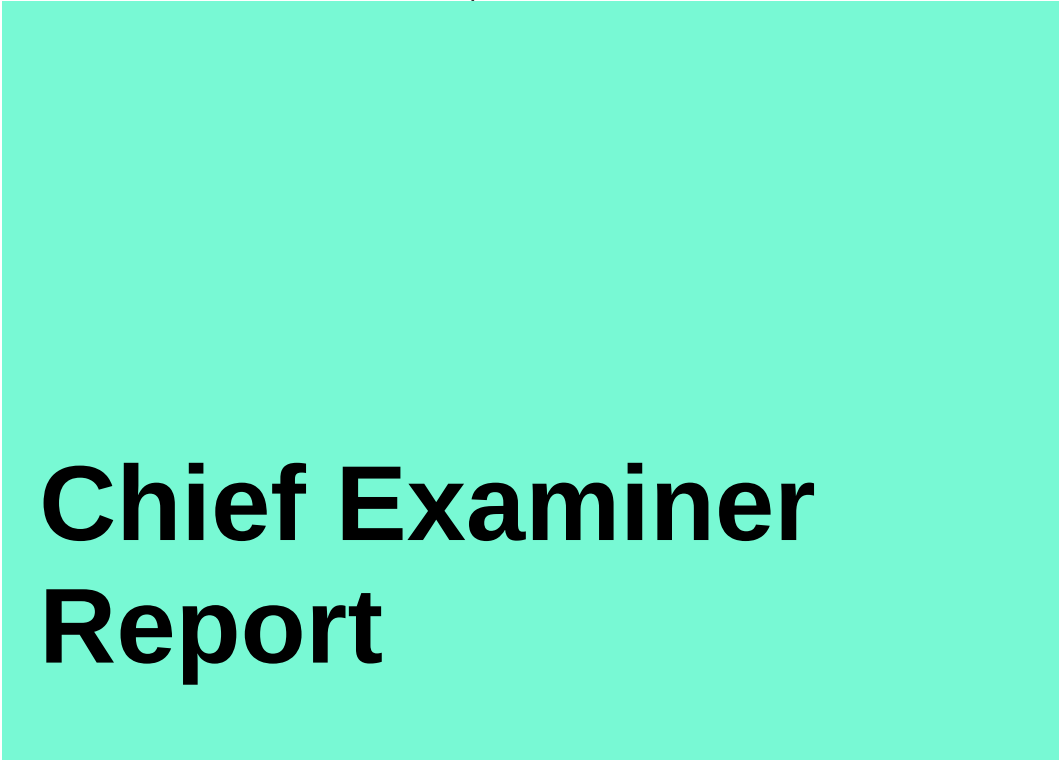




Chief Examiner Report

**T Level Technical Qualification
in Science
QN: 603/6989/9**

**Summer 2025 – employer set project
(ESP) Laboratory Science**

Introduction

Summer 2025 – employer set project (ESP) Laboratory Science

Assessment dates: **8 May to 21 May 2025**

Paper number: **P002815**

This report contains information in relation to the externally assessed component provided by the chief examiner, with an emphasis on the standard of student work within this assessment.

The report is written for providers, with the aim of highlighting how students have performed generally, as well as any areas where further development or guidance may be required to support preparation for future opportunities.

Key points:

- grade boundaries
- standard of student work
- evidence creation
- responses to the external assessment tasks
- administering the external assessment.

It is important to note that students should not sit this external assessment until they have received the relevant teaching of the qualification in relation to this component.

Grade boundaries

Raw mark grade boundaries for the series are:

	Overall
Max	147
A*	131
A	116
B	99
C	83
D	67
E	51

Grade boundaries are the lowest mark with which a grade is achieved.

For further detail on how raw marks are converted to uniform mark scale (UMS), and the aggregation of the core component, please refer to the qualification specification.

Administering the external assessment

The external assessment is invigilated and must be conducted in line with our [Regulations for the Conduct of External Assessment](#) document. Students may require additional pre-release material to complete the tasks. These must be provided to students in line with our regulations.

Students must be given the resources to carry out the tasks and these are highlighted within the [Qualification Specific Instructions for Delivery](#) (QSID) document.

Standard of student work

Students generally performed well on this summer series of the ESP. It was pleasing to see some new providers and an overall increase in total entries. It was considered that the summer 2025 ESP performed in a comparable manner to the autumn 2024 series, having a slightly higher mean mark than the autumn 2024 series. The autumn 2024 students did achieve higher individual maximum and lower minimum marks.

The format of the assessment remains constant across the ESP series, consisting of the following tasks:

- 1: research strategy
- 2: plan a project
- 3: analysis of data
- 4: present outcomes and conclusions
- 5: group discussion
- 6: reflective evaluation.

This allows for a good comparison across the different series and has also allowed the students to develop their assessment techniques, due to being more familiar with the format.

The statistics demonstrated a good range of marks were achieved for each of the tasks, all obtaining a facility score in the optimal range and discrimination values were all good, the only exception being task 6 AO4, use of English, mathematics and digital skills used to communicate aspects of reflective evaluation, where it was in the marginal range. Some students were a little unprepared for this assessment, this was seen across the tasks and many students stated this in their reflective evaluation. Providers should ensure students are fully prepared by using formative and mock assessments.

Evidence creation

Word pro-formas were available for task 1: research strategy, task 2: risk assessment and task 6: reflective evaluation. The majority of students were using these pro-formas, but not all students. The use of these pro-formas helps capture the best evidence from the students. Providers should allow the students to become familiar with these forms, this could take the format of a mock assessment. Some students were not confident in producing risk assessments correctly.

Task 3 required students to analyse provided data – there was a LIMS spreadsheet and a 'laboratory science statistical techniques guide'. The statistical analysis can be performed using Excel or manually – whichever method the student selects to use is equally acceptable, however the student should show workings, and the data selected. Evidence of this can be provided using the spreadsheet, which should be uploaded, but if the data is collected manually, intermediate workings should be captured. The results of the analysis, tables, graphs, findings and conclusions can be added to a word document report, whichever way the analysis was performed, or can be submitted as text on the spreadsheet.

Task 4 required students to present outcomes and conclusions. The A2 poster can be produced electronically, using suitable software, and many students used a PowerPoint slide. Some students produced the poster by cutting and pasting information onto a sheet of A2 paper. Both of these methods are equally acceptable. The sheet of A2 paper can be stuck to the wall/board or the PowerPoint slide can then be projected to accompany the presentation. Some students were producing a set of slides; this does not meet the requirements of a poster.

Video evidence is required for task 4 and these were of a higher standard in this series than in previous. Please continue to produce high quality videos, where the student and poster can be clearly seen and heard. This video evidence is part of the student's final assessment, so, if possible, a professional environment should be provided, where the student is not disturbed or distracted by external noise or visitors. The assessor should remain professional and focused on the student; they should collect evidence and complete the pro-formas. The tutor should be familiar with the guidance for this task before the assessment. It may be necessary for a tutor to ask the student questions at some point during the presentation, but this should only be to provide clarity. The questions should not be guiding or leading the student. Some providers were using this as assessment as formative assessment or a teaching opportunity. It is good practice to familiarise the students with poster presentation before the assessment, but this is a summative assessment. Evidence from questions asked should be captured.

Video evidence for task 5 was much better this time, with many providers using additional microphones to clearly capture the students input into the discussion. Students should identify themselves at the start of the discussion and the faces of all students should be visible through out. There were examples where a large group was filmed, it showed mostly backs of heads. Recording of two smaller groups would have allowed the student to have better visibility and to demonstrate better engagement, as there would not have been large gaps between the student's contributions to the discussion. Videos should show all the students in the group, so a student recording themselves on their phone, does not meet these requirements. Providers should check the videos for clarity of images and audio before submitting them as evidence.

Responses to the external assessment tasks

Task 1: research strategy

Generally, students were achieving Band 2 or Band 3 for this task. Many students found this a challenging task in terms of what parameters should be discussed and also in terms of their own time management. Many students discussed in their evaluation and reflection that they ran out of time or had not correctly reviewed the sources of literature on the list.

Task 1 (AO2)

Most students were able to describe the contents of the sources, with the majority able to discuss one or two of the parameters that should be included into a literature review, however many students were focused on these one or two and did not include the full range of validity, relevance, reliability, non-bias and quantitative data. Few students were able to provide a well-balanced justification for the selection, prioritisation or rejection of a wide range of sources.

Task 1 (AO2)

Most students were stating a recognised referencing technique and were making an attempt at referencing. Some students were not quoting from the articles and citing the quotations. Many of the students that were quoting from the articles were quoting from a limited range, which restricted the available marks. The brief states internet access is 'for provided literature database links only' which excludes the use of reference generation software within the ESP.

Task 1: English

Students generally showed good communication skills with the majority showing a well-developed use of Level 2 English, spelling, punctuation and grammar. Where students did not achieve as well this was mainly due to the use of informal or spoken language or text speak for example 'u' or just carelessness and lack of proof reading of the work.

Task 2: plan a project

The majority of students achieved good marks in this task. However, some marks were lost due to weak scientific report writing skills and lack of awareness of the principles of good scientific design. There was a range in quality of risk assessments, higher performing students were able to provide a range of hazards that were applied to the brief and considered risks involving others and the hierarchy of controls. Students that performed less well were providing generic risks with limited mitigation and understanding of risk hierarchy.

Task 2 (AO1)

There was a wide range in the quality of the plans produced here, some were detailed and well researched others lacked detail. The majority used sequential steps, however many missed some essential steps. Many students described using current antibiotics rather than the extremophiles that the investigation demanded. Some higher achieving students were able to consider the principles of good scientific design, the timeframe and resources.

Task 2 (AO2)

There were some very good examples here, but many contained insufficient detail to cover most of the risks involved. Many students produced generic assessments that did not consider the hazards associated with microbiological work. Some students struggled to complete the risk assessment pro-forma correctly, especially in terms of the calculated risk and control measures. A large number of students were not describing the key risks involving others with understanding of risk hierarchy (prioritisation).

Task 2 (AO5)

This was the area where many students achieved lower marks. Students should be considering the types of data being collected and the mechanism of data collection, including quantitative and qualitative data. Many students did not consider the use of replicates and the need for quantity and breadth of data required for statistically valid analysis. Higher performing students produced a balanced justification for good experimental design principles, replicates and management of resources.

Task 2: English

The majority of students showed good communication skills, with most showing a well-developed use of level 2 English, spelling, punctuation and grammar. Some students did not achieve the top bands due to a lack of proof reading.

Task 3: analyse data

A large range of ability was seen within this task. The majority of students were able to calculate the mean and plot their findings on a graph, which were well labelled. Higher achieving students were able to accurately demonstrate a range of statistical analysis techniques, presenting their findings in tabular and graphical formats, which were used to produce logical conclusions.

Task 3 (AO2)

Higher achieving students were able to select relevant data to statistically analyse and produce graphs and tables that added value to the analysis and enhanced readability and understanding.

Task 3 (AO3)

Students demonstrated a range of statistical skills from basic to more advanced level. Students should be encouraged to practice and gain confidence in using statistical skills and the production of tables and charts. Students should be familiar with the 'laboratory science statistical techniques guide'.

Task 3 (AO5)

Most students were able to apply their findings to produce a conclusion that linked to the aims of the investigation however, some did not produce a conclusion. Lower achieving students produced simplistic

conclusions by describing the trends seen within their data analysis. Higher achieving students were able to produce balanced and well-justified conclusions, that considered the trends and patterns shown in the data, also considering the impact of any anomalies or limitations within the data.

Task 3: English

The majority of students were able to communicate most aspects of the report effectively, with some attempt at logical structure. Level 2 English spelling, punctuation and grammar was used in conjunction with technical scientific language.

Task 4: present outcomes and conclusions.

The majority of students achieved good marks in this task. Most posters were to a very good standard with information clearly presented. Students demonstrated good presentation skills, however many were reading the poster and not expanding on the points shown.

Task 4 (AO2)

Most posters were well produced. Some students were putting in large amounts of text or large tables of data, which were cut and pasted from earlier tasks, which can impact on accessibility. The aim of a scientific poster is to include a concise explanation of the investigation parameters, which highlights the important trends in an accurate and accessible way.

Task 4 (AO3)

Most students were able to produce a scientific poster, with the higher achieving students producing posters that were detailed and easily accessible with a logical layout, which made maximum use of the available space.

Task 4 (AO5)

The majority of students were able to present their poster successfully. The stronger students were able to use the poster as a stimuli and add additional verbal explanation of content within their presentation. However, many students were reading their presentation. Providers need to support the students by providing a well-lit professional environment, for the students to do their presentation. Providers should check the quality of the sound and lighting is sufficient.

Task 4: mathematics and digital skills

Most students were able to demonstrate strong IT software and mathematical skills in order to organise data and conduct analyses.

Task 5: group discussion

Most students were engaged in the group discussion and were able to demonstrate a reasonable breadth and depth of knowledge and understanding. The emails were generally clear and well written. Providers should ensure that the students are clearly identified at the start of the discussion. Students' faces should be in clear view during the discussion, the sound quality must be good, so that their input into the discussion can be clearly heard. Smaller group sizes for example three or four, allow the students to have more time to speak and to demonstrate breadth and depth of knowledge and understanding. Examples were seen where the tutor was contributing to or leading the discussion, this is not permitted, this is clearly stated in the provider guidance.

Task 5 (AO2, AO3, AO5)

Most students were engaged and demonstrated an ability to participate effectively in the group discussion, demonstrating a reasonable depth of knowledge. Some students asked questions of their peers, a few checked the understanding of others within the group. It should be encouraged that peers ask questions of the quieter students to make sure they are included. Higher achieving students were addressing all the concerns raised by the practitioner and suggesting valid solutions, the lower achieving students were only addressing the initial concerns raised.

Task 6: reflective evaluation

Students were required to reflect and evaluate their achievements within the different tasks of the ESP. Students demonstrated a range of skills from across the bands.

Task 6 (AO2, AO3, AO5)

Most were able to provide a description of the tasks they had undertaken, providing an account of what had worked well and what worked less well, but could not articulate how they could improve beyond generic statements. Higher performing students were able to critically analyse their performance, providing a well-balanced and justified account of what went well and what went less well. They were able to reflect and evaluate reasons for potential changes if they were to repeat the tasks. A few students were able to directly reflect and apply the analyses to the referenced aims of the project, while taking into account the restraints of the project.

Task 6: English

Most students were able to communicate their reflective evaluation with a well-developed use of Level 2 English spelling, punctuation and grammar. They used a clear, logical structure with appropriate technical terminology to convey their reflections and evaluations. Some students did not proofread their work and correct spelling and grammatical errors, which was reflected in the mark achieved.

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