

# 10

# Knowledge inventory

## Technique sheet

Problem-based learning resources

### Introduction

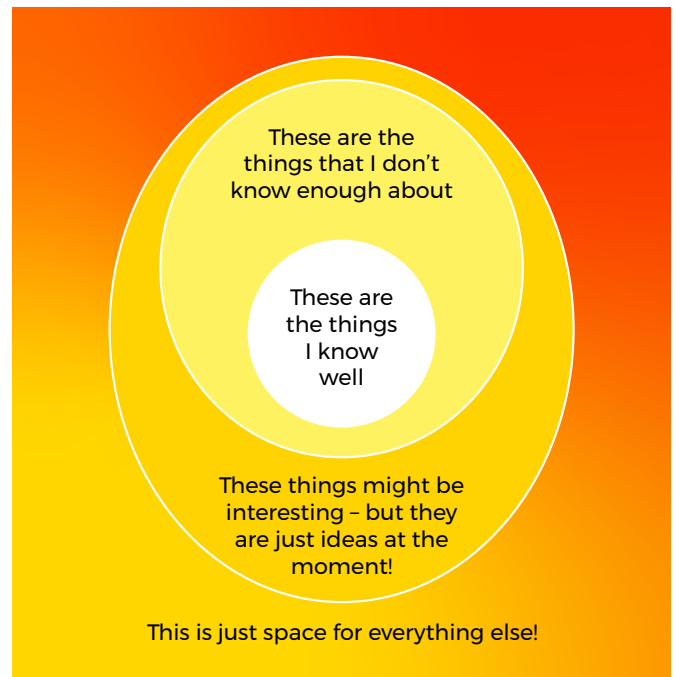
Engineering involves many specialist fields. It is not possible for everyone to know everything about everything! Sometimes you will need to ask advice or do some studying before taking on a task. Of course, if you want to get somewhere it's useful to know where you're starting from – this is the job of a knowledge inventory.

### What is a knowledge inventory?

A knowledge audit considers what you currently know and how it might be relevant to the task you have to do. Most of the time these audits are informal and almost automatic. If you have to replace a battery in an electric vehicle, you will automatically think 'How do I access the battery compartment safely and fit the component properly?'. If you don't know how to do these things, you can't just start the job!

Sometimes the task is more complex, and you may need to think more carefully about what you know, what you need to know and how you could gather this extra knowledge. This usually needs structuring carefully and can often involve inputs from a number of people.

- Make sure you think before you start a job. Do I have the knowledge and skills to do this safely and effectively? If not, how can I find out?



### Why is a knowledge inventory useful?

A knowledge inventory is a good way to codify a problem to make sure that you understand what is being asked of you. It will also allow you to review the resources you already have – it may be surprising to find out you know more, or less, than you thought at first! The output from your knowledge inventory will also help to inform your strategy to solve the problem. If you know very little

about a particular branch of electronics or how to use a particular workshop tool there is no point in building your strategy around these.

- Make sure you use your knowledge inventory – it's not just a form to fill in! It will help you to develop a viable strategy to solve the problem you have been set.

## How can you do a simple knowledge inventory?

Start with a large sheet of paper and note down the things you know and are important to the project in the centre of the page. Just a word or phrase will be enough. Think widely about what might be useful but remember always that only ideas or knowledge that are relevant to the task should be included. You don't need to put in that you don't know the name of the striker at Manchester United in the circle if you're thinking about plumbing in new drains! Draw a circle around the group – these are your 'known' and 'relevant'. Now move out from the circle and note down things you think are important, but you do not know enough about yet. These are 'unknowns'. The next layer out will be things that are hunches and guesses that you want to remember just in case. Some of these ideas might move towards the central area as the project develops. And the outside? That's for anything else – the longest of long shots! Usually, this space will be empty but there may be some thoughts in there that could become useful if unexpected problems or difficulties appear.

- Make sure you capture your, or your team's, existing knowledge that is relevant to the project and identify issues where you currently have a knowledge gap (your 'unknowns').

## What should you do with the results of your inventory?

The next stage is to review your 'unknowns' (the things in the outer circle) and decide which ones are most significant and how you could most effectively gather this new knowledge. That might involve simply looking it up online or in a manual, asking your supervisor or other experts or carrying out some investigations of your own. Your own investigations are likely to be more targeted on the specific issues you need to address. You might need a sequence of them to build a true understanding you need. Remember that this knowledge is needed for your original task, not just to build your understanding for its own sake, and your priorities may change as the project develops.

- Make sure you act on the insights from your knowledge audit – but target the things you really need to know rather than just things that might be interesting.

## What about the ideas on the edge of the page?

Why did you record your ideas or things that might be relevant on the outside of your circle? These are reminders of things that might become useful as a project develops. They do not have to be used but never throw away an idea or possibility – none of us can see the future and it is annoying to have to re-think things because you didn't take notes!

- Make sure you don't lose the thoughts and ideas in the outer circle. They may seem useless at the moment, but as times change, they could provide some clues about things you need to know to complete your project.



### Check yourself

**You should be able to answer these questions easily after reading this sheet.**

1. What goes in the central circle of your knowledge inventory?
2. List three ways you could deal with 'unknowns' you need to sort before you start the project.
3. Why do you think the outer space for 'long shots' might be useful as the project progresses?



### Taking it further

**These activities will deepen your understanding of this topic.**

1. Conduct a knowledge inventory for your next task. What do you already know? What would it be useful to know and how could you find out most efficiently? If you had two weeks to prepare for this task, how would you use it?
2. A skills inventory is a version of the same task but concentrating on skills that you already have and skills you know will be relevant but do not yet have (or are not very good at!). Again, it can be the first step in identifying skills you will need to develop and suggest which ones are most important for the project you are facing. Think of a task you have already completed. What could you do at the beginning and what skills did you need to develop during the task? How did you develop these?