

Short-listed entry for Formative e-Assessment



Formative e-Assessment in Mathematics Using SCHOLAR

This case study explores the use of formative e-Assessment in Mathematics at Hermitage Academy from S1 to S6. This innovative approach made use of the SCHOLAR Intermediate Mathematics material which is based on the SQA curriculum. This highly interactive material was designed to help prepare students for end-of-unit assessment. The approach adopted has contributed to the aims of Curriculum for Excellence which attempts to impart four capacities - successful learners, confident individuals, responsible citizens, effective contributors - and has allowed for individual progression by pupils to reach their maximum potential in a subject where innate ability needs to be nurtured.

The study shows that the use of SCHOLAR had a positive impact on the teaching and learning of Mathematics in Hermitage Academy. Its use resulted in retained learning, for example during cooperative learning quiz sessions with S4 credit classes, the pupils showed a confidence that the others did not and easily answered the trigonometric graph questions weeks later. The effectiveness of the learning was also seen in later paper and e-Assessments. Pupils did much better in the SQA exam than expected. For example, in the Intermediate 2 class, whilst only 1 pupil passed the prelim exam over half the class passed the final exam - a satisfying outcome.

Some areas of SCHOLAR provided new methods for demonstrating understanding which were not possible on paper. For example, the interactive tools for sketching and identifying trigonometric graphs allowed the learning to be covered with much more speed than normal. The students therefore had the time to investigate and experiment with a variety of trigonometric equations rather than having to spend time drawing the graphs by hand. This type of exploratory activity allows students to discover the relationships for themselves can be a very powerful tool, and can result in deeper understanding rather than learning by memory.

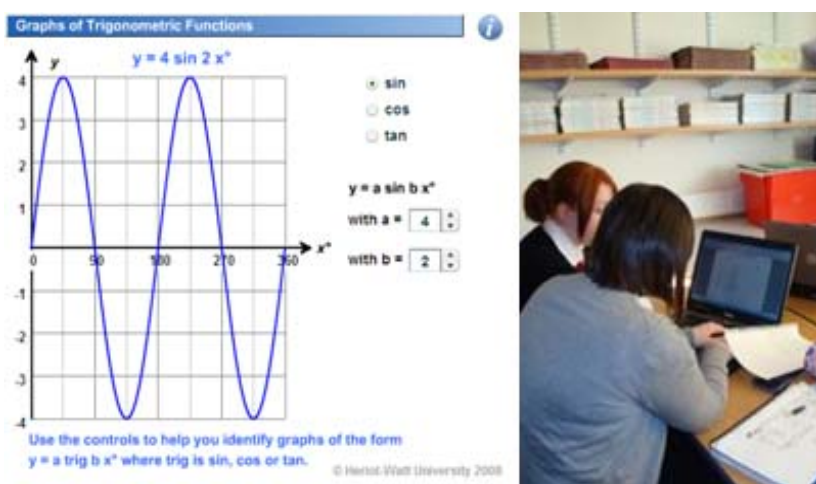


Figure 2: Having had the opportunity to explore trigonometric graphs and their equations, S4 students retained the knowledge and easily answered questions weeks later.

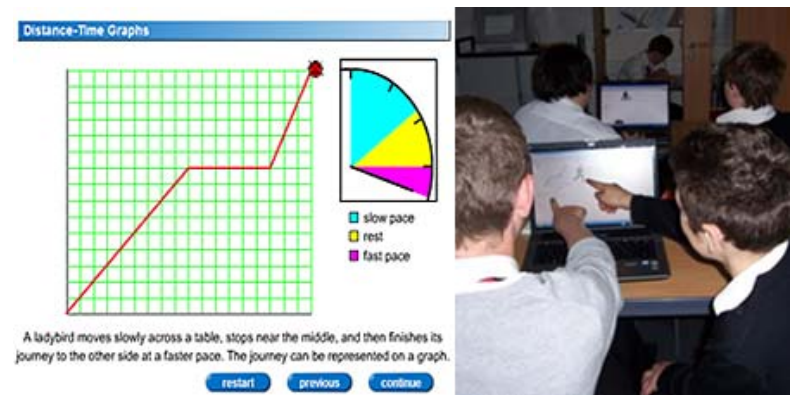


Figure 1: The engagement of the pupils is obvious as S1 pupils work their way through the use of speed-distance time plots.

The level of support and personalised feedback changes as the students' progress through their learning. For example, in the initial stages of the material, an optional walk-through is available for each question. Automatic marking and additional support is also provided for students when they are stuck. Randomisation is another key component throughout the e-Assessments. This is particularly useful in subjects such as Mathematics where students' can benefit from repeated practice. This also allows students' an opportunity to revisit an assessment after acting on feedback.

Overall the use of SCHOLAR certainly enhanced the delivery of the curriculum for both students and teachers at Hermitage Academy. Teachers benefited from enhanced information where they could identify misconceptions through the e-Assessment reports allowing appropriate action to be taken. Students showed increased enjoyment, confidence and autonomy. Activity in the classroom and the results in the summative exams showed that SCHOLAR e-Assessments made learning for this group a more enjoyable experience.

Whilst it took greater time and encouragement for S5/6 pupils who have experienced a more traditional form of learning, they eventually saw the benefit of using online learning and e-Assessment. This was evidenced through the unsolicited use of SCHOLAR for revision purposes from home. The gradation of levels, the repeated practice and automatic personalised feedback were all designed to improve pupils' confidence as well as their awareness of their abilities. This improved confidence was evident in the S4 credit class.