

NQ Verification 2014–15

Key Messages Round 2

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Section 1: Verification group information

Verification group name:	Physics
Verification event/visiting information	Event and visiting
Date published:	June 2015

National Courses/Units verified:

H25C 74 Physics Assignment (National 4) Added Value Unit
H4L1 76 Researching Physics (Higher)

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Section 2: Comments on assessment

Assessment approaches

For National 4, it is important that the evidence produced relates clearly to a key area from one of the other three Units within the Physics Course. It is suggested that all centres follow the structure of the report as supplied in the advice provided within the Unit assessment support pack. The activities selected to achieve this Unit should be at the appropriate level for the Course.

To aid both internal and external verification it is advised that candidate scripts be clearly marked, at the specific point, where the centre makes a judgement that an Assessment Standard has been achieved.

Assessment Standard 1.1 should be at National 4 level and must be linked to a key area from any of the other three Units being studied. It is important that the application selected allows candidates to demonstrate their understanding of the physics theory at an appropriate level and also allows the effect on society or the environment to be explained.

Assessment Standard 1.2 requires the candidate to select two relevant sources of data/information during the research stage. The candidates can use two sources from the internet, a book, newspapers, journals or a relevant publication or any combination of these, or one from literature research material and one from a practical experiment. When using an experiment it is important that the

title and aim is clearly included for the reference details. Where the candidate uses any research material as evidence it is important that the reference is supplied in enough detail to allow the relevant data to be confirmed with a minimum of verifier input.

For verification purposes, the centre should include the candidate's log book in the verification sample and this must include the relevant data/information from the sources they have researched, to allow the assessment of selection of relevant data to be confirmed. This will also allow clear assessment of Assessment Standard 1.3 as this requires the candidate to present information from one source in an appropriate format, different to that in the original source. The accuracy of assessment decisions can only be checked if the data from the research stage is included.

Assessment Standard 1.4 requires the candidate to explain the impact the chosen topic has on the environment, or society in terms of appropriate physics. This impact can be either positive or negative but must be backed up with the use of physics theory.

Assessment Standard 1.5 is the communication stage of the Added Value Unit and is where the candidate communicates the overall findings in an appropriate way by bringing all the research information and data manipulation together. The evidence must include a clear aim and a final evaluation of the data presented by the candidate.

All of the centres selected for Round 2 used the standard scientific report to convey the relevant information/findings. Centres are reminded that other forms of communication are permitted, eg conference poster, PowerPoint presentation with speaker notes, etc.

For the Researching Physics (Higher) Unit, visiting verification was carried out.

For Assessment Standard 1.1 the candidate should research a topic that is linked to one of the other three Units in the Higher Physics Course and should record at least two sources of data/information for the chosen topic. These should be in a format that allows the assessor and verifier to check the information selected by the candidate and that the information is recorded in the candidate's own words and not just 'cut and paste'.

In order for Assessment Standard 1.1 to be achieved there needs to be sufficient physics included and candidates need to show a clear understanding of the physics, using terms and ideas correctly and at an appropriate level for Higher. Some centres had interpreted 'statement' as meaning a sentence (or two); at Higher level the statement should have sufficient physics for the candidate to clearly demonstrate their understanding of the topic, and may well run to several paragraphs or even a number of pages.

Assessment Standard 2.1 requires the candidates to design and carry out a practical investigation based on the topic of interest. This can be carried out in a

small group but the centre staff must check that each candidate takes an active part in both the planning and the practical work.

Assessment Standard 2.2 can also be completed in a small group but each candidate must take some of the readings and record them in an appropriate format with headings and units.

All of the centres selected for visiting verification used an appropriate log book to record the candidates' findings.

Assessment judgements

The centres selected this year for National 4 Added Value unit demonstrated clear decisions in respect of Assessment Standard 1.1. Most candidates began with the identification of an area of physics, with justification for the choice at the beginning of the research phase and also included this in the final communication stage. This could not be evaluated for some candidates without the inclusion of the log book, where the research evidence should be found.

All candidates selected topics linked to a key area of the National 4 Physics Course as required, although some candidates used a copy of the National 5 assignment as evidence for the Unit assessment.

Not all centres supplied sufficient information to allow the verifier to confirm the centre decisions in respect of the appropriateness and relevance of the data selected, as required for Assessment Standard 1.2. The centre should include the log book as evidence to allow the data to be checked or include the evidence in the communication stage of this Unit. It is also important that full reference details are included within the communication stage to allow the data to be checked with minimum extra input from the assessor/verifier.

Assessment Standard 1.3 at National 4 requires some of the research data to be presented in a different format and for physics it is recommended that, where appropriate, this should be a graph. The presentation format should be selected to best suit the original researched data and not just carried out as a simple data handling exercise, ie the use of a line graph rather than a bar graph where the variables are continuous.

It is important that candidates are encouraged to make sure that all tabulated results have the correct headings and units and these must be repeated and averaged. The mean values should then be used on any graph resulting from the data. Where appropriate, it is also important to mark the origin on the graph as per the general marking instructions.

It is also important that assessors record on the candidate scripts where they decide that an Assessment Standard is achieved. This would aid the internal verification of the candidate assessment and eventually the external verification process. It is also important that the centre applies the internal verification

procedures and clearly demonstrates what the final decision is after any disagreement with the original assessor.

Centres should note that for Assessment Standard 1.5 it is not just the final conclusion that is required but the full report, or presentation that is being assessed.

All centres selected for visiting verification of the Researching Physics Unit supplied interim evidence for the candidate evidence.

Assessment Standard 1.1 required the candidates to make a clear statement at the beginning of the research stage as to the topic being selected. This statement should include details of the physics involved at a level appropriate to Higher. In most cases this was not present but the underlying physics was provided by all candidates. Care should be taken in future to check that this description is included for each candidate.

Some centres had interpreted 'statement' as meaning a sentence (or two); at Higher level the statement should have sufficient physics for the candidate to clearly demonstrate their understanding of the topic, and may well run to several paragraphs or even a number of pages.

Assessment Standard 2.1 demonstrated that all candidates were involved in the development and design of the practical investigation. This was often an altered design from the research stage showing the input by the centre in line with the apparatus available.

Assessment Standard 2.2 was partly completed for most candidates and demonstrated recording of evidence collected during the practical investigation stage. A number of candidates did not have complete tables with units and headings. This requirement should be reinforced by the centre during the practical investigation stage in the future.

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Section 3: General comments

For the National 4 Added Value Unit, it is possible to reduce the assessment burden by using an Outcome 1 report from one of the other Units as a source of evidence, if it is related to the selected topic and is appropriate. The candidate must give the title and aim of the experiment as a reference to the source. It is also possible that the communication produced by the candidate for the Added Value Unit could provide evidence of the candidate achieving Assessment Standards 2.2 and 2.3 of the other Units.

It is important to remember that, since this is a Unit assessment, candidates can be allowed to redraft the communication phase where a particular Assessment Standard has not been achieved. If this is the case then the level of feedback to the candidate should be at a level that does not supply model answers to the candidate but allows them to complete the assessment. This could be in the form of prompts.

For example, identifying to a candidate that the units on a graph are missing and so they have not achieved Assessment Standard 1.4 would be an appropriate level of support for re-assessment. Saying to a candidate 'the units in your graph should be m s^{-1} , you need to correct this' would not be appropriate.

It should be noted that the level of support supplied should not be beyond that supplied in the Unit assessment support pack. For example, the use of a centre-devised log book is fine as long as this does not have prompts to support the production of tables or suggestions as to what should be written as an evaluation of the communication stage.

For the Researching Unit (Higher) it is possible for candidates to undertake the researching Unit and use the appropriate planning and data collected to also complete Outcome 1 for the other Units.

It is also important that centres have a robust internal verification procedure to check that each candidate is given the same opportunities across the class and between classes. The centre is required to have this verification process as part of the SQA procedures that allow the centre to deliver the subject.

For external verification purposes, it is important that evidence is supplied to demonstrate this internal verification process, not only in the provision of a school/department policy but on the effective use of the policy on the candidate's work.