



Using SOLAR in National Courses in Mathematics at Armadale Academy

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The introduction of new qualifications as part of Scotland's Curriculum for Excellence educational reforms provides teachers and pupils with opportunities to experience improved forms of assessment. The principles of assessment are set out in the Education Scotland publication *Building the Curriculum 5*. Assessment approaches should promote learner engagement and ensure appropriate support so that all learners can achieve their aspirational goals and maximise their potential. Approaches to assessment in the next generation of National Qualifications will support learning and take account of the need for breadth, challenge and application of learning.

The Institution

Armada Academy moved to its present purpose-built campus in West Lothian in 2009. The Academy's vision is to inspire, challenge, support and empower its students to become successful learners, confident individuals, responsible citizens and effective contributors. The Academy plans to achieve its aims in line with National and Local Authority directives to develop courses and innovative learning strategies which match the needs and aspirations of all learners. The curriculum delivery will challenge all ability levels and offer greater choice in the new National Qualifications.

Rosey Steele is a Mathematics teacher at Armada Academy in West Lothian. She has for some time made effective use of various online resources to support her pupils in their learning. These resources include materials that can be accessed online from home, as well as materials produced by other schools. Some teachers at the school have produced short instructional YouTube videos for Mathematics topics and Rosey makes use of these as well as other online video materials of this type.

The Challenge

In 2014 Armada Academy had pupils undertaking the new National Courses in Mathematics (26 at National 4). The Academy also offered Lifeskills Mathematics courses, with 37 pupils at National 4 and 11 at National 5.

Rosey Steele has recognised the benefits for her learners in using online assessment for formative purposes. She observed that her pupils were enthusiastic users of technology to enhance their school experience and had quickly come to expect that e-testing would form an integral part of their Mathematics courses. However not all staff in the Mathematics department had adopted online assessment and only a subset of pupils taking Mathematics were experiencing e-testing.

The Activity

The challenge of preparing summative assessments that made more efficient use of teacher time and met pupil expectations of e-testing led Rosey Steele to break new ground in her school through her use of SOLAR online formative and summative assessments. She used these firstly with the Personal Finance Award (in 2010-11 and subsequent years) and in 2013-14 with the N4 and N5 Lifeskills Mathematics courses and the N4 Numeracy Unit. Rosey also used the OpenAssess (formative) materials in 2013-14 for the Personal Finance Award and N4 & N5 Lifeskills Mathematics to prepare her pupils for the summative assessment.

The Outcomes

The use of SOLAR for assessment in Mathematics has led to considerable efficiencies for Rosey. She estimated that marking a paper assessment for any of the Units in the courses above would take 3 hours of her time. The school has a system of sample-based moderation of marked scripts, which would take a further 1 hour of her time. After each test, assessment or NAB, the Mathematics department issues pupils with Individual Learning Plans (ILPs) and the outcomes of each assessment are recorded in the ILP for each student, along with feedback from the teacher in terms of next steps for learning. The creation and recording of this information and feedback would normally take Rosey 2 hours of her time.

Using SOLAR for assessment removes the need for marking and moderation, and the recording for ILP purposes is reduced to 0.5 hrs. Using SOLAR for a Unit summative assessment therefore saves Rosey 5.5 hours per Unit. Across the Personal Finance, Lifeskills Mathematics N4 and N5 Units her saving in time amounts to $3 \times 3 \times 5.5 = \mathbf{49.5 \text{ hours}}$.

However, for each class group there is an administrative overhead of 1 hour of Rosey's time in setting up the SOLAR records. The net estimated time saving for Rosey is therefore 46.5 hours. Rosey noted that this was an area where further savings could be made by streamlining the process of extracting class records from the school SEEMIS and uploading them in the correct format for SOLAR.



Learner Perception

Pupils commented on the ease of use of the SOLAR assessments. One aspect of the e-assessment that appealed to them was that they were not required to do any writing in an exam script. They noted that the use of e-testing for summative assessment meant that they had experienced a consistent use of the technology that had been used to support their learning and formative assessment. In a video recording made in the school, pupils also spoke of the value that they found in Rosey's approach to assessment and how it resonated with their everyday experience of living and learning in a digital world. Rosey also views the SOLAR approach as a natural extension of the way that her pupils learn through online and computer-based resources and encounter formative assessment in the form of online quizzes.



Lessons Learned

As not all of the teachers at Armadale Academy were e-testing on SOLAR for Lifeskills Mathematics courses there was a need to create re-test NAB papers. However with the work Rosey had previously done on SOLAR e-testing she was able to convince other teachers of Mathematics in the Academy to use SOLAR e-testing for the final NAB in the National 4 Lifeskills Mathematics course (Geometry and Measures National 4). Therefore no re-test paper NAB's were required to be produced. This realised an additional gain for Rosey, and she estimated that she had saved 4 or 5 hours for each Unit assessment that she would be required to write. She estimated that her personal saving of time was between 24 and 30 hours.

A consequence of this decision was that her colleagues realised that they too could gain the benefit of these efficiencies. From session 2014-2015 the Mathematics departments at Armadale Academy, where possible, will be will be e-testing on SOLAR.

Rosey is satisfied that her decision to invest in online assessment for formative and summative purposes has paid dividends for her in terms of efficiency. Additionally she was able to use the time released to develop school resources for the N4 and N5 Lifeskills Mathematics courses and to free her for the completion of a Postgraduate Certificate in Educational Leadership.

Useful Links

For information on SOLAR assessments see: <http://www.sgasolar.org.uk>

The Armadale Academy maths videos are here: <http://www.youtube.com/user/YouKenMaths>

Contributors/Key Contacts

For further information about the approach Rosey Steele has adopted at Armadale Academy, contact her at rosey.steele@wled.org.uk.

For SOLAR advice contact: solar@sqa.org.uk or telephone the Help Desk at 0345 270 121