Higher Mathematics Unit 2 NAB

Introduction

Since the introduction of National Qualifications, Unit NAB assessments have been paper-based — set by SQA and marked by teachers. In 2004, students in two schools were involved in a pilot scheme sitting an online NAB assessment for a Higher Mathematics Unit. In this pilot, the NAB was marked automatically by computer, marks were reviewed by the teacher, and the NAB was externally moderated by the SQA. The results were used by the SQA as evidence of attainment. The teacher, students and the Senior Moderator involved all give their views below on the pilot, and the use of e-assessment.

The teacher's perspective

During the few weeks before the assessment, the students familiarised themselves with the inputting procedure and most managed this quite easily. The formative assessments supplied by SQA were very helpful, giving students plenty of practice.

I began to familiarise myself with the reporting system, and found it to be very useful at this time to check that the students had been practicing as they had promised. It took me a while longer to familiarise myself with it sufficiently to be able to use all the features.

The students were scheduled to take the test in a computer room and, despite one or two blips, this went well. One of the computers crashed, and some students found the unusual setting a little strange and did not do themselves justice. The test involved multiple choice and other short-answer questions. These can take a little longer than the equivalent paper-based test. The computer room was booked for a double period, which proved sufficient for most students, although a few required longer. Unfortunately a horde of second year pupils outside the door meant that further time was not possible!

The immediate online results showed clearly which students had passed with no problem. For those who had not reached the required threshold, their rough paper working was scrutinised. Where there was evidence that they had reached the required standard, without having entered this correctly online, a pass was given.

At the end of this process, a number of students needed to re-sit one or more Outcomes. It was agreed that these students could tackle these at the computer in the classroom, so that I could continue to teach the rest of the class.

At this point I found the reporting system to be very useful, as I was able to check on the progress of the students who were re-sitting. By using the different tools available, I was able to check who had been practicing (and when!). Looking at group results, I could see where the common errors were occurring and then look at individual responses to see how to remedy these errors, and I could get a strong sense of which students actually understood the work.

The students who were re-sitting passed the Outcomes with no problems on the second attempt. I had arranged that all those who had just one Outcome to re-sit went first, then those with two, and so on. As this took place in the classroom, it was easy to get immediate results, and the process flowed very smoothly. With the re-sits, I also felt much more in control of the process, as it was my decision when the re-sits were taken, and I could feel certain that the students had the necessary knowledge and confidence to pass. It was also much more like a normal classroom situation, and so less threatening to certain students.

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For teachers who are confident with computers, this process will be extremely helpful as results are immediate, both to the students and to SQA — which saves administrative time. With assistance, most teachers and students would soon become competent with the system, though pen and paper will still be the preferred option for some. With time I feel this number will diminish, so that once familiar with the inputting system, students could then tackle the later assessments with fewer concerns.

The students' perspective

We had some reservations before using the system — we were worried that making typing mistakes would influence the results, and we weren't too keen on learning how to input maths equations into the computer, as well as having to learn about the subject.

However, when we started using the computer we liked the fact that we got lots of extra practice in Maths. What was also good was that we got instant feedback and the system could show us where we went wrong. (Collated responses)

What I liked was that I could practice at home or at school. (Amanda)

I was pleased that the system helped me to improve the presentation of my work. (Robert)

The SQA Senior Moderator's perspective

Before the online assessment took place, some minor amendments were made to the paper NAB to create the online version. This was to allow automatic marking. I was involved in this process to ensure standards were being met.

For the online assessment, students were given rough working booklets, and encouraged to enter all working in this booklet. The booklets were collected in at the end.

Retrospective moderation was carried out to allow flexibility. The moderation was conducted using a spreadsheet printout of the computer-assigned marks. Only rough working had to be examined for some candidates — those who had not demonstrated on screen that they had passed all Outcomes. Marks were amended if necessary.

With time and practice, this should benefit the teacher considerably by:

- Reducing the time spent correcting students' work.
- Increasing knowledge of student performance by giving a detailed analysis of student and class performance.

I found this project to be a great success — e-assessment provided the same results as paper-based assessment. It also provided huge amounts of instantaneous information and helped teachers to understand why students performed as they did.