



Introduction

Learners will benefit from a learning style that is explicit, experiential, scaffolded, co-operative and reflective. They will benefit wherever we can 'unpack whitefella ways' to give them the tools they will need to see what is happening at the deeper level of western culture. Learners will benefit from being told the reason (beyond the obvious) why they are learning this content in this way and why they are required to talk or push themselves in ways that may be challenging. In short, they will benefit wherever we can share the purpose for learning.

Please refer to the **Overview Teacher Guide** for an introduction in how to approach the concept of "skill mastery" and provide you with definitions of mastery levels the videos present. This can be found in the introduction section of the *Skill Mastery website*.

Learning intentions

What do we want students to learn?

After viewing this video and working through activities students will gain an understanding of:

- · ongoing learning in the workplace
- improving skills in the workplace
- the benefits of skill mastery i.e. improve employment prospects, career progression.

Success criteria

After viewing this video and working through activities students will be able to identify how to grow expertise and distinguish the difference in skills between a:

- Civil Operator
- Civil Supervisor
- · Civil Engineer.



Before viewing the Civil Engineering Skill Mastery video, get students to consider the three different roles in the engineering pathway context from their own perspective: Tapping into prior knowledge, start with the what the students know and make links wherever possible.

- What do the students already know about the engineering industry?
- Do they know someone else who works in engineering and what stories have they heard?
- What is the reason (beyond the obvious) they are learning this content?
- What do they expect to find out?
- What do the three levels outlined above mean to them in their industry?



Build vocabulary: Use a Word List – either before starting a topic or as you go (refer to table below and glossary supplied)



Prompting questions and general vocabulary to start:

Expertise Development and Career Progression		
General Engineering Questions	Vocabulary	
what do they do / make / sell? Who is the beginner, intermediate, master? How can you tell? What are the levels called? Are there any words you don't know? Write them down.		



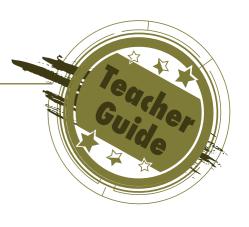








ACTIVITY - draw a line to match the screen captures of each person to their appropriate rank on the mastery scale below.







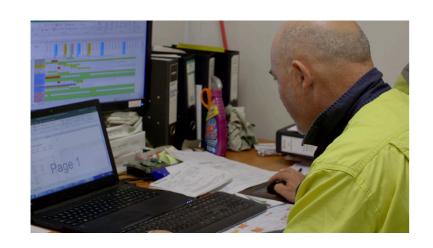


























VIEW - watch sections of the video and ask question before, during or after











Questions



- What kinds of places are there to work in in this industry?
- Who does what? Who is in charge? Who answers to
- How do they all communicate?
- What do they spend much of their time doing?
- What is the difference between a job role and a responsibility?
- What kind of roles and responsibility would you prefer to have and why?
- What is a Moxy? How did Ben progress from Trainee to
- What are the daily targets they are talking about? What might they involve at each level?
- What and who would be involved in the following daily responsibilities?
 - Providing a safe workplace
 - allocating personnel on machinery
 - · monitoring workplace inspections
 - rehabilitation
 - planning
 - execution
 - · closing out
 - quality control
 - · commercial aspects
 - · interacting with Supervisors, Engineers, and Operators
- How is the daily production report important?
- What would the safety stats, designs, plans, targets show in a weekly report?
- Why would the Engineer then report monthly to head office and the General Manager (GM)?
- Why does the Site Supervisor report to the Project Manager? What information would he need to communicate?

- What is an average working day?
- What happens during these hours for each person?
- What paperwork or daily duties need to be done?
- What do you think of the hours they work? Could you do it? Why/Why not?
- What kind of hours and shifts would you prefer to work?
- How could you make that work for you?
- What do you think of showing up early or staying late to get something done?
- Longer hours are a challenge for junior staff. How many hours a day are they expected to work? What would that mean? What time do they start? How would that change how you live your life?
- How many days per week would you prefer? What does the roster do?
- How many weeks at a time would you prefer?
- How would that change your daily or weekly life? (Focussing for days / weeks a at a time)
- How would conditions affect your job?
- What's a FIFO? 3 and 1/2 And 1?
- What's important about punctuality? What are the impacts of your time keeping on others in this job?
- What about the Supervisor's hours? Why do you think they are longer? How did he say he manages that?
- How are the Project Manager's hours dependent on different stages of a project? How do the following affect his daily job and what he would need to talk to the team about?
 - Project cycles
 - starting
 - · month end
 - cost tracking
 - planning
 - forecasting

- What helps keep people motivated?
- What keeps you motivated to do something?
- What kind of attitude and skills do you think you might need to work in civil construction?
- What matters to a good work ethic in construction?
- How does team work help? What does that involve sometimes?
- What are unacceptable behaviours?
- What does 'reliable and committed' look like do you think? Essential work behaviours?
- What helps the Supervisors do their job?
- Dig plan what is that? Dump locations and targets from the plan – how would that look over a day / week / month?
- What kinds of costs do you think are involved?
- What kinds of things would be on the plan?
- Skills Marius said are important are attention to detail, cost awareness and planning. What do you think this entails?
- What is a pre start check? When is a daily inspection
- Reporting on any hazards?
- Why is communication important in any workplace?











VIEW - watch sections of the video and ask question before, during or after



Section









Questions



- What kinds of PPE do you need?
- What site rules to you need to follow?
- Why do they need to discuss access to different locations needed?
- What is an end of shift report? Statistics for dirt moved why would this be needed? What would it be used for?
- What is a main safety rule between dump truck operators and supervisors? What are things Ben has to think about when driving the dump truck?
- What is a JSEA and who needs to do them?
- What does the Project Manager and Supervisors need to think about when dealing with policies and procedures?
 Why is this important?
- What differs between states and seasons?
- What is an example of a site rule?
- How would this affect working conditions?
- How could you stay safe in these conditions?

- What are the strong points for each person?
- Who had the most relatable advice and why do you think you understand it well?
- Why do they need that skill at that level?
- What was the best piece of advice? Why?
- What kinds of specialisation would an Engineer be able to pursue? Which ones are appealing to you?
- Civil Engineering what kinds of construction are there?
- Supervisors need to work with the Engineer to determine what things at the start of a project. What does the Supervisor know that can help the Engineer and vice versa?
- What does this determine about the Operator's workday?
- What can change the design plan and discussions between the Site Supervisor and Engineer?
- What's a main challenge for the Operators?

- Can you place where each person is on the different skill mastery levels?
- How could they progress on to the next level or get better at what they do?
- Do you think the Project Manager can progress? On to what do you think?
- What kinds of experiences in different job situations and projects does Marius say you can learn from?
- How could you see your career in Civil Engineering unfolding?
- What might plans look like in your ideal Civil Construction job?
- What different kinds of Project Management pathways are there?
- What are the steps from a Cert III and the next position Ben was saying he would go for?













VOCABULARY look up industry words.



allocate	allocating, distribute (resources or duties) for a particular purpose. "in past years we didn't allocate enough funds to infrastructure maintenance"
attention to detail	the ability to achieve thoroughness and accuracy when accomplishing a task
budget requirements	an estimation of how much a project might cost and how long it might take, this is re-evaluated on a periodic basis (at regularly intervals). A surplus budget means profits are anticipated, while a balanced budget means that revenues are expected to equal expenses.
civil engineering	a professional engineering discipline that deals with the design, construction, and maintenance of the physical and naturally built environment, including works like roads, bridges, canals, dams, and buildings.
commercial	concerned with or engaged in commerce or business. "a commercial contract" making or intended to make a profit.
contract	a written or spoken agreement, especially one concerning employment, sales, or tenancy, that is intended to be enforceable by law. "he has just signed a contract keeping him with the club"
cost awareness	the price paid or required for acquiring, producing, or maintaining something, usually measured in money, time, or energy; expense or expenditure; outlay.
daily targets	goals and milestones that need to be met every day in order to contribute to progress of a project over time.
dig plan	a program to follow that shows where and what parts of a site need to be dug up and transported.
discrepancies	an illogical or surprising lack of compatibility or similarity between two or more facts. Things that don't 'match up'
dump truck	a range of specialised machinery used on construction and mine sites to move large quantities of earth, rocks and or minerals
driving to conditions	a safety rule and procedure that operators need to follow in order to be safe. Conditions can include weather, other machinery, and the kid of surface being operated on.
earth works	engineering works created through the processing of parts of the earth's surface involving quantities of soil or unformed rock
essential/ expected behaviours	attitudes and actions that operators need to demonstrate in order to keep productions moving and work completed.
execution	the end and completion of a project; a project is 'executed' when it is done
fatigue management	a shared responsibility between management and workers as it involves factors both inside and outside of work. Fatigue refers to mental or physical exhaustion that stops a person from being able to function normally. Fatigue is more than simply feeling tired or drowsy Fatigue is generally associated with: spending long periods of time awake. having an inadequate amount and/or quality of sleep over an extended period. This can sometimes be a feature in some job roles.
fly in / fly out / (fifo)	a form of work that involves air travel to a work site, temporary stays during the course of the shift or 'swing' and flying out to spend free time at home or elsewhere. FIFO is usually determined by the work site being unsuitable for living at or near due to isolation or geographical features.
interaction	contact between team members
JSEA	Job Safety Environmental Analysis – simply means looking at the work task and considering what is the safest way to complete it. It is a way of becoming aware of the hazards involved in doing the job and taking action to prevent an injury.
labourer	a worker, especially one that does physical work
loading report	a method of communicating what work was done that day, week or month, given in written or verbal form to a Supervisor or Manager.
moxy	Moxy Engineering is a Norwegian manufacturer of articulated haulers (dump trucks) for off-road use in the earth moving and construction industries
loading report	a method of communicating what work was done that day, week or month, given in written or verbal form to a Supervisor or Manager.













VOCABULARY look up industry words.



'on the floor'	staff that are 'on the floor' are people who are on the work site.
operator	machine operating staff and drivers
personnel	staff members
policies and procedures	sets of rules which stipulate how certain tasks need to be carried out. Policies and procedures are often updated when new legislation or rules are written. They help maintain consistent processes in work environments to ensure productivity and safety of personnel.
pre start checks	checks on machinery before starting operations for the day. Any safety conerns need to be recorded and reported after the pre-start check is completed, and any obstructive safety issues resolved before work commences.
project manager	a professional that oversees and co-ordinates the progress of a project.
punctuality	the characteristic of being able to complete a required task or fulfill an obligation before or at a previously designated time. "Punctual" is often used synonymously with "on time".
ppe	personal protective equipment - gear that operators need to wear on a work site in order to comply with safety rules an protect themselves from work hazards
roster	schedule or timetable that shows when personnel work; their shifts and hours, as well as time off
quality control	a system of maintaining standards in manufactured products by testing a sample of the output against the specification.
rehabilitation	the action of restoring something that has been damaged to its former condition. The area rehabilitation after engineering works would include taking care of vegetation and cleaning up debris so the landscape stays safe, attractive and functional.
seasonal work	depending on the conditions of each season, work may or may not be able to be done. During rainy seasons, for example, some construction work is impossible because the earth is too wet.
shifts	a person's scheduled period of work, especially the portion of the dayscheduled as a day's work when a shop, service, office, or industry operates continuously during both the day and night.
site supervisor	a manager at mid-level who deals directly and constantly with operators and acts as an intermediary between Operator and Project Manager
specialisation	pursuing a particular line of study or work
standard	something considered by an authority or by general consent as a basis of comparison; an approved model.
stats	statistics - numbers and figures and measurements of work completed during a day; the numerical facts or data themselves
tafe	technical and further education
technical	relating to a particular subject, art, or craft, or its techniques
tickets	specific qualifications, cards and 'certificates or tickets'; issued to ensure you can perform certain dangerous tasks on a work site safely and effectively
trainee	a person being trained, especially in a vocation; apprentice
tray	the part of a dump truck or ute which holds cargo or load
utilised	make practical and effective use of
workplace inspections	the act of viewing, especially carefully or critically; formal or official viewing or examination
work ethic	an attitude towards work. If someone has a good work ethic it means they do their work well and have pride in the work they do.















Find out the different kinds of specialisation and pathways you could follow in Civil construction:

- in different parts of the world
- in different sectors
- in different states.



What information and stats can you find out from this report?

Prestart check:

http://www.worksafe.nt.gov.au/PDF%20Conversion/guide-to-safety-management-small-business-toolkit.pdf

What details can you read from the JSA? What would you need to do to stay safe on site with JSA?

https://www.worksafe.vic.gov.au/pages/safety-and-prevention/health-and-safety-topics/job-safety-analysis



Check out this set of lessons in PreVET all about some other job roles in Civil Services

http://resources.prevet.net.au/m4b/m4b-magazine/

Check out this set of lessons in PreVET all about some other job roles in Building and Construction

http://resources.prevet.net.au/m4c/m4c-magazine/



How could Allen get more qualifications to become a Project Manager without getting a degree in Engineering?

How long does it take to get a degree in Engineering and what jobs can you do that you can only do with that qualification?

How will Ben become a Site Supervisor if he's at Certificate III level now? What will he need to do?





