Level 3 Composites Technician Apprenticeship (ST0094/1.0)

EPA1: Work-Based Project Guidance

Version 3

Updated 19 March 2025

INTRODUCTION

Apprentices must undertake a work-based project during the last six months of the programme and submit this report to PIABC Limited for review by a panel of assessors. This work-based project should be started by the apprentice before they complete the final gateway.

The report will enable apprentices to demonstrate specific work related tasks that they have completed in order to demonstrate how they have achieved the knowledge, skills and behaviour (KSBs) and professional competence set out in the Level 3 Composites Technician Standard and for registration as an Engineering Technician (EngTech) by a relevant Professional Engineering Institution (PEI), such as the Institute of Materials, Minerals and Mining.

The report also provides apprentices with the opportunity to demonstrate to the end point assessment panel that they understand the company in terms of their products, processes, procedures, tools, equipment, materials, documentation and information systems by showcasing what they have done, what they have learnt and how they have applied this knowledge and skills to real work tasks including solving composites related problems.

KNOWLEDGE, SKILLS AND BEHAVIOURS (KSBs)

The Level 3 Composite Technician apprenticeship standard states that all technicians employed in the composites sector will need to develop specialist KSBs. These KSBs will be generic and/or technology specific, but the subject areas indicated below will provide a foundation for an apprentice development in composites manufacture.

The EPA provides apprentice with a showcase opportunity to provide oral and documentary evidence of their KSBs developed throughout the apprenticeship in a synoptic way. It enables the EPA panel to test the KSBs acquired by the apprentice throughout the apprenticeship.

The KSBs of the of the Level 3 Composite Technician apprenticeship standard are set out below:

Knowledge
A composites technician will require a thorough understanding of the industry in which they are employed. They will be able to understand and apply the following areas:

- Working safely, appropriately, and collaboratively.
- Equality & Diversity.
- Maths, science, and engineering disciplines.
- The characteristics of composites and their various applications.
- Composite materials and consumables
- Types of resins (e.g. polyester, epoxy, bio-resins).
- The manufacture of materials (e.g. semi-finished, woven reinforcements, preforms.
- Material science, design, tooling, moulding, laminating, curing, testing, inspection & repair.
- Hand lay-up (e.g. open moulding, spray lay-up).
- Automated lay-up (e.g. automated fibre placement, automated tape layup).
- The manufacture of complex parts (e.g. airplane wings, body armour, turbine blades).
- Quality, Cost and Delivery (QCD) standards and their importance in the workplace.
- Manufacturing costs and the need for preventative maintenance.

- Business improvement techniques and waste reduction.
- Application of IT systems to support manufacture (including CAD/CAM/CMM).
- Automation techniques including programming and operating robots.
- Supporting R & D projects.
- New Product Development (NPD).

Skills
A composites technician will develop skills in the disciplines of design, mould tool making and preparation, part lay-up, curing, testing, inspection, repair, and material science. They will be able to:

- Select appropriate techniques, procedures, and methods to undertake part manufacture.
- Identify and select materials (resins, matrix, and core).
- Design and prepare mould tools.
- Design and manufacture components.
- Select appropriate consumables required to ensure satisfactory progress and completion of projects and/or manufacturing programmes, in conjunction with any relevant Health and Safety legislation.
- Read and understand technical drawings for part manufacture.
- Laminate geometrically complex parts.
- Operate machinery associated with laminating and automated manufacture.
- Carry out maintenance to machines or equipment to comply with preventative maintenance plans.
- Assist and advise in the planning and preparation of manufacturing programmes and research projects to ensure they meet customer requirements and schedules.
- Understand and follow work instructions.
- Use metrology equipment applicable to the workplace.

Behaviour
The behaviour of technicians in the composites industry is one of the most important aspects of the standard. Composites technicians will be expected to:

- Manage and apply safe systems of work, ethically and responsibly.
- Show respect for colleagues and the work environment.
- Be focused on customer satisfaction, ensuring that work is undertaken following QCD principles to meet or exceed customers' expectations.
- Have a "right first time" approach.
- Understand and implement continuous improvements in the workplace.
- Solve problems, eliminate waste and risks.
- Undertake engineering activities which contribute to sustainable development.
- Be able to work in a team with effective interpersonal skills.
- Be able to communicate clearly.
- Commit to & apply a professional code of conduct.
- Carry out continuous professional development activities and have a desire to develop a career in composites engineering.

THE WORK BASED PROJECT

It represents and demonstrates the application of KSBs by the apprentices to meet the outcomes in the standard, as well as the approach to planning and completion of the work-based project. It:

- will take place towards the end of the apprenticeship and provides a substantive evidence base from a business-related project.

- is designed to assess apprentices in a consistent way, irrespective of their workplace and training provider. The employer and training provider will work together with the apprentice to agree a work-based project that is achievable within the employer's business constraints whilst meeting the needs of the standard.

- should be conducted as part of the apprentice's normal work and the employer should make allowance, in terms of time and resource, for the work-based project to be undertaken. Any elements which need to be undertaken outside of normal work should be agreed between the employer, apprentice and training provider to ensure that the apprentice is not disadvantaged in any way from performing their job and can meet the requirements of the work-based project.

The completed work-based project will be submitted to the PIABC Limited and the end point assessment panel will ensure that it demonstrates competence across the relevant standard.

The evidence presented by the apprentice in the work-based project must be valid, current, authentic, sufficient, and relevant to the standard. By this PIABC Limited mean:

- **Valid:** Relevant and appropriate to meet the KSBs criteria.

- **Current:** The evidence has been produced during the time the apprentice has been on the apprenticeship.

- **Authentic:** The evidence can be identified as the individual apprentice's own work and not that of someone else or a group of people. If produced by the apprentice, if evidence is team-based it must be able to clearly identify the apprentice's contribution

- **Sufficient:** There is enough evidence to be certain that performance to the required standard is consistent and could be achieved on more than one occasion.

- **Relevant:** There is a clear match between the item of evidence and the required KSBs criteria.

Apprentices are allowed a degree of freedom in how they present their work-based project.

But it is important to note that the work-based project is NOT:

- A report that a consultant would produce
- A description of the latest developments in an organisation
- A textbook or manual
- A narrative history of a company's successes or failures

STRUCTURE AND APPROACH

The work-based project should:

- Address and meet the KSBs criteria
- Contain a beginning, middle and an end
- Contain accurate referencing
- Be an apprentice's own work
- Relevant use of experience and consultation with others adding to the quality of the content

An introduction – what is it being investigating or debating and why. A description of the method – describe how an apprentice tackled the work-based project, what methods were used, and any difficulties encountered. The middle will include – results – what did was found? Discussion – this means the main part of the work – what are the findings/research what does it all mean. The end section will include – possible conclusions or solutions. What can be learned from the work-based project?

At the end of the work-based project there should be – references in the form of a bibliography. This is an alphabetical list of books, articles, websites, company documents which an apprentice has referred to in their work-based project.

Appendices can be used for the purpose of supporting data and information included in the work-based project.

Apprentices need to ensure that they write enough to ensure the end point assessment panel has enough information from which to deem the apprentice's competency.

While succinctness and clarity are features of good communication, apprentices must express themselves in sufficient detail, and produce enough evidence that the Independent Assessors are able to assess you as competent.

Apprentices must always adhere to confidentiality rules and protocols of their organisation when including any supporting evidence.

FORMAT

The work-based project should be presented in the following format:

- In Arial font size 12
- Double line spacing
- Pages should be numbered
- Please add a footer to your work-based project – full name/Unique Learner Number (ULN)/submission date
- Minimum word count of 1,500 words (excluding any appendices & references)
- In PDF format

Failure by the apprentice to adhere to the rules may result in work not being marked.

PLAGISARISM

Plagiarism is taking or using another person's thoughts, writings or inventions and presenting them as your own. Apprentices needed to ensure that all work they submit to be assessed within their work-based project is their own work.

If an apprentice uses other people's work than it must been properly cited or referenced. If an apprentice does not cite or reference someone else's work, then this is called plagiarism. Dependent upon the amount of work which has been plagiarised an apprentice risks having their work-based project failed by the panel of assessors.

The following are examples of plagiarism:

- Downloading text from the web, without reference to the original source or using quotation marks and without using the material to answer the question or to support an argument.
- Quoting, re-writing, or scanning information from books without adequate reference.
- Copying information from colleagues and including this as if it were own work (whether modified or not).

Citing and referencing section below gives guidance for apprentices when using someone else's work within their work-based project.

Apprentices need to submit with their work-based project a covering sheet, which an apprentice should confirm that they have complied with the following statement:

"I declare that this work-based project is my own work. Where sources such as the internet, books and the work of others has been used; these sources have been fully acknowledged within the text and included in the references and bibliography on the last page. Any assistance given by others has been included in the acknowledgements."

CITING AND REFERENCING

What?
Apprentices must cite and reference all images, tables, illustrations and graphs taken from printed or internet sources, as well as blogs, e-mails, wikis, conversations, TV and radio broadcasts, plus all statements, opinions, conclusions, etc. taken from another writer's work, whether the work is directly quoted, paraphrased or summarised.

How is citing and referencing done in a work-based project?
PIABC Limited recommend that apprentices use the standard Harvard reference system. There are two elements to the Harvard system:

1. In-text citations

Where do they go?
In-text citations occur within the main body of the work-based report.

What info is included?
An in-text citation gives brief information about the source; the author, the date, and the page number (if appropriate).

How to create in-text citations

Within the text, within brackets:

- Give the author's surname, or the corporate author, organisation, artist, or editor if there is no author (e.g. Smith, Microsoft, Welsh Government).
- Give the year the source was produced (e.g. 2020).
- Give the page numbers if quoted, paraphrased or summarised words or ideas on a specific page of the source. However, if summarising what an author has argued in an entire book or article, then do not give page numbers.
- If the author's name used in the sentence, there is no need to put in the brackets, just the year and page number, if appropriate.

Examples of citing within text:

Quoting directly:
Jones argues that land fill sites are "not cost efficient" (2019: 48).

Paraphrasing:
Jones argues that land fill sites are expensive and inefficient (2019: 48).

Summarising an entire book or article:
A recent study reveals new information about child poverty in Scotland (Davidson 2018).

2. Bibliography

Where do they go?
A bibliography is a list of references which is included on a separate page at the end of the work-based report.

What info is included?
It gives full details of the source and provides enough information for readers to locate it.

How to create a bibliography
A bibliography should contain all the sources that have been cited in the work-based project and should appear on a separate page at the end. The list should be organised in alphabetical order according to the surname of the author.

Examples of how to create a bibliography:

For a website:
Author, A. (year of publication/ update) *Website or Resource Title* [online]. Available from <URL> [Day Month Year]
Smith, J (2020 *Using the Harvard system* [online]. Available from <http://www.bournemouth.ac.uk/servicesdepts/lis/LIS-pub/harvardsyst.htm> [16th Dec 2009]

For a book:
Author, A. (year of publication) *Book Title* Nth edition. Place of publication: Publisher
Ball, M. (1997) *Consulting with Parents: Guidance for practice* 2nd ed. Edinburgh: National Press

ASSESSMENT CRITERIA

WORK-BASED PROJECT	COMPETENT	NOT COMPETENT
To be deemed competent KSBs are individually demonstrated.	Makes a reasonable attempt to address the achievement of individual KSBs in their work-based project using appropriate work examples of activities undertaken.	Overly focused on only one or two elements of the KSBs or there are complete gaps (one or more) in coverage of some of the KSBs within the overall work-based project with insufficient use work examples to explain how many of the KSBs have been achieved or the evidence of role and responsibilities is not sufficiently credible.

GRADING

The work-based project will be assessed Pass or Fail; it will not be given a grade.

SUCCESSFUL COMPLETION OF THE END POINT ASSESSMENT

For an apprentice to pass the end point assessment (EPA) as a whole and be deemed to be competent, the apprentice must pass both EPA1: Work-Based Project and EPA2: Professional Discussion (which includes a viva based on the work-based project).

Should the apprentice fail either EPA1 or EPA2 they are required to re-sit/re-take that component. The number of times an apprentice is permitted to re-sit/re-take the end point assessment and the date at which they do so is determined by the employer.