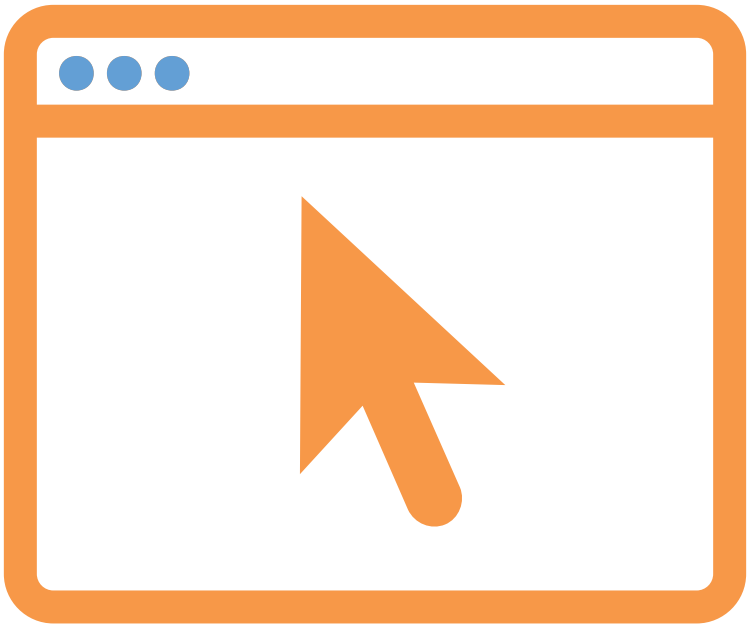
Assessment Guidelines

FOR LEVEL 3 BUILDING, CONSTRUCTION, AND ALLIED TRADES SKILLS (BCATS) UNIT STANDARDS



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BCITO appreciates the opportunity to again congratulate and thank the winners of Build-Ability 2015: Tarzan Smith, Tiaki Harrison, and Bruce Mabagos, from Rotorua Boys High School.

INTRODUC TION

This booklet is designed to provide guidance to those supporting students to learn the underpinning knowledge and apply the practical skills required to achieve the Level 3 Building, Construction, and Allied Trades Skills (BCATS) unit standards. It focuses on the ideal of the student completing Unit Standard (US) 29684, Undertake a Stage 3 BCATS project, with evidence collected throughout contributing to the assessment of the other Level 3 BCATS unit standards.

What do we mean by 'BCATS'?

'Building, Construction, and Allied Trades Skills' (BCATS) is the term the BCITO uses for the broad range of trades that contribute to complete buildings and properties, such as carpenters, painters and decorators, glaziers, plasterers, joiners, stonemasons. Appendix 1 provides a list of the most common trades, but does not include recent specialisations, such as manufacturers of pre-fabricated frames and trusses, kitchen installers, or external cladding installers. Many of these specialisations have emerged due to pressure for faster and more efficient builds.

The Level 3 BCATS unit standards provide recognition that students have gained skills and knowledge that will help them take advantage of these numerous career opportunities post-school.

Level 3 BCATS

Until recently, the only building and construction-related unit standards and qualifications designed for secondary schools have been at Levels 1 and 2, with some Level 3 unit standards (intended for those undertaking apprenticeships) available for those doing Gateway.

There are eight Level 3 BCATS unit standards listed on the NZQF. The Level 3 BCATS unit standards are:

- Flexible enough so that teachers/students can select their own projects.
- Able to be achieved by undertaking projects in any of BCITO's trades.
- Able to be achieved in school workshops, training establishments, outdoor areas, and/or in the workplace during industry placements ('work experience').
- Explicit that attaining commercial competence is not a requirement.
- Suitable for students participating in Build-Ability competitions or in 3+2, Gateway, or Youth Guarantee programmes.
- Responsive to the reality that some students will likely be enrolled for a full school year, whereas others may be able to engage in BCATS for only part of it.

LEVEL 3 BCATS UNIT STANDARDS

Number	Full name	Short name *	Credits
29684	Undertake a Stage 3 BCATS project	**Project**	12
29677	Follow safe workplace practices, and contribute to a health and safety culture, in a BCATS environment	**Safety**	2
29678	Demonstrate knowledge of, select, and use materials for a Stage 3 BCATS project	**Materials**	4
29679	Develop and use BCATS project documentation for a Stage 3 BCATS project	**Documents**	8
29680	Communicate and work collaboratively in a Stage 3 BCATS project	**Collaborate**	5
29681	Measure and calculate for a Stage 3 BCATS project	**Measure & calc**	3
29682	Select, use, and maintain tools, equipment and machinery for a Stage 3 BCATS project	**Tools**	4
29683	Incorporate other building, construction and allied trades into a Stage 3 BCATS project schedule	**Other trades**	2

* Rather than repeat the verbose and complex full name of unit standards, this document will often refer to their short name for simplicity.

Integrated assessment

The Stage 3 BCATS project allows students to develop and enhance a range of skills and knowledge and to apply them naturally during the course of undertaking the project.

Achievement is measured against individual unit standard learning outcomes but should be assessed holistically. Programmes should be based around a project, with all students working towards achieving US 29684 *Undertake a Stage 3 BCATS project* (12 credits).

Student progress toward US 29684 incorporates the learning outcomes for other Level 3 BCATS unit standards**, thereby providing opportunities for achievement of a total of 40 credits along the journey. Therefore, while 40 credits may seem a lot to offer for one subject, it must be remembered that each "equivalent learning hour" while undertaking a project contributes to multiple aspects of the other seven Level 3 BCATS unit standards.

** The only unit standard that could possibly be achieved without undertaking a Stage 3 BCATS project is unit standard 29683 (Other trades).

Ngaruawahia High School building a stage and sound shell for their school during Build-Ability Challenge 2017

The table below shows how the Level 3 BCATS unit standards' evidence requirements interact.

EVIDENCE REQUIREMENTS INTERACTION

Project unit standard	**Evidence interaction with other unit standards**						
US 29684 Undertake a Stage 3 BCATS project	29677 Safety	29678 Materials	29679 Documents	29680 Collaborate	29681 Measure & calc	29682 Tools	29683 Other trades
Outcome 1 Prepare to undertake a Stage 3 BCATS project							
ER 1.1 Material and equipment requirements are identified from BCATS project documentation.	All	2.1	1.1-1.3	All	All	1.1 2.1	N/A
ER 1.2 Work area and required materials, tools, equipment and machinery are set up to meet the project requirements in accordance with BCATS project documentation and workplace practice.	All	2.2	1.2-1.3	All	All	2.2	N/A
Outcome 2 Undertake a Stage 3 BCATS project							
ER 2.1 Materials, tools, equipment and machinery are used to meet the project requirements in accordance with BCATS project documentation and workplace practice.	All	1.1-1.4 2.3	1.2-1.4	All	All	1.2-1.4 2.3-2.5	N/A
ER 2.2 Each stage of t he production process is undertaken in accordance with BCATS project documentation.	All	2.1-2.3	1.1-1.3	All	All	All	2.1
ER 2.3 Any amendments to the project are recorded in project documentation in accordance with workplace practice.	All		1.3 1.5	1.6	All	N/A	2.1
ER 2.4 Identified quality control procedures are implemented during the production process in accordance with workplace practice.	All	2.1-2.3	1.4	All	All	All	2.1
Outcome 3 Compare a Stage 3 BCATS project against project requirements							
ER 3.1 Project outcome is checked and measured against project requirements.	All	N/A	1.4-1.5	All	All	N/A	N/A
ER 3.2 Any variances between the project outcome and the project requirements are identified.	All	N/A	1.4-1.5	All	All	N/A	N/A
ER 3.3 Any remedial actions required are identified.	All	N/A	1.5	All	All	N/A	N/A

Please note:

1. Teachers and students must be familiar enough with each of the standards' evidence requirements to be able to collect all the required evidence as the project progresses.

2. The following two unit standards **must be achieved throughout the project**, from preparation through to the final comparison:

   - US 29677 Safety
   - US 29680 Collaborate

GENERAL ASSESSMENT GUIDANCE

Stage 3 BCATS project

A Stage 3 BCATS project is one undertaken in a BCATS environment under limited supervision, using a broad range of tools, equipment, machinery and materials, and involving a range of standard processes.

The Level 3 unit standards do not specify particular projects. Instead, a project's suitability is determined by its complexity and the ability to meet unit standards' outcomes at Level 3. This provides flexibility for students (and teachers) to choose projects according to their interests and circumstances.

The word "project" automatically brings visions of a student completing something in its entirety, which in many cases is exactly what students will opt to do. For others the finished form (such as a relocatable house) is far outside what the school, class, or employer can offer each individual and so the larger project comprises any number of individual projects.

BCITO will develop a repository of exemplar projects over time. In the meantime:

- Appendix 2 provides examples of projects that may be suitable.
- Below is a table showing what the NZQF specifies at Levels 1-3.
- Following the table are some questions that may further help determine if the proposed project meets requirements.

NZQF LEVEL DESCRIPTORS – L1-3

Level 1	Level 2	Level 3
Qualifies individuals with basic knowledge and skills for work, further learning and/or community involvement.	Qualifies individuals with introductory knowledge and skills for a field(s)/areas of work or study.	Qualifies individuals with knowledge and skills for a specific role(s) within fields/areas of work and/or preparation for further study.
Graduates are able to:	**Graduates are able to:**	**Graduates are able to:**
Demonstrate basic general and/or foundation knowledge	Demonstrate basic factual and/or operational knowledge of a field of work or study	Demonstrate some operational and theoretical knowledge in a field of work or study
Apply basic skills required to carry out simple tasks	Apply standard processes relevant to the field of work or study	Apply a range of standard processes relevant to the field of work or study
Apply basic solutions to simple problems	Apply known solutions to familiar problems	Select from and apply a range of known solutions, select and apply them to familiar problems
Apply literacy and numeracy skills for participation in everyday life	Apply literacy and numeracy skills relevant to the role in the field of work or study	Apply literacy and numeracy skills relevant to the role in the field of work or study
Work in a highly structured context (direct supervision)	Work under general supervision	Work under limited supervision (can include periods of direct and/or general supervision)
Demonstrate some responsibility for own learning	Demonstrate some responsibility for own learning and performance	Demonstrate major responsibility for own learning and performance
Interact with others	Collaborate with others	Contribute to group performance
		Apply a range of communication skills relevant to the role in the field of work or study
		Adapt own behaviour when interacting with others

The following questions may help determine if a project is suitable for a Stage 3 project.

- Does the project require a range of materials?
- Will the student need to make some judgments about what materials are suitable?
- Does the project require tools, equipment and machinery common to the trade the student has chosen to focus on?
- Will the student be able to select and use the tools and equipment with little or no guidance?
- Will the student be permitted to use all required machinery themselves?
- Will the student have the opportunity to research (eg project ideas, materials, safety)?
- Will the project require the teacher to supervise the student more than teach the student?
- Will undertaking the project provide the student with opportunities to interact with people in different roles (eg client, supplier)?
- Do you expect the student will encounter many new problems? If so, the project may be more than expected at Level 3.
- Does the project require non-standard processes? If so, the project may be more than expected at Level 3.

If there is still doubt, please email bcats@bcito.org.nz with the proposed project for guidance.

'Undertake'

Unlike Level 1 and 2 BCATS, we have intentionally used the word 'undertake' instead of 'complete'. The ideal is always that the student gets to take a completed project home or to be able to point out a community or workplace project they helped complete. However, we need to be responsive to the reality that there are students who receive job offers during Year 13 and that others will be unable to complete their project for reasons outside of their control (eg, ongoing inclement weather affecting an outdoor project). In these situations, the student must have completed enough of their project to have met all required outcomes in order to be awarded the L3 BCATS unit standard(s).

Standard of competence

It is unrealistic to expect a secondary school student to be commercially competent*. Instead, Level 3 BCATS graduates will have sufficient understanding, familiarity, and practice of a BCATS trade to form a good basis from which they can go on to gain commercial competence while undertaking post-school employment and training. It is nevertheless expected that the project outcome is fit for purpose and meets any applicable industry standard.

* Someone who is "commercially competent" is able to confidently and safely repeat varied tasks, to the required standard and within commercially viable timeframes, without needing to be instructed, and does so in different situations throughout employment.

Evidence collection - written

Information collected throughout a project only becomes evidence supporting the assessor's decision once it has been verified as authentic and assessed against the unit standard's evidence requirements.

Written information submitted for assessment should, wherever possible, be that which is naturally developed as part of the student preparing to and undertaking their BCATS project.

In the work place, a tradesperson keeps a work diary, which is often simply a notebook or notes recorded on a digital device. BCITO has developed a Student Work Diary that includes prompts to help students record all they need to.

Written evidence could additionally include, where appropriate, completing worksheets or being tasked with writing explanations. Please treat 'worksheets' provided by BCITO as a guide – please adapt them according to the needs of the project and teaching methods.

Evidence collection – verbal and observational

Verbal evidence is normally obtained through the student and assessor walking around the workshop/job site(s) discussing what tasks students are working on or have completed, how they are approaching it, and the reasons for doing it this way rather than another.

Observational evidence is what the teacher/employer observes the student doing. Anyone can write and say all the correct things about how to, for example, work safely or to use machinery properly; being observed actually doing what they should is essential evidence that the student can turn the theory into practice and do as they should.

The teacher/employer must verify that what they have heard and seen meets the requirements of the unit standard in order for it to be considered as evidence. Brief notes and/or videos recording verbal and observational evidence are encouraged, just as they would be if a tradesman was walking their client through the site.

The following pages provide additional guidance specific to each unit standard and minimum expectations of evidence to support an assessment of 'achieved'.

UNIT STANDARD 29677 - SAFETY

US 29677 Follow safe workplace practices, and contribute to a health and safety culture, in a BCATS environment *(2 Credits)*

Outcome 1	Follow safe workplace practices in a BCATS environment
ER 1.1	The workplace practices of the BCATS environment are explained in terms of relevant safety procedures and site-specific requirements.
ER 1.2	Work tasks are completed in accordance with workplace practice.
ER 1.3	Workplace, tools, equipment, and machinery are kept clean and safe, and are stored in accordance with workplace practice.
Outcome 2	**Contribute to a health and safety culture in a BCATS environment**
ER 2.1	Workplace health and safety induction processes are completed in accordance with workplace practice.
ER 2.2	A site-specific safety plan is completed, and its requirements are complied with.
ER 2.3	Hazards are identified and assessed for risk, and controls are implemented and monitored, in accordance with workplace practice.
ER 2.4	Accidents, incidents and near misses are reported, and followed up, in accordance with workplace practice.
ER 2.5	Workplace health and safety practices are applied in accordance with workplace practice and relevant specifications.

The purpose of this unit standard is to recognise students who are aware of and can apply safe workplace practices. Importantly, students awarded this unit standard have shown they contribute to a health and safety culture through being mindful of the environment - and how their actions/inactions could affect it and the safety of others - and through recognising that situations change and new hazards emerge as a job progresses.

Students need to follow safe workplace practices and contribute to a health and safety culture throughout their project. Fulfilling the evidence requirements occurs in conjunction with the requirements of other Level 3 BCATS unit standards, such as following manufacturers' safety specifications and safety data sheets when using machinery and materials. (US 29678 Materials and US 29682 Tools).

Information supporting the assessor's decision **must** include a completed site specific safety plan and **could** include notes taken at toolbox meetings and/or reports of new hazards, accidents, incidents, or near misses.

Verbal evidence **could** be obtained through walking around the workshop/job site(s) with the student discussing hazards and safe work practices.

Observational evidence **must** include the teacher/employer formally attesting that the student has applied workplace health and safety practices in accordance with workplace practice and relevant specifications. This would include the student using all materials, tools, equipment, and machinery safely and reporting any that are faulty.

UNIT STANDARD 29678 - MATERIALS

US 29678 Demonstrate knowledge of, select, and use materials for a Stage 3 BCATS project *(4 Credits)*

Outcome 1	Demonstrate knowledge of a broad range of materials used for a Stage 3 BCATS project
ER 1.1	Materials are described in terms of their purpose and function for a Stage 3 BCATS project.
ER 1.2	Materials are identified and described in terms of their physical properties.
ER 1.3	The methods and reasons for using different types of materials are explained in accordance with specifications and workplace practice.
ER 1.4	The health and safety procedures when using different types of materials are described in accordance with specifications and workplace practice.
Outcome 2	**Select and use materials for a Stage 3 BCATS project**
ER 2.1	Material requirements for a Stage 3 BCATS project are confirmed in accordance with the BCATS project documentation.
ER 2.2	Materials are selected and the selection is justified.
ER 2.3	Selected materials are used safely to meet the Stage 3 BCATS project requirements.

The purpose of this unit standard is to recognise students who have the knowledge and skills to correctly identify and use materials common to the industry to which their Stage 3 BCATS project relates. It also recognises knowledge of why a particular type of material is required for the particular project.

The number and type of materials must be relevant and appropriate to the BCATS project(s) being undertaken. For example, depending on the project:

- a playhouse could require timber, concrete, sheet metal roofing materials, cladding materials, lining materials, joinery, fasteners etc and an understanding of types and finishes of different materials, advantages and disadvantages of one material over another, treatments applied to different materials, the appropriateness of combining different materials, and so on.
- a painting project could require different coatings, cleaning products, fillers, sandpaper, etc and an understanding of the different types of substrate, types of paint, types of finishes, the advantages and disadvantages of combining different types of paint, and of different considerations depending on whether it is a renovation job or new work, and so on.

Information supporting the assessor's decision **could** include the BCATS project documentation, including relevant Safety Data Sheets (SDS). A work diary, verified by the employer/supervisor as correct, is recommended if the student is undertaking the project in a workplace instead of under the direct guidance of a teacher.

Either verbal or written evidence **must** be used to demonstrate that the requirements of ER 1.1 - ER 1.4 and ER 2.1 - 2.2 have been met.

Observational evidence **requires** the teacher/employer to formally attest that the student has used the materials safely to meet the BCATS project requirements, according to the requirements of ER 2.3.

This observational evidence also contributes to the requirements of

- US 29677's (Safety) ER 1.2 and 2.5, and to
- US 29684's (Project) Outcomes 1 and 2.

Beginning to assemble the project by applying glue into the mortises in a table leg.

UNIT STANDARD 29679 - DOCUMENTS

US 29679 Develop and use BCATS project documentation for a Stage 3 BCATS project *(8 Credits)*

Outcome 1	Develop and use BCATS project documentation for a Stage 3 BCATS project
ER 1.1	Stages of the job are identified and BCATS project documentation is developed in accordance with project requirements and workplace practice.
ER 1.2	BCATS project documentation is used to decide the materials, equipment, and machinery required for the Stage 3 BCATS project.
ER 1.3	Information is stored, retrieved, and reported in accordance with workplace practice.
ER 1.4	Quality control procedures to be used during production are identified in accordance with project requirements and workplace practice.
ER 1.5	BCATS project documentation is updated as required throughout the project to reflect any changes needed to continue to meet the requirements of the Stage 3 BCATS project.

'BCATS project documentation' refers to the information and instructions (oral, written, and graphic) that detail the parameters of and planning for a BCATS project. The BCATS project documentation may include such things as project briefs, project plans, working drawings, specifications, and quality control procedures, but will vary depending on the particular BCATS environment and BCATS project.

The project documentation should accurately reflect what is needed to successfully undertake the project, including appropriate quality control procedures. Students are permitted to use existing documentation but must make sufficient modifications to demonstrate that their work is authentic. 'Develop' can therefore mean creating all the project documentation from scratch or further development and customisation of existing documentation. In the latter instance, the extent and appropriateness of the modifications depends on the project chosen, the overall context within which the project occurs, and the extent to which other project documentation is created by the student.

The project documentation needs to set out realistic stages of the project. Each stage of the project must take into consideration relevant workplace practice. Diagrams should include symbols that would typically be seen in project documentation, and common abbreviations should be used appropriately.

Project documentation should take into consideration relevant information that informs workplace practice, such as:

- The client's needs and wishes
- BRANZ Good Practice and/or Good Repair Guides
- WorkSafe New Zealand's Guidelines
- Manufacturer's specifications
- Durability (of, for eg, materials, design, processes)
- Cost and availability of materials and equipment

(Please note that the above list is not a checklist.)

Project documentation must be updated as the project progresses.

If a student is undertaking their project during industry placements, the unit standard can be achieved through developing project documentation that relates to their role in the workplace (ie, the project they're undertaking). The project documentation can then be updated as they undertake the project and the documentation completed to the stage of the project they have contributed to.

The final project documentation must be sufficiently robust that it could be used by others to replicate the project to the stage at which it was completed.

Applying glue to the biscuit.

UNIT STANDARD 29680 - COLLABORATE

US 29680 Communicate and work collaboratively in a Stage 3 BCATS project *(5 Credits)*

Outcome 1	Communicate and work collaboratively in a Stage 3 BCATS project
ER 1.1	The parties involved in the Stage 3 BCATS project are described in terms of their roles and relationships.
ER 1.2	Information relating to the BCATS project is received and passed on clearly, accurately and in accordance with workplace practice.
ER 1.3	Information is exchanged that is relevant to the situation, occasion and the relationship between the participants.
ER 1.4	Questions are used to obtain and clarify information from other parties when needed.
ER 1.5	Communication style that contributes to an effective team environment is demonstrated.
ER 1.6	Negotiation techniques are used when necessary to ensure the Stage 3 BCATS project is undertaken successfully.

Teamwork and the ability to understand and be responsive to the needs of other parties are essential to any of the building, construction, and allied trades. This unit standard recognises students who can do this in a BCATS environment, providing a solid basis from which they can further develop their communication and collaboration skills post-school.

'Parties' refers to those involved in the BCATS project. Depending on what the project is and what BCATS environment it is in, the parties could be any number of teachers, classmates, clients, employers, tradespeople, suppliers, community groups, and so on.

Students can achieve this standard while working on a team project or on an individual project where communication and collaboration are required (eg, in a workshop with the normal resources, space, equipment and materials constraints).

Evidence that the student can communicate and work collaboratively, to the standard required, **must** include examples of written and/or diagrammatical information exchanged.

Either verbal or written evidence **must** be used to demonstrate that the requirements of ER 1.1 have been met. The student must describe the roles of at least three different parties, one of which must be the client. Given the endless possibilities for projects, the teacher's discretion about whether this can be a theoretical client (for example, the student is making the project for him/her self) is permitted.

Observational evidence **must** include the teacher/employer formally attesting that the student:

- exchanged relevant, accurate information in methods and styles appropriate for the context and people involved; and
- worked collaboratively with the other parties to undertake the Stage 3 BCATS project; and
- sought clarification and negotiated, when necessary, throughout the project.

Rotorua Boys' High School, Build-Ability Challenge Winners, 2015'

UNIT STANDARD 29681 - MEASURE & CALC

US 29681 Measure and calculate for a Stage 3 BCATS project *(3 Credits)*

Outcome 1	Measure and calculate for a Stage 3 BCATS project
ER 1.1	Required measurements and calculations are determined.
ER 1.2	Mathematical methods that are chosen are appropriate for the required measurements and calculations.
ER 1.3	Chosen methods are applied in the context of the situations provided.
ER 1.4	Measurements and calculations are undertaken and are accurate and consistent with the requirements of the Stage 3 BCATS project.
ER 1.5	Information and results are accurately presented in accordance with workplace practice.

Every building, construction, and allied trade depends on accurate measurements and calculations to produce a quality product. This unit standard recognises students who successfully use them to undertake a Stage 3 BCATS project.

'Calculations' refers to those suited to BCATS projects, such as addition, subtraction, multiplication, division, converting fractions to decimals and percentages (and vice versa), square, square root, using formulae to calculate area and volume, and trigonometry.

Many products come with coverage written on the packaging material (paint pail, bag of plaster, bucket of compound, etc) that can help form the basis of calculations (eg, 16-18kg/m² per cm of screed thickness).

In accordance with workplace practice, calculators and other technology (eg on-line calculators, apps) may be used. Examples of these are:

www.resene.co.nz/homeown/problem-solver/paint-calculator.htm

www.british-gypsum.com/technical-advice/plaster-coverage-tool

alliedconcrete.co.nz/technical-info/tools/concrete-calculator

www.steelformers.co.nz/resources/calculator

There are also many apps available that students can either Google or ask a relevant tradesperson to recommend. We suggest that teachers double-check any app before use to ensure it uses metric rather than imperial measurements.

Final calculations for materials must include the specific trade's standard allowance for wastage.

Records of how the student measured and calculated should be collected while they:

- Undertake a Stage 3 BCATS project (US 2964)
- Develop and use BCATS project documentation (US 29679)
- Demonstrate knowledge of, select, and use materials (US 29679*),
- Incorporate other building, construction and allied trades into a project schedule (US 29683**)

* Outcome 2

** Outcome 2 when the student estimates time requirements as part of incorporating other trades into the project scheduleto be instructed, and does so in different situations throughout employment.

Written evidence for this unit standard **could** therefore include project plans, project schedules, material order sheets, cutting lists, and so on.

Photographic and observational evidence **must** include proof that the projects' materials have been cut/measured/calculated/applied as required for the Stage 3 BCATS project.

Checking the project legs' measurements.

UNIT STANDARD 29682 - TOOLS

US 29682 Select, use, and maintain tools, equipment and machinery for a Stage 3 BCATS project *(4 Credits)*

Outcome 1	**Select, safely use, and maintain tools and equipment for a Stage 3 BCATS project**
ER 1.1	Tools and equipment required for a Stage 3 BCATS project are selected in accordance with the BCATS project documentation, specifications and workplace practice.
ER 1.2	Selected tools and equipment are inspected and used safely, in accordance with specifications and workplace practice.
ER 1.3	Selected tools and equipment are maintained in accordance with specifications and workplace practice.
ER 1.4	Tools and equipment are cleaned and cleared after use, in accordance with workplace practice.
Outcome 2	**Select, set up, safely operate and maintain machinery for a Stage 3 BCATS project**
ER 2.1	Machinery required for a Stage 3 BCATS project is selected in accordance with the BCATS documentation, specifications and workplace practice.
ER 2.2	Selected machinery is set up in accordance with specifications and workplace practice.
ER 2.3	Selected machinery is operated in accordance with specifications and workplace practice.
ER 2.4	Machinery and work area are cleaned and cleared after use, in accordance with workplace practice.
ER 2.5	Machinery is maintained in accordance with specifications and workplace practice.

This unit standard requires the student to demonstrate that they can select, check, safely use, and maintain a broad range of tools and equipment typically required for the trade(s) their Stage 3 BCATS project relates to.

Because this unit standard is designed for secondary school students, BCITO does not require students to use machinery deemed inappropriate for their ages by the Ministry of Education. BCITO expects that any teachers allowing students to use them will have first obtained appropriate permission, in accordance with their school's policy.

Please ensure you are familiar with the recommendations in *Safety and Technology Education: A Guidance Manual for New Zealand Schools; Learning Media, Ministry of Education 2017* and any subsequent versions of this guidance.

The use of tools, equipment, and machinery is restricted to the BCATS environment and **does not** equate to the level of commercial competence expected by trade practitioners. (See *"Standard of Competence"* on page 7).

Selecting, using, and maintaining the tools, equipment, and machinery therefore includes:

- Safely using them for their intended purposes.

- Wearing/using the appropriate PPE at all times. (Please remind students to tuck hoody drawstrings away.)
- Keeping the work area clean and tidy and storing the tools, equipment and machinery correctly after use.
- Maintaining tools, equipment, and machinery (including knowing when specialist maintenance is required).

Written evidence **must** include the project documentation. A work diary, verified by the employer/supervisor as correct, is **recommended** if the student is undertaking the project in a workplace instead of under the direct guidance of a teacher.

Observational evidence **must** include an attestation from the teacher/employer that the student has selected, used, and maintained the tools, equipment and machinery for the Stage 3 BCATS project in accordance with specifications and workplace practice.

Photographic evidence **should** include the results of using the tools, equipment, and machinery safely and correctly.

Evidence collected for this unit standard contributes to the requirements of:

- Undertake a Stage 3 BCATS project (US 29684);
- Develop and use BCATS project documentation (US 29679);
- Demonstrate knowledge of, select, and use materials (US 29678*) and;
- Follow safe workplace practices, and contribute to a health and safety culture (US 29677).

* Outcome 2, ER 2.3

Working together to use the thicknesser.

UNIT STANDARD 29683 - OTHER TRADES

US 29683 Incorporate other building, construction and allied trades into a Stage 3 BCATS project schedule *(2 Credits)*

Outcome 1	**Identify the contributions and impacts of other trades on a Stage 3 BCATS project**
ER 1.1	The reasons for incorporating other trades' requirements into a project schedule are explained.
ER 1.2	Other trades relevant to a specific Stage 3 BCATS project are identified from BCATS project documentation.
ER 1.3	Other trades' requirements, limitations, and inter-relationships are described in terms of the implications for the project schedule.
ER 1.4	Other trades' production and/or construction processes are described in terms of their contributions to, and impacts on, a Stage 3 BCATS project.
Outcome 2	**Incorporate the work of other trades in planning and scheduling the work required to complete a Stage 3 BCATS project.**
ER 2.1	The requirements and limitations of identified trades are incorporated in the Stage 3 BCATS project schedule, in accordance with BCATS project documentation and workplace practice.

Trade professionals need know how different trades work together. A student awarded this unit standard knows enough about at least two trades, in addition to the one that is their main focus, to plan how and when they work together on a Stage 3 BCATS project.

This unit standard can be achieved through developing a project schedule for an actual BCATS project or a theoretical BCATS project. Some creative licence would be required if the way the project is being undertaken does not require other trades; the student's project documentation would instead include sections where the requirements of other trades would be incorporated if the project was more complex. For example:

- If building a utility shed, the project schedule could include an interior systems tradesperson installing interior linings and joiners installing exterior joinery.
- If building cabinetry, the student could imagine it is kitchen joinery and thus include carpenters and plumbers into the project schedule.

As with US 29379 guidance, if the student is undertaking a workplace-based BCATS project, they can develop a project schedule that incorporates the trades that come before and after (and/or concurrently) with their part of the larger project.

Students need to be able to explain the order – and reasons for the order - in which the three trades' work intersects. This explanation should include descriptions of the two other trades' production and/or construction processes and how their requirements and limitations (for example availability, quality of product, expertise, and environmental challenges) impacts on the success of the project. The project schedule must then incorporate their requirements and limitations and accurately reflect the work that must be undertaken prior to and/or in conjunction with each trade's involvement in the project.

In accordance with workplace practice, the project schedule should stipulate any quality requirements (eg, the carpenter must have built and lined the walls to the appropriate standard before the plasterer comes into the project, who must plaster the walls to a painting - not wallpapering - standard before the painter can start).

Written evidence **must** include the project schedule and other relevant project documentation.

Written evidence **could** be provided for each of the requirements under Outcome 1. Alternatively, verified verbal evidence **could** be provided.

Evidence for this unit standard could be gathered in conjunction with – and contribute to – that for:

- Develop and use BCATS project documentation (US 29679),
- Undertake a Stage 3 BCATS project (US 29684) and
- Communicate and work collaboratively (US 29680).

Chiselling out the mortise.

APPENDIX 1: BCATS OCCUPATIONS

Australian and New Zealand Standard Classification of Occupations

BCATS OCCUPATIONS	
→ Airconditioning and Mechanical Services Plumber	→ Construction Rigger
→ Autoglazier	→ Crane Chaser
→ Bricklayer	→ Drainer (Aus) / Drainlayer (NZ)
→ Builder's Labourer	→ Driller's Assistant
→ Building Insulation Installer	→ Electrical or Telecommunications Trades Assistant
→ Cabinetmaker	→ Electrician (General)
→ Carpenter	→ Fencer
→ Carpenter and Joiner	→ Fibrous Plasterer
→ Cement and Concrete Plant Worker	→ Floor Finisher
→ Cement Production Plant Operator	→ Furniture Finisher
→ Clay, Concrete, Glass and Stone Processing Machine Operators	→ Gasfitter
→ Concrete Batching Plant Operator	→ Glass Processing Worker
→ Concrete Products Machine Operator	→ Glass Production Machine Operator
→ Concrete Pump Operator	→ Glazier
→ Concreter	→ Handyperson
→ Home Improvement Installer	→ Scaffolder
→ Industrial Spraypainter	→ Solid Plasterer
→ Joiner	→ Steel Fixer
→ Kitchen and Bathroom Designer	→ Stone Processing Machine Operator
→ Landscape Gardener	→ Stonemason
→ Painting Trades Worker	→ Structural Steel Erector
→ Paving and Surfacing Labourer	→ Surveyor's Assistant

→ Paving Plant Operator	→ Technicians and Trades Workers
→ Plumber (General)	→ Wall and Floor Tiler
→ Plumber's Assistant	→ Wood and Wood Products Factory Worker
→ Roof Plumber	→ Wood Machinist
→ Roof Tiler	→ Wood Machinists and Other Wood Trades Workers
→ Sales Representative (Building and Plumbing Supplies)	→ Wood Turner

First part of the project coming together.

APPENDIX 2:
EXAMPLES OF PROJECTS

suitable for Level 3 BCATS

Smokehouse

Garden shed

Bed in a box

Folding refreshment cabinet

Block and mortar raised garden edge

This could become a small group project if the height/length is great enough that under "normal" circumstances it would not be a single qualified tradesperson constructing it

Tiny house

Renovating a house

Building a (relocatable) house
- Makoura College

Car and trailer
- Feilding High School, BuildAbility Challenge

Playhouse
- Lytton High School, BuildAbility Challenge

Playhouse
- Awatapu College,
BuildAbility Challenge 2016

Climbing wall (Left)

Decking (Right)

Skate ramp