

From controlled assessment and non-exam assessments to 'practical endorsement'.



This report of the CAS Assessment working group considers a change from formal coursework assessment to formative practical work and the implications of a 'practical endorsement' for computing qualifications

Most computing related qualifications have an element of coursework completed during supervised time and marked and moderated by the school (controlled assessments). Experience in other areas including: Cambridge Assessment Research, the Cambridge Science specifications and iGCSE Computer Science indicates that there may be positives in exploring alternative models.

Practical endorsement

One model has been introduced into the GCSE and GCE Science courses. This model, the *practical endorsement*, involves a series of Awarding Body recommended practical activities completed during curriculum teaching time without any formal assessment.

As part of the reform of A-level and GCSE examinations in England, changes have been made to the assessment of practical skills in A-level Biology, Chemistry and Physics. Learners undertake a minimum of 12 practical activities which are listed in the specification. Their competence in practical skills will be assessed by their teachers. This assessment will include, but will not be restricted to, the minimum activities specified. Teachers will assess learners' practical skills over the two year course of study using

Common Practical Assessment Criteria (CPAC). They will make a final, holistic judgement about each learner's competence which will be reported separately from the main subject grade, as a Practical Result, on a Pass / Fail basis. Additionally, a minimum of 15% of the marks available on the written examinations will assess practical skills. At GCSE, students complete a minimum of 8 practical activities, which are embedded in the syllabus content, in preparation for a written examination that will specifically test these skills. Unlike at A level, students' performance on these activities is not reported separately. In both cases the judgements of teachers do not contribute to marks or grades of the GCSE and there is no moderation process.

The practical activities are centred on either new learning, the application of knowledge or the demonstration of problem solving abilities and can be open ended in nature. Some activities might not take long to complete and can have no time limit to allow flexibility in delivery. Assessment of these activities would be formative enabling delivery through individual, paired, group or class work. Teachers have the opportunity to give informal and formal feedback thus enhancing the learning potential of the activities. Summative assessment related to the learning in these activities would be encountered during a written paper. The development of practical endorsement and initial teacher reactions are reported in a summary of the cross-board trialling in A Level Science <https://goo.gl/2roPH0>.

Advantages and affordances

We feel that disassociating practical and coursework activities from the formal summative assessment and accreditation process has many advantages for the teaching/learning process.

School and professional issues:

- frees up classroom time for more learning and teaching
- frees the teacher from the external assessment role and the professional tension this causes

Awarding Body issues:

- frees up the Awarding Body from having to regulate classroom practice
- frees up the Awarding Body from the moderation of marking in relation to coursework

Classroom and curriculum issues:

- would mean that the practical exercises inform learning rather than become a task in themselves
- would allow practical work to illustrate concepts and knowledge
- allows full teacher feedback to support learning
- allows for a greater choice in the teaching delivery methods
- frees the scheme of work to suit the school's calendar
- would mean that practical learning opportunities can be repeated

Learner and learning issues:

- allows the learner to make mistakes and learn from them without harming their assessment
- enables learners to progress at different rates and in different ways
- enables paired or group work to support or extend learners, encouraging team work
- removes the artificial constraint on the activity by the by the fixed format or recording
- allows the learner greater creativity in what they produce
- allows the transferability of concepts and knowledge to solve different problems

Computing-specific issues:

- would allow the direct formative assessment of problem solving and programming skills
- reduces the focus on the ability to write a report
- would allow more practical programming work to be completed in an integrated way
- learning to computer program can be a formative experience

Most importantly, it has been shown in the evaluation of the cross-board trial (<https://goo.gl/2roPH0>) that the removal of high stakes assessment from the current practical element of the course would encourage *engagement, excitement and creativity*.

Computing and practical endorsement

The Assessment Objectives that are currently within the coursework element of computing qualifications include analysis, planning, programming and evaluation. For example,

Analyse problems in computational terms:

- to make reasoned judgements
- to design, program, evaluate and refine solutions

<http://ocr.org.uk/Images/225975-specification-accredited-gcse-computer-science-j276.pdf>

These objectives are assessed by answers to written questions in examination papers. There might need to be a reorganisation of the assessment objectives. A record of the tasks that the learner had carried out could be reported on the final exam certificate. For example, practical activities can be based around the learning involved in string manipulation, writing to and reading from files, arrays, input validation, binary/hex conversion, encryption, hashing or binary vs linear searching. However, the endorsed practical approach enables the teacher to choose which to focus on to better enhance classroom learning.

In conclusion, divorcing the practical element of the course from 'high stakes' assessment, while still making it a central part of the delivery of the qualification, will lead to greater freedom for the school, teachers and the Awarding Body. This freedom could invigorate the subject, not only allowing support for some and the possibility of extending others, but eliminating the constraints imposed by the criterion based assessment of practical work.

CAS Assessment working group (January 2017)

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Bibliography

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Impact of removing assessed practicals from A level science (blog) <https://goo.gl/MyWIWX>

iGCSE ICT <http://www.cie.org.uk/images/203280-2017-2019-syllabus.pdf>

Impact of changes to practical assessment at GCSE and A-level: the start of a longitudinal study by OCR Frances Wilson, Neil Wade and Steve Evans <https://goo.gl/OknOnk> p119

Instructions for conducting non-examination assessments (new GCE & GCSE specifications) <https://goo.gl/G11Xsm>

Summary of Cross-Board Trialling of the A Level Science Practical Endorsement <https://goo.gl/2roPH0>

Tim Oates: video regarding NC reform 2014 <https://goo.gl/HETgMT>