessment content and the student’s response are mediated through the test administrator. Test administrators may interact differently with different students, differently to other test administrators, and differently from day to day. Young students may feel reluctant to ask the test administrator to repeat questions – but in a tablet mode the audio prompt can be repeated over and over again. Feedback from assessment supervisors is limited to helping the student to use the tablet and providing general encouragement.

Translation

In keeping with the philosophy of a paperless test, translation of the source English materials into the target test languages is facilitated through an online translation management system and the use of a computer-based translation editor, enabling a multi-step translation process to proceed with multiple users and full version control. Draft translations can be previewed in context and integrated seamlessly into the tablet delivery system. ACER has already successfully trialled translations into Dari and Pashto, both right to left languages, and Sesotho. Any language with a standardised font can be accommodated.

Test deployment

New tests or even modifications to existing tests are easily deployed. They can be downloaded to any tablet containing the test delivery application, anywhere in the world via an internet connection.

Data collection and security

Student responses are initially recorded on the tablet in real time. Following the assessment, the test administrator simply connects the tablet to the internet and uploads the data to ACER’s databases.

The ability to transfer the data immediately after the test offers strong data security as the results are immediately backed up on ACER servers.

The assessments themselves are secured through the use of encryption and user passwords while the students’ test results are also encrypted. Even if the tablet is lost, nobody can access the tests or results.

Responding

The student responds in a tactile manner to questions and tasks by touching a hotspot; or the drag-and-drop method.

Hot-spot selection sequence

Together with the audio prompt, the illustration indicates how students’ judgement of comparative quantity or size can be measured without reading or writing loads.

The student is faced with an item. The student touches the audio button to hear the instruction, “Select the biggest tree.”

The student touches an element on the screen. The element is highlighted in yellow to indicate the student’s response.
As well as receiving instructions from the test administrator, the students are guided through the initial part of the assessment by culturally appropriate, friendly onscreen helpers.

**Motivation**

Feedback from test administrators in Lesotho and Afghanistan indicates that the combination of interactive technology, playful and colourful design, and audio motivates students to participate. Students who were not sampled actually ask to be tested.

**Reporting**

The tablet-based assessments allow a wide range of content to be administered to students in an efficient manner. This in turn allows ACER to construct proficiency scales for reporting. Such scales describe what students at different levels of proficiency know and can do in a way that is meaningful to teachers, principals and other educational practitioners.

The goal of improving access to quality educational assessment and reporting of this kind is to support teaching in classrooms, schools and systems, and improve learning for all students, wherever they may be around the world.

**References**