National Qualifications 2012
Internal Assessment Report

Chemistry (Advanced Higher)

The purpose of this report is to provide feedback to centres on verification in National Qualifications in this subject.

National Qualifications (NQ) Units

Title/level of NQ Unit verified:

Chemical Investigation/ Advanced Higher/ DO75 13

General comments

It is evident that many candidates take a considerable amount of responsibility for the planning, experimentation and write-up of their AH investigation and they almost all find the process to be a valuable learning experience. All visiting verifiers commented on the regular verbal interaction between staff and pupils as advice and appropriate guidance was given.

In the majority of centres the candidates had been well prepared before beginning the investigation. This preparation resulted in strong candidate evidence including regular dated entries, clear aims, references, safety/risk assessment data, clear procedures, well tabulated results and calculations based on the underlying chemistry.

Unit specifications, instruments of assessment and exemplification materials

All centres verified were aware of the two Outcomes and six Performance Criteria used to assess this half Unit and 67% of centres verified were aware of the need to assess the 'day books' or record of work. All centres had prepared their candidates before they started experimental work; candidates had all been issued with the SQA document *Guidance for AH Candidates*, they all knew that their day book constituted evidence for a NAB and had all been shown the list of Performance Criteria which had to be overtaken. Ninety per cent of centres were using the latest version of the guidance document.

Evidence Requirements

Thirty-three per cent of centres verified still did not fully appreciate that the day book is evidence for a NAB and it must be assessed. Just as a NAB testing O1&2 (KU & PS) would be marked (assessed), the day book must also be marked and the points at which each Performance Criterion has been overtaken must be indicated. If the centre has not assessed their day book, it is not possible to know whether a candidate has achieved a pass for the half unit DO75 13.

Administration of assessments

All centres verified were aware of the two Outcomes and six Performance Criteria used to assess this half Unit and 67% of centres verified were aware of the need to assess the day books.

External verification of the NQ half Unit DO75 13 takes place prior to the completion date set by most centres. As such, external verification of this half

Unit is, almost always, verification of incomplete evidence so visiting verifiers see partially assessed material. In all centres verified, the assessment decisions which had been made by teachers/lecturers were in line with national standards. Fifty-five per cent of centres verified showed no evidence of internal verification. In each of these centres, constructive feedback was given by verifiers and a system was discussed for the regular inspection of day books, at given dates, with a view to carrying out regular internal verification and assessment of Performance Criteria as the investigations proceed. The idea of a departmental policy for day book assessment procedures was explored.

Areas of good practice

1. Over 50% of centres verified had attached a copy of the Record of Attainment from page 18 of Chemical Investigation D075 13/NAB001 (issued July 2002) to each candidate's day book. In these centres, candidates were encouraged to use the Performance Criteria to check their own progress and the Record acted as a prompt/reminder for both staff and candidates to treat the day book as a NAB and remember the need to work towards achieving all six Performance Criteria.

2. One centre had customised the Record of Attainment to include two extra columns, one for the class teacher to indicate when each Performance Criterion had been overtaken and the second for the Internal Verifier to record the date when each assessment judgement was verified.

3. Evidence from all centres showed an appreciation of risk and most day books contained formalised risk assessments.

4. In all centres verified it was evident that the candidates had been well prepared. Staff had spent time explaining the nature of the Chemical Investigation half Unit and all candidates had been encouraged to research and discuss their procedures, then to plan carefully before starting the experimental work.

Specific areas for improvement

1. Outdated guidance documents, eg 2009, should not be issued to candidates.

2. Candidates should be encouraged to ensure that results tables have headings and units.

3. Candidates should be encouraged to consider the number of significant figures used in calculations and to consider the precision and accuracy of their measurements, eg masses to two decimal places and burette readings to one decimal place.

4. If candidates are encouraged to use the correct tense when writing procedures in their day books, they are more likely to gain marks by using the correct tense in the investigation report.

5. A departmental policy for the assessment and internal verification of day books should be put in place.

It is worth noting that the 2011 mark scheme for AH Chemical Investigation is available on the SQA website. It is also possible to use the day books as a teaching aid and, to this end, emphasis of the following general points might be useful:

- Use of the correct number of significant figures and consequential effects on any calculations
- Working through the results of each experiment before the next is attempted in order to identify possible 'rogue' results, or where further measurements are required
- Using clear controls in analysis
- The advantages of limiting the number of different techniques that a candidate may have to carry out, bearing in mind the timescale and the need for replicate experiments
- The advantage of using the past tense in writing up procedures in the day book as this is needed in the final report
- The need to change the concentration of reactant solutions to modify small titres and improve accuracy
- Areas such as references, where candidates lose marks by not following advice given in the Guidance document
- The role of correct formulae and balanced equations in the Underlying Chemistry section
- The need to quote a value in the summary if a candidate has set out to quantify a value