The project product for Project Qualifications

Students can either submit a research-based written report as their product or they can opt to produce an artefact with an accompanying shorter research-based written report. If they opt for a research-based written report as a product, they should aim to write 5000 words. The length of the report accompanying an artefact is not of importance but should be a minimum of 1000 words.

For the artefact projects, the key aim will be to produce a fully functioning, fit-for-purpose artefact. The report that accompanies their artefact should not be a 'write-up' of what they have done but, rather, should demonstrate a synthesis of the research and how the research has influenced every single design decision that underpins the final product.

For all projects, the report should be written in formal academic style and be fully referenced with an accompanying bibliography. Conclusions and findings should be clearly articulated. (See the *Teaching guide: The Taught Element of Project Qualifications* for more detail on the report writing skills that students should be developing and evidencing in their report).

Artefact products

What is an artefact?

An artefact can be a physical outcome such as a book or a short film, or it can be a presentation to a specific audience – like a play, or an event such as a fashion show, or a musical evening. It might be an experiment, a performance, a website, a vehicle or a garment. There's almost no limit to what constitutes a project artefact, as long as it has research at its core.

Key points to understand about artefact projects

Research focus

Students who choose artefact projects must understand that planned research should form the largest part of their project and that the production of the artefact should only start once this detailed and wide research is completed; all artefact projects must be research-based and have a clear purpose. A common mistake seen with artefact projects is the idea that they don't need to have a research focus. This is **not** the case. Students producing artefacts must have clear research aims and they should use a wide range of resources in order to complete their projects. Depending upon the nature of the project being undertaken, these resources might be less conventional than for students undertaking a long research-based report but they should still be critically evaluated and analysed the same as any other project.

For example, if a student is planning to record a song and sound quality is an important part of the project, the student might conduct research into the equipment that is available. Such research may take the form of the more traditional book and internet-based research, or it may include interviews with people who have

experience in the field or perhaps tests of various pieces of equipment. What remains important is that the student evaluates the reliability and validity of each resource they consider using throughout the research period and that they fully analyse all data and information derived from each resource.

Management and decision making

When a student has produced an artefact, it's important that the finished product is of a high standard at the appropriate level. However, this alone is not enough to earn high marks. Students need to demonstrate that they have made appropriate decisions throughout the project process. For example, by choosing, with reasons, the correct tools and materials to work with. They must also ensure that their final outcome is consistent with the plan they finally agreed (at mid-project review). A project that has not been well-managed can easily veer off in an unexpected direction. If decision making, changes and developments aren't documented and explained in the Production Log, students can fail to achieve high marks despite having produced a high-quality artefact.

Evaluation

When formulating proposals, Supervisors should encourage students to develop a proposal that incorporates how they will judge the success of their artefact after they have created it. It's vital that project planning includes time for the testing of the artefact so that the student will be able to answer the question: 'Is the completed artefact fit for its intended purpose?' It's vital that the student has objective evidence from which to judge the fitness for purpose of their artefact. For some artefacts, this may derive from primary research evidence of the completed artefact performing its designated task, eg a video of a surfboard (the artefact) being used to jump waves (its intended purpose) or a video of a synchronised swimming team performing a routine. Did the underwater timer (the artefact) improve the performance of the team (its intended purpose)?

For some artefacts, evidence to support fitness for purpose may be testimony from the intended user/audience and for other artefacts students may seek expert evaluation of the finished artefact. For example, an architect is best to judge the accuracy and fitness for purpose of an architectural model, a teacher of Spanish might be an appropriate expert if the artefact is a magazine article written in Spanish for a Spanish audience, a costume designer might be asked to evaluate a student's product if the artefact is a gown produced for a particular dramatic production, etc.

Working to a brief

There are sometimes opportunities for students to base their artefact projects on a brief and this is fine as long as it's the student who seeks out the brief. It's not appropriate for someone else to tell a student what topic they should study, nor how they should go about it. Moreover, any brief followed must be broad enough to allow students to take their own decisions and pursue their own independent research.

For example:

- a student who wants to research particular aspects of advertising might seek out a real client and attempt to create advertising that fulfils the client's brief whilst applying independent research undertaken into the chosen aspect
- a student interested in environmental matters may seek out a brief from a local nature reserve and undertake research into an area of fauna/flora resulting in an artefact that would be of benefit to the reserve
- a student undertaking research into website design might seek out a real client with very specific needs for whom to design a website.

In each case, the project planning should include plenty of time for client feedback. The student should evaluate whether or not the brief has been followed adequately and consider whether or not the client's needs have been understood and met.

Group projects

Large artefacts sometimes lend themselves to group production, usually these will be events or performances that couldn't be undertaken by an individual student.

If students are working on a group production or event project they must define their individual research focus and role, alongside any tasks carried out as a group. The individual contribution forms the basis for a student's project. The overall end product may be the same for all students, it's important that students are assessed on their **individual contribution** and not as a group.

A group should contain no more than four students and each Production Log must declare **all** students involved in the group.

Students wishing to work as a group should be advised that it's imperative that each of their individual contributions is explicit and identifiable in the final outcome. Credit can only be awarded to individuals for evidenced individual achievement.

Common mistakes with group projects

Submitting very similar Production Logs and/or reports for all students

Sometimes a group of students have submitted projects containing material that is almost identical with little or no evidence of what their individual contribution has been.

Students must complete their own Production Log so that their individual development can be assessed. They must write an individual and unique report focusing on the research undertaken by them as an individual and how this research has contributed to the final artefact. Reports that are produced as a joint effort render it impossible to tell exactly what each student has contributed.

Students focusing on the group effort

If students use the phrase 'we' within their Production Logs and focus on the joint aims of the team, they can't be awarded any individual credit. Students who don't make their individual role clear put themselves at a disadvantage. Supervisors need to ensure that students fully understand the need to focus on individual contribution and this should be discussed at the initial planning stage. To provide students with the opportunity to explore how they are able to contribute, Supervisors should advise the group to assign specific duties and responsibilities to each member of the group. Supervisors should not provide generic advice and comments for all students, as each student's skills and abilities are different. Students in a group may have different Supervisors to allow greater focus on each individual rather than viewing each project as a collective effort.

Completing a group presentation

The presentation is a key element within Project qualifications and it gives students the opportunity to provide evidence for all Assessment Objectives. A group presentation would constrain each student's ability to demonstrate their understanding of the process they have undertaken in completing the project and to reflect on their own performance. It's important, for each student to produce their own unique presentation, with a separate question and answer session to draw on their unique project journey.

Practical science projects

The flexibility of Project Qualifications lends them well to the investigative scientific project. Many centres support students through imaginative and well-planned scientific studies. Practical experimental investigations in the sciences can be very successful and allow students the opportunity to apply scientific method to their own investigation. This develops vital research skills.

Science topics where a hypothesis is tested work best as research-based 5000-word reports, written in the style of a scientific paper. Students complete a literature review containing the secondary research findings at the beginning followed by the methodology, data and analysis. Statistical validation of results is appropriate for many such investigations. Primary research may be included from the student's own experimentation.

However, an engineering construction project or a set-piece experiment or demonstration can be presented as an artefact product. The written report would contain the secondary research undertaken and explain how it affected the decision making that was implemented in the creation of the artefact together with an evaluation of the success of the finished artefact

Resource implications for science based projects

- The cooperation of subject staff and technicians is a must for experimental work as all safety protocols need to be observed and laboratory or fieldwork will need a level of supervision and appropriate risk assessments put in place.
- Note however that the student's Project Supervisor does not need to be a science specialist. A staff member who is prepared to be consulted regularly and supervise any practical work can be designated as a technical mentor, leaving the Project Supervisor in the normal advising and monitoring role. The Production Log can be used to record the input of the technical mentor. (See the *Notes and guidance: Work with third parties on Project Qualifications* for more detail about the use of technical mentors).
- University departments, work experience placements and field study centres can be useful resources, particularly where specialist technologies are required. Provided the planning stages of the project are completed before a placement, there's no reason why such resources can't be used to gather experimental evidence. The role of technical or research staff in the placement would needs to be clearly described so that the independent work of the student is clearly delineated. The arrangement of the placement and the precise support or facilities to be used to implement the student's plan should be clearly communicated within the Production Log.
- Individual experts can be approached for advice or mentoring where appropriate, provided the student acknowledges this. This is no different from any other project topic where experts such as healthcare professionals, university lecturers or subject specialist teachers are interviewed or their advice sought. (See the *Notes and guidance: Work with third parties on Project Qualifications*).

Resources for science-based projects

- The institute for research in schools (IRIS) provides EPQ guidance and exemplar projects.
- The Wellcome Trust has produced a practical guide to extended science projects
  Read the Wellcome Trust's practical guide to extended science projects.
- The Institute of Physics has guidance on supporting the Level 3 Extended Level 3 Extended Project in Physics.
- The National Stem Centre provides resources to support STEM subject EPQs – including ethics guides for students and teachers.
- The Nuffield Foundation provides guidance on health and safety in school and college science laboratories.
- Science and Plants in Schools provide resources to support developing skills for science and social science EPQs.
- Into Biology provide research ideas for EPQ and resources that support biology and biochemistry EPQs.

Artefacts projects as vehicles for research

Universities tell us how important it is that students are able to undertake their own independent research. Artefact projects may involve working to a brief, working as an individual member of a team, or choosing a project according to their own assessment of the practical support and resources available. As long as students are able to make their own decisions and pursue their own independent research, then there's no reason to discourage students from seeking out a brief to work to or from working as a member of a group to create a large artefact. Artefact projects offer particular opportunities to develop practical research skills alongside those skills delivered via the project Taught Element.