Employer set project student pack

T Level Technical Qualification in Healthcare Science

NCFE CACHE

Contents

Introduction

If you are a student studying the T Level in Health and Science (Healthcare Science pathway) and preparing for the employer set project (ESP), this support pack is for you.

We know that the ESP can seem daunting and there are so many points to consider and skills to develop, but we are here to help. This support pack contains guides and activities on various aspects to help with your ESP preparation as a supplement to your classes and is to support your independent learning. The support ranges from English writing, reflection, key terms, applying the core skills and more. In addition to guides, this pack contains some activities in each section.

We do not recommend doing it all at once; it can be a lot to digest. The first section is a self-assessment, this is a good place to start to identify areas where you would benefit from more support. Start with these key areas and then work through the others step by step.

Self-assessment

In each of the areas, give yourself a RAG rating (red – R, amber – A or green – G). Rate yourself 'red' if you are not confident, 'amber' if you have some confidence and 'green' if you are very confident. Once you have completed a section of this pack, come back and rate yourself again, saying why you have given yourself that rating. If you are still on red or amber, what are your next steps to turn this to a green?

Area	Rating before		Rating after		Next steps
	RAG	Why?	RAG	Why?	
Key terminology					
Core skills					
English, maths and digital skills in your employer set project (ESP)					
Maths: foundations for your ESP					
English: foundation for your ESP					
The importance of evaluation in your ESP					
The importance of justification in your ESP					

Area	Rating before		Rating after		Next steps
	RAG	Why?	RAG	Why?	
Creating effective conclusions in your ESP					
Reflection					
Referencing					
Top tips for peer discussions and feedback					
Top tips for presentations and tutor discussions					
Making links through effective project management					

Key terminology

Here are some of the key terms from the T Level Technical Qualification in Healthcare Science specification. Once you have covered these areas, or for revision, write their definition in the space provided. There is space at the end for you to add any other terminology you feel would be useful.

Term	Definition
Core component section A: the health and science sector	
Cleaning	
Consent	
Decontamination	
Dignity	
Disinfection	
Duty of care	
Job description	
Personal protective equipment (PPE)	
Person specification	
Person-centred care	
Primary care	
Privacy	

Key terminology

Term	Definition
Safeguarding	
Scope of practice	
Secondary care	
Standard operating procedures (SOPs)	
Sterilisation	
Tertiary care	
Urgent/Immediate referral	
Core component section A: the health and science sector	
Accuracy	
Antimicrobial resistance	
Bioinformatics	
Descriptive statistics	
Good laboratory practice (GLP)	
Good manufacturing practice (GMP)	
Good scientific practice (GSP)	

Term	Definition
Inferential statistics	
Precision	
Reliability	
Core component section B: science concepts	
Carbohydrates	
Deoxyribonucleic acid (DNA)	
Eukaryotic cells	
Genetics	
Genomics	
Lipids	
Monomer	
Polymer	
Prokaryotic cells	
Proteins	
Ribonucleic acid (RNA)	

Term	Definition
Semi-conservative replication	
Core component section B: science concepts	
Alternating current	
Antibody	
Antigen	
Catalyst	
Collision theory	
Count-rate	
Direct current	
Direct transmission	
Endocrine system	
Enzyme	
Excitation	
Half-life	
Indirect transmission	

Term	Definition
Ionisation	
Longitudinal wave	
Potential difference	
Resistance	
Respiratory system	
Titration	
Transverse wave	
Wave	
Core component section B: science concepts	
Anatomic classification system	
Bioinformatics	
Cardiovascular system	
Digestive system	
Epidemiology	
Epigenetics	

Term	Definition
Evolutionary genomics	
Functional genomics	
Genome	
Homeostasis	
Injury	
Integumentary system	
Musculoskeletal system	
Nervous system	
Physiological classification system	
Renal system	
Reproductive system	
Structural genomics	
Topographic classification system	
Trauma	
Visual system	

Term	Definition
Other terminology	

Core skills

The employer set project (ESP) brief requires that students apply and contextualise core knowledge through the demonstration of the core skills, and these are demonstrated through the completion of a number of tasks:

CS1: Research skills

CS2: Communication skills

CS3: Teamworking skills

CS4: Problem solving skills

CS5: Reporting and presentation skills

CS6: Reflective evaluation

Task 1: research/literature review

Task 2: quality improvement report

Task 3: peer discussion and update of quality improvement report

Task 4: present an overview of your quality improvement report

Task 5: Reflective account

Key core skills terminology

Core skill	Describe this skill in your own words, and how you could demonstrate it
Research skills	
Communication skills	
Teamworking skills	

Core skill	Describe this skill in your own words, and how you could demonstrate it
Problem solving skills	
Reporting and presentation skills	
Reflective evaluation	

How the core skills are demonstrated in each task

Task 1: synthesis task – research/literature review

This tasks links to researching skills (CS1) and problem solving skills (CS4). To maximise success in this type of assessment you should consider the following tips:

Apply effective research skills using the literature sources

You should use your research to effectively provide evidence-based information to justify how you would investigate the issue from the brief. It is important to group key themes from your research which will enable you to clearly present research findings in the literature review.

Ensure that written literature reviews are detailed, with clear explanations and justifications that avoid descriptive responses

It is important to synthesise, evaluate and summarise information from your research. Do not simply repeat quotes from the sources within your literature reviews with descriptive responses.

Be sure to check out the importance of justification in your ESP and creating effective conclusions in your ESP sections of this support pack.

Task: using 2 highlighters, identify which of the above tips link to the core skills CS1 and CS4?

Task 2: quality improvement report

This task links to Communication skills (CS2), Problem solving skills (CS4), and Reporting and presentation skills (CS5). To maximise success in this type of assessment you should:

Focus on a range of elements for quality improvement

It is important to use the pro-forma to structure your quality improvement report and provide explanation and justification for each element. You should avoid the use of descriptive or superficial responses.

Ensure you effectively consider how changes would be implemented

It is important to explore and justify how changes would be implemented using information from the brief, existing knowledge, and information from the literature review. You should avoid repetitive information from task 1 but use this information to provide clear explanation and justification about how changes would be implemented.

Tasks 3(a) and 3(b): peer discussion and update of quality improvement report

In task 3(a) students are required to provide and receive feedback about their research findings and quality improvement report. In task 3(b) students are required to use peer feedback to write a summary of how they will update their quality improvement report based on the peer feedback. This task links to researching skills (CS1), communication skills (CS2), teamworking skills (CS3), reporting and presentation skills (CS5) and reflective evaluation (CS6). To maximise success in this type of assessment you should:

Provide a rationale for any changes made to the quality improvement report

It is important to demonstrate clearly that you have referred to and effectively evaluated feedback given. You should acknowledge weaknesses in your original report and justify why changes were made. Don't just include changes because someone asked you to; all changes must be justified.

Task 4: present an overview of your quality improvement report

This task links to research skills (CS1), communication skills (CS2), and reporting and presentation skills (CS5). To maximise success in this type of assessment you should:

Ensure that presentation length is appropriate

You should ensure that presentations are long enough to demonstrate knowledge and understanding of the project outcomes and include justification for changes made to your quality improvement reports. Having very short presentations can give you less opportunity to present your knowledge and understanding.

Engage fully with questions asked in the discussion and give a considered response

It is important that you listen fully to the questions asked in the discussion to ensure you fully understand what you are being asked before responding. You should avoid short, simplistic answers that may not provide the full answer to the questions being asked.

Be sure to check out the top tips for presentations and top tips for peer discussion and feedback sections of this support pack for additional guidance and support.

Consider your strengths and the information provided. What are your **3 key takeaways** that you will use in preparation for this task? Write them here.

Task 5: reflective account

In this task, students are required to complete a reflective account. This task links to reflective evaluation (CS6). To maximise success in this type of assessment you should:

Understand what reflective writing is and how to write reflectively

Prior to the assessment, you should be introduced to reflective writing and models of reflection to aid in the understanding of what to include when writing reflectively. You need to avoid writing descriptively and ensure that you effectively **evaluate** your performance; reflecting on what went well, what could be improved, and **justification** for further developments based on your own experience and feedback gained throughout the tasks. You also need to reflect on your own performance against the project aims/objectives, including your strengths and limitations.

Be sure to use the guidance and exercises in the reflection section of this support pack.

Task: using Gibbs Reflective Model as an example – think of something that occurred on placement, or in a recent skills session you had in class (role play, presentation) and complete a reflective evaluation.

1. Describe what happened:

2. What were you thinking? What were your feelings and reactions?

3. Evaluate, was it good or bad? Also include why and how.

4. Analyse it, what sense do you make of it?

5. Conclusion, what else could you have done?

6. Action planning, what would you do if it happened again?

English, maths and digital (EMD) skills in your employer set project (ESP)

The table below can be used to guide your focus when it comes to considering how you would demonstrate the General English Competencies (GEC), General Mathematical Competencies (GMC) and General Digital Competencies (GDC). For each competency, the core skill is linked. You would be expected to demonstrate these during your employer set project (ESP), therefore included in the table are the tasks you could demonstrated the general competency in.

It is an important component of your assessment outcomes: **AO4 Use English, maths and digital skills as appropriate.**

General competency	Linked core skills in Healthcare Science	ESP tasks this could link to
GEC1. Convey technical information to different audiences.	CS2: Communication skills – communicate effectively with patients, customers, carers and other health and social care professionals using a range of techniques to overcome communication barriers	Task 2 Task 3 Task 4
	CS5: Reporting and presentation skills – be able to interpret and analyse information and data to present conclusions in a range of formats to a variety of stakeholders	Task 1 Task 2 Task 3 Task 4
GEC2. Present information and ideas.	CS1: Research skills – be able to research from independently identified sources of information, including being able to conduct literature searches to contribute to research and innovation within a specific area of practice	Task 1 Task 3 Task 4
	CS2: Communication skills – communicate effectively with patients, customers, carers and other health and social care professionals using a range of techniques to overcome communication barriers	Task 2 Task 3 Task 4
	CS3: Team working skills – work collaboratively with a range of healthcare professionals within and outside a specific team, as well as with other individuals such as carers	Task 3
	CS4: Problem solving skills – be able to identify problems, propose innovative solutions, implement these solutions and, where appropriate, make use of new technologies to solve problems	Task 1 Task 2
	CS1: Research skills – be able to research from independently identified sources of information,	Task 1

General competency	Linked core skills in Healthcare Science	ESP tasks this could link to
GEC3. Create texts for different purposes and audiences.	including being able to conduct literature searches to contribute to research and innovation within a specific area of practice	Task 3 Task 4
	CS2: Communication skills – communicate effectively with patients, customers, carers and other health and social care professionals using a range of techniques to overcome communication barriers	Task 2 Task 3 Task 4
GEC4. Summarise information/ideas.	CS1: Research skills – be able to research from independently identified sources of information, including being able to conduct literature searches to contribute to research and innovation within a specific area of practice	Task 1 Task 3 Task 4
GEC5. Synthesise information.	CS1: Research skills – be able to research from independently identified sources of information, including being able to conduct literature searches to contribute to research and innovation within a specific area of practice	Task 1 Task 3 Task 4
GEC6. Take part in/lead discussions.	CS2: Communication skills – communicate effectively with patients, customers, carers and other health and social care professionals using a range of techniques to overcome communication barriers	Task 2 Task 3 Task 4
	CS3: Team working skills – work collaboratively with a range of healthcare professionals within and outside a specific team, as well as with other individuals such as carers	Task 3
	CS5: Reporting and presentation skills – be able to interpret and analyse information and data to present conclusions in a range of formats to a variety of stakeholders	Task 3
	CS6: Reflective evaluation – be able to reflect on own practice and make improvements to own practice, for example, having completed a task reviewing and suggesting improvements and consideration of lessons learnt for own professional development	Task 3 Task 5

General competency	Linked core skills in Healthcare Science	ESP tasks this could link to
GMC5. Processing data	CS5: Reporting and presentation skills – be able to interpret and analyse information and data to present conclusions in a range of formats to a variety of stakeholders	Task 1 Task 2 Task 3 Task 4
GMC8. Communicating using maths	CS2: Communication skills – communicate effectively with patients, customers, carers and other health and social care professionals using a range of techniques to overcome communication barriers	Task 2 Task 3 Task 4
GDC2. Design, create and edit documents and digital media	CS2: Communication skills – communicate effectively with patients, customers, carers and other health and social care professionals using a range of techniques to overcome communication barriers	Task 2 Task 3 Task 4
GDC4. Process and analyse numerical data	CS5: Reporting and presentation skills – be able to interpret and analyse information and data to present conclusions in a range of formats to a variety of stakeholders	Task 1 Task 2 Task 3 Task 4
GDC5. Processing data	CS5: Reporting and presentation skills – be able to interpret and analyse information and data to present conclusions in a range of formats to a variety of stakeholders	Task 1 Task 2 Task 3 Task 4

Maths foundations for your employer set project (ESP)

Maths is an important part of all T levels and indeed, any health and science role. We use maths when calculating doses, to communicate information such as disease statistics and to determine if treatments are working effectively, amongst others. This section includes guides and questions on a selection of mathematical areas. Give these a go to develop your skills. Please note that the mathematical examples and questions are not exhaustive. If you identify areas you would like to work further on, be sure to speak to your teacher or a maths specialist.

Rearranging formulae

A formula is a relationship between different variables that is expressed algebraically. Often the formula will have application in everyday life, such as the formula for speed or the formula for converting Degrees Celsius to Degrees Fahrenheit.

There may be cases where we wish to rearrange a formula to find a different variable from that formula.

Example 1

Rearrange

$$v = f\lambda$$

to make f the subject.

We can divide both sides by λ which will remove λ from the right-hand side of the equation leaving just f.

$$\frac{v}{\lambda} = f$$

There is our answer!

Rearranging can become more complex when we have more values and with the introduction of algebraic fractions, but it is just a step-by-step process.

Example 2

Rearrange

$$y = \frac{4 + x}{7} - 2$$

to make x the subject.

The first term we need to remove is '-2', this is because it is the only variable on our right-hand side that is not part of the fraction.

We can move the -2 by adding 2 to both sides:

$$y + 2 = \frac{4 + x}{7}$$

The second term we need to remove is the denominator, and we can do this by multiplying both sides by 7.

$$7(y + 2) = 4 + x$$

Notice the use of brackets as the 7 is multiplied by both **y** and 2.

The third term to remove is '4', and we can do this by subtracting this from both sides.

$$7(y + 2) - 4 = x$$

And there we have it! Have a go yourself using the practice questions below.

Practise rearranging formulae

1. Rearrange the following formula to make x the subject:

$$9(x - 4) + 3 = y$$

2. Rearrange the following formula to make x the subject:

$$4y = \frac{t + x}{m}$$

3. The formula to convert degrees Fahrenheit to degrees Celsius is:

$$C = \frac{5}{9}(F - 32)$$

You record a temperature of $36.2\ C$, use the formula above to convert this into Fahrenheit

4. How much current flows through a 9 V battery that has a resistance of 6.4 Ω? (Hint: You will need to remember Ohm's law)

Using units: dimensional analysis

In the health and science sectors, you may find yourself either performing calculations with no formula or calculating units for an unfamiliar calculation. Both these tasks can be solved with the understanding of one principle: dimensional analysis. The name may sound complicated, but it is essentially using units to your advantage.

First, some background. Whenever you put numbers through a calculation or formula, you are also putting their units through the calculation.

For example, when calculating the speed of a car travelling 200 km in 4 hours using the formula:

$$speed = \frac{distance}{time}$$

We input our values from the question into the formula:

$$\frac{200 \; km}{4 \; h} = 50 \; km/h$$

If we look just at the units, we can see we are treating them algebraically – that is, like an x or y:

$$\frac{km}{h} = km/h$$

> **Tip: whenever you say 'per' in units, that means divide.**
>
> **For example, 'km/h' means km divided by hour.**

Therefore, if you do not have the formula for calculating speed, or you have forgotten it, you can work it out from the units:

- km/h
  - → kilometres divided by hour
  - → distance divided by time

By the same principle, if you do not know the units, but have the formula, you can calculate the units by putting them into the formula.

Using this principle of dimensional analysis can mean less memorising and can help you out when you are given an unfamiliar equation.

Try the following practice questions using the key points from above (the answers are at the end of this section).

Working out units from formulae/calculations

1. You are preparing a dose of ibuprofen for a patient. You calculate the concentration using the following formula:

$$concentration = \frac{mass}{volume}$$

You dissolve 100 mg in 5 mL, what are the units?

2. Researchers are looking into the effect of dietary acid on the breakdown of tooth enamel. From their experiments, they calculate the rate of decay as mg of enamel broken down per hour. What are the units?

3. When analysing blood samples for haemoglobin concentration to diagnose anaemia, a technician will perform a count for the mass of haemoglobin (measured in g) per litre of blood. What are the units for this?

Working out formula from units

1. Resting heart rate is given in beats per minute (bpm). Therefore, what is the formula to calculate heart rate?

2. The density of copper at room temperature is 8.96 g/cm^3. Therefore, how would you calculate the density of a 200 cm^3 piece of aluminium with a mass of 540 g?

3. The units for moments are Newton-metres (Nm). If you were to calculate the moment experienced by a prosthetic arm holding a weight, what formula would you use? The weight exerts a force of 10 N and the distance of the weight from the elbow of the arm is 0.3 m.

Calculating rate

Rate is a measure we need to calculate in various areas of health and science.

Remember:

$$rate = \frac{change}{time}$$

And the units? The rules of dimensional analysis apply here too!

Have a go at these questions.

1. A newborn baby has an increase in mass of 2 kg in the 6 weeks from birth. Calculate the rate of increase, giving your answer to 2 significant figures. State the units.

2. A clinical researcher is looking at the effect of a new pharmaceutical drug on breathing rate. In a 5-minute period, one subject has 90 breaths. Calculate their respiratory rate in breaths/minute.

3. A chemical reaction produces 500 g of product in 16 minutes. Calculate the rate of reaction and state the units.

Percentages

Calculating percentages, is incredibly useful, both in health and science and in everyday life. In the T level qualification, it falls under GMC2: estimating, calculating and error spotting. In this section, we have step-by-step guides to help you gain confidence with percentages.

Percentage increase

To work out what the new amount will be after a percentage increase:

1. Work out the percentage of the original amount
2. Add that amount onto the original amount

Example

The diameter of a bacterial colony was 1.2 mm after a 2% increase in size, what will the new diameter be?

Work out 2% of 1.2:

1.2 ÷ 100 x 2 **or** 1.2 x 0.02 = 0.024

Add the percentage increase to the original amount:

1.2 + 0.024 = 1.224 mm

(A shortcut would be to simply calculate 1.2 x 1.02 = 1.224)

Percentage decrease

To work out a percentage decrease:

1. Work out the percentage of the original price
2. Take that amount away from the original price

Example

You order personal protective equipment (PPE) that costs £850; however, you have 10% discount code, how much do you now pay?

Work out 10% of £850:

850 ÷ 100 x 10 **or** 850 ÷ 10 **or** 850 x 0.1 = 85

Take the percentage decrease from the original amount:

850 – 85 = £765

(A shortcut would be to calculate 90% of the original 0.9 x £850 = £765)

Calculating percentage change

To work out percentage change between an original value and a final value:

1. Find the difference between the 2 values

2. Divide the difference by the original value

3. Multiply by 100 to change that number to a percentage

Example

The laboratory energy bill in 2020 was £1277, in 2022 the bill is £1971. What is the percentage increase in the cost of energy?

1. Find the difference between £1971 and £1277:

    £1971 – £1277 = £694

2. Divide the difference by the original value:

    694 ÷ 1277 = 0.5435

3. Multiply by 100 to change the decimal into a percentage:

    0.5435 x 100 = 54.35%

Calculating one number as a percentage of another number

1. Divide the number you want to find as a percentage by the other number

2. Multiply the decimal by 100 to convert it to a percentage

Example

A bill for department resources comes to £5600. The PPE equipment ordered was £850. What was the cost of the PPE equipment expressed as a percentage of the total bill?

Divide the cost of PPE by the total cost:

850 ÷ 5600 = 0.1518

Multiply by 100 to convert to a percentage:

0.1518 x 100 = 15.18%

Practise calculating percentages

1. You measure a virus cell that is 48 nm in diameter. Another virus cell is measured to be 124 nm in diameter. How much larger is the second cell given as a percentage?

2. During one week of a disease outbreak, 25,000 people were found to be infected. If the total population is 740,000. What percentage of the population were infected?

3. A group one metal is added to water, and the time taken for a reaction is measured. The group one metal takes 25 s to react. When the water temperature is increased the reaction time goes down to 19 s.

    What is the percentage decrease in time taken to react?

4. A cell with a diameter of 0.045 mm is viewed through a microscope, the cell appears to have a size of 18 mm when viewed through the lens.

    What is the magnification of the microscope given as a percentage?

General mathematical competencies (GMC)

All T level students (regardless of subject) must develop 10 general mathematical competencies. These are:

- GMC1. Measuring with precision
- GMC2. Estimating, calculating and error spotting
- GMC3. Working with proportion
- GMC4. Using rules and formulae
- GMC5. Processing data
- GMC6. Understanding data and risk
- GMC7. Interpreting and representing with mathematical diagrams
- GMC8. Communicating using maths
- GMC9. Costing a project
- GMC10. Optimising work processes

You will find that there are specific questions within the external assessments that assess against these competencies; however, it is important to consider how maths is assessed within your employer set project (ESP).

The table below can be used to guide your focus when it comes to considering how you would demonstrate the general mathematical competencies:

General mathematical competency	Examples of how GMC is applied to the health and science T Level
GMC1. Measuring with precision	Measuring with precision can include: • choosing the correct equipment for the task • the units and scale of the measurement needed • taking account of any errors, such as zero errors and equipment that is 'off' a set amount • how this zero and systematic error could be affected with further calculations, the error could get compounded • reading calculator screens and choosing the appropriate number of significant figures/decimal places
GMC2. Estimating, calculating and error spotting	The estimation, calculating and error spotting competency can require: • understanding and knowledge of the context in order to find appropriate solutions to calculations • using rules of thumbs when making estimations. For example, an extra inch of height adds 5 pounds of weight

General mathematical competency	Examples of how GMC is applied to the health and science T Level
	• getting a sense check of any calculations performed, so you can be reassured your answer is in line with the expected solution
GMC3. Working with proportion	Working with proportions can include: • using numbers, ratios and percentages, for example, but also graphical representations, determining trends/pattens • an understanding of direct proportion and inverse proportion – such as in graphs, numbers or qualitative descriptions • applying proportionality to make predictions and draw conclusions, for example
GMC4. Using rules and formulae	Using rules and formulae includes: • knowledge and understanding of how to use rules and formulae given in the specification • general rules as well, such as area and volume calculations, hierarchy of operators for multiplication, division, brackets, addition (BIDMAS) • being able to use formula to find different quantities by rearranging equations • taking account of units and dimensions, and the effect when performing calculations, for example
GMC5. Processing data	Processing data can include: • how the data is collected to begin with • what technology, such as spreadsheets, is used to process the data • how the data is represented and processed such as tables or chart/graph form • being able to interpret already processed data, such as drawing conclusions from provided graphs

General mathematical competency	Examples of how GMC is applied to the health and science T Level
GMC6. Understanding data and risk	Understating data and risk can include: • knowledge and understanding of how data is sourced, for example primary, or secondary sources • being able to critically evaluate data • making predictions and drawing conclusions from data • considering how data was generated, for example sample sizes, data source in terms of possible bias
GMC7. Interpreting and representing with mathematical diagrams	Interpreting and representing with mathematical diagrams include: • the creation of suitable diagrams, charts, infographics, for example • being able to interpret diagrams and charts • using technology in their production and setting suitable scales, trend lines, for example
GMC8. Communicating using maths	Communicating with maths includes: • the use of calculations and diagrams to represent your findings and support your conclusions/judgements • using different methods for different audiences – such as information for the general public versus information for professionals/specialists
GMC9. Costing a project	Costing of a project can include: • financial planning, considering the various costs involved, such as equipment, space, time, resources, labour • being able to justify a budget for a certain project • taking into account risks that could potentially impact on any plans
GMC10. Optimising work processes	Optimising work processes can include: • identifying problems from data gathered, such as time requirements, efficiency, financials • suggestions for improvements and any resulting calculations, such as the amount of time saved, how it would affect resources/equipment costs • gather data to analyse the impact that the changes have and evaluate said impact

Answers to questions

Practise rearranging formulae

1. $x = \frac{y-3}{9} + 4$

2. $4ym - t = x$

3. Rearranging gives $\frac{9}{5} C + 32 = F$ so, 36.2 C = 97.16 F

4. 1.41 A (Using V = IR, rearrange to give I = V/R (3.s.f.))

Working out units from formulae/calculations

1. mg/mL

2. mg/h

    *Tip: remember, 'per' means divide!

3. g/L

Working out formula from units

1. beats divided by minutes

2. mass divided by volume (giving an answer of 2.7 g/cm^3)

3. force x distance (giving an answer of 300 Nm)

    *Tip: remember your rules of algebra! ab = a x b

Calculating rate

1. 0.33 kg/week

2. 18 breaths/min

3. 31.25 kg/min

Practise calculating percentages

1. 258% larger

2. 3.37%

3. 24%

4. 40000%

English: foundations for your employer set project (ESP)

Why spelling, punctuation and grammar (SPaG)?

Spelling, punctuation and grammar (SPaG) enables us, as writers, to convey our thoughts in a way that our reader will find easy to understand.

SPaG that is clear and accurate can make you appear more professional and get your message heard.

Employers are more likely to employ people who have good written communication skills.

Apostrophes

There are 2 types of apostrophes:

- **possession** –ownership/belonging (for example, the dog's toy)
- **omission** – where you leave out a letter (for example, I'm a student (Instead of I am))

In formal writing such as reports and articles, apostrophes for omission should be avoided to help keep the formal tone and register.

Apostrophes for possession often cause some confusion.

1. **The _dog's_ tail was fluffy.**

Dog is a singular noun, so you need to add an apostrophe and 's' to show that the tail belongs to the dog.

2. **_James's_ dog was naughty.**

James is a singular noun so, even though it ends in an 's' already, you need to add an apostrophe and another 's' to show that the dog belongs to James.

3. **The _brothers'_ feet were muddy.**

Brothers is a plural noun that ends in an 's', so you don't add another 's' after your apostrophe. You can just add an apostrophe to show the feet belong to the brothers.

4. **The _children's_ toys were broken**

Children is a plural noun, but it does not end with an 's', so you need to add an apostrophe and an 's' to show that the toys belong to the children.

The following activity is for you to try to recap apostrophes for omission and possession, as well as identifying if they are singular or plural.

Apostrophe activity

Add the apostrophe	Possession/omission	Singular or plural?
My dads name is Amir.		
Pauls dog is very cute.		
I read the research its apparently Harmans Theory of aging.		
Antonios grandma speaks English, Italian and Arabic.		
My sisters friend is coming to visit in an hour.		
Im not sure but I think the physiotherapists are meeting next week.		
The hospitals strategy.		
The Childrens Hospital		
Hes the friend I spend the most time with.		
Thats Davids pen, he must have forgotten it.		
The swimmers families cheered them on.		

Apostrophe activity

Using the correct word

Sometimes words can be confusing as they sound the same but have different spellings and meanings. Below are some words that are often confused, with an activity to help secure understanding of the meanings.

It's or its?
The dog had eaten all _____dinner.
_____ been a fantastic day, she exclaimed.
The dog licked _____paw.
Let me know when _____ready.

I or me?
Who else will be coming to the cinema with John and _____?
The children and _____were sitting on the settee.

Whose or who's?
_____ shoes are these?
_____ left their shoes in the doorway again?
I do not know _____number this is.
Do you know _____singing this song?

Using the correct word

Accept or except?
I _____ your apology.
No dogs allowed _____ guide dogs.
Everyone ___ the nurses need to attend.
They do not _____ credit cards in the shop.

Practice or practise?
I am going to visit the new medical _____.
I must _____ my breathing techniques.
On a Friday, the children _____ handwriting.
The injection is given at your doctor's _____.

Affect or effect?
Does the medication _____ the symptoms of the patient?
The new medication has no _____ on glucose.

Advise or advice?
My _____ would be to visit your GP.
I _____ that you stop smoking.
I asked the doctor for some _____.
Scientists _____ that you wear a mask.

Allowed or aloud?
You are not _____ in the restricted area.
The process of learning clinical reasoning may be assisted by using think _____.
The patient was _____ to go home.
She read the instructions _____.

Activity

Create a sentence for each of the following words.

Word	Meaning	Sentence example
Past	Gone in time/no longer	
Passed	To indicate movement	
Advice	A noun that means a suggestion about what you should do (a guide to action)	
Advise	A verb that means to suggest what should be done - to recommend/give info to someone (verb)	
Lose	To fail to win or hold on to something	
Loose	Adjective: not tight, not attached or Verb: to free something or someone.	
Affect	To influence something	
Effect	The result - it represents the end and a good way to remember is both start with an 'e'.	
Infer	Come to a conclusion, make an educated guess.	
Imply	To suggest, hint at.	

Formality and tone

What makes a text formal or informal?

- purpose – what is it trying to achieve?
- audience - who is it for?
- tone - the attitude of the text
- punctuation
- language and grammar

Activity

The following activity is to identify the formality of the text. Select from the following the formality of each of the descriptions:

- highly formal
- quite formal
- quite informal
- highly informal

Description	Formality
An article for your company's newsletter about you and your job role.	
An email to a customer reminding them of an appointment.	
An email to friend to invite them to your birthday night out.	
A letter to customer with regards to receiving an incorrect product.	

Formality and tone

Activity

Which of the following would be the most formal?

1(a). An email to the council about the decline of leisure activities in the local area.

1(b). An email to the council regarding a stall at the local summer fayre.

2(a). A review of a recent film.

2(b). A review of local transport.

The following activity is to identify the formality of the text by saying if it is formal or informal and also to suggest the tone of the text. Tone of the text is the mood such as humorous, sarcastic, sad, fun.

| Text	Formal/informal	Tone
Temperatures are rising. This is caused by human emissions of greenhouse gases and a change in weather patterns		
The joys of camping in the UK – wonderful wet weather, soggy socks, and toppling tents! A great way to spend your well-deserved holiday		
Dial-a-dog! Ever wondered if a dog is for you? This is a great way to find out! You could soon be finding your own fantastic furry friend.		

Tenses activity

Identify the tense of the sentence.

| Sentence	Tense: past/present/future
We will go to the cinema on Saturday.	
Rashid is eating his lunch.	
Mario is walking to the shops.	
Viktoria slept all day yesterday.	
Mr and Mrs Perez are speaking Spanish.	
My parents flew from Gatwick airport.	
I am going to read a book.	
Elena is writing a story.	

Sentences

This is an example of a **main** clause. It is a complete sentence and makes sense by itself.

This is a **simple** sentence.
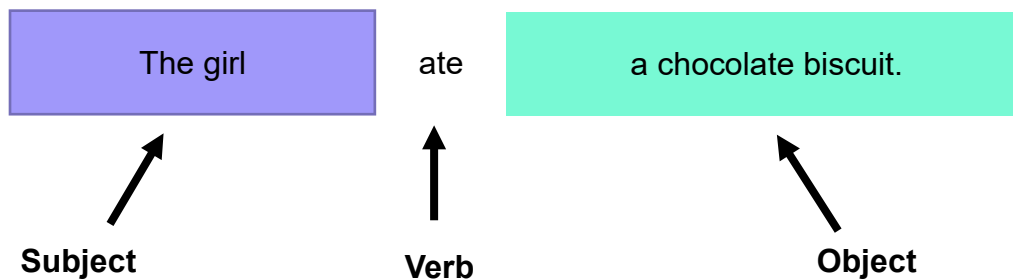
A compound sentence **connects 2 independent clauses, usually with a coordinating conjunction like, and, or, but**. They combine 2 or more self-sufficient and related sentences into a unified single sentence.

This is a **compound** sentence:

I like coffee.	Helen likes tea.

I like coffee **_and_** Helen likes tea.

Conjunction
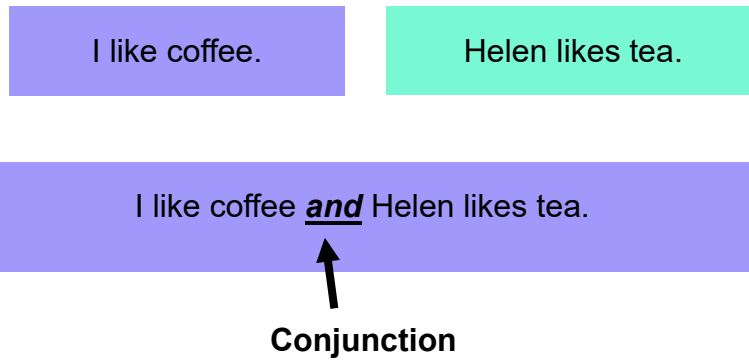
This is a **complex** sentence:

My sister,	who is younger than me,	is a doctor.

Complex sentences are formed by adding a **subordinate clause** to a main clause

Subordinate clauses add information to the main clause.

For example: 'who is younger than me' is a subordinate clause as it adds more information to the sentence but **does not make sense on its own.**

A subordinate clause must be separated from the main clause using punctuation (usually a comma).

Sentence activity

What is the sentence type: simple, compound, or complex?

Sentence	Type
Molly, 2 years younger than me, was not allowed to go.	
It was a very sunny day.	
They did not like the food, so they left the restaurant	
The boy was crying because he had fallen.	
Ahmed, managed to find a chair, while others had to stand.	
I have a dog called Toby.	

Answers for spelling, punctuation and grammar (SPaG) activities

Apostrophes

Add the apostrophe	Possession/Omission	Singular or plural?
My dad's name is Amir.	Possession	Singular
Paul's dog is very cute.	Possession	Singular
I read the research its apparently Harman's Theory of aging.	Omission and possession	Singular
Antonio's grandma speaks English, Italian and Arabic.	Possession	Singular
My sister's friend is coming to visit in an hour.	Possession	Singular
I'm not sure but I think the physiotherapists are meeting next week.	Omission	Plural
The hospital's strategy.	Possession	Singular
The Children's Hospital	Possession	Plural
He's the friend I spend the most time with.	Omission	Singular
That's David's pen, he must have forgotten it.	Omission and possession	Singular
The swimmer's families cheered them on.	Possession	Plural

It's or its?

- The dog had eaten all its dinner.
- It's been a fantastic day, she exclaimed.
- The dog licked its paw.
- Let me know when it's ready

I or me?

- Who else will be coming to the cinema with John and me?
- The children and I were sitting on the settee.

Whose or who's?

- Whose shoes are these?
- Who's left their shoes in the doorway again?
- I do not know whose number this is.
- Do you know who's singing this song?

Accept or except?

- I accept your apology.
- No dogs allowed except guide dogs.
- Everyone except the nurses need to attend.
- They do not accept credit cards in the shop.

Practice or practise?

- I am going to visit the new medical practice.
- I must practise my breathing techniques.
- On a Friday, the children practise handwriting.
- The injection is given at your doctors practice.

Affect or effect?

- Does the medication affect the symptoms of the patient?
- The new medication has no effect on his glucose.

Advise or advice?

- My advice would be to visit your GP.
- I advise that you stop smoking.
- I asked the doctor for some advice.
- Scientists advise that you wear a mask.

Allowed or aloud?

- You are not allowed in the restricted area.
- The process of learning clinical reasoning may be assisted by using think aloud.
- The patient was allowed to go home.
- She read the instructions aloud.

Word meaning

Word	Meaning	Possible example
Past	Gone in time/no longer	I often think of past holidays.
Passed	To indicate movement	Anita passed the ball to Umar.
Advice	A noun that means a suggestion about what you should do (a guide to action)	I need to get some advice about my car.
Advise	A verb that means to suggest what should be done - to recommend/give info to someone (verb)	I advise you to stay at home as the weather is poor.
Lose	Fail to win or holding on to something	I aim to lose weight.
Loose	Adjective: not tight, not attached or Verb: to free something or someone.	My dog is running loose as it escaped.
Affect	To influence something	Poverty can affect anyone.
Effect	The result - it represents the end and a good way to remember is both start with an 'e'.	The experience has had a good effect on him.
Infer	Come to a conclusion, make an educated guess.	'I don't know how much you can infer from his data'.
Imply	To suggest, hint at.	She did not mean to imply that he was lying.

Formality and tone:

- article for your company's newsletter about you and your job role   quite formal
- email to a customer reminding them of an appointment   quite formal
- email to friend to invite them to your birthday night out   highly informal
- letter to customer with regards to receiving an incorrect product   highly formal

Which would be the most formal? 1(a) and 2(b)

Formality and tone:

- formal   serious
- informal   sarcastic
- informal   fun

Tenses

Future, present, present, past, present, past, future, present.

Sentences

Complex, simple, compound, compound, complex, simple.

Tenses

Sentences

The importance of evaluation in your employer set project (ESP)

This section covers a range of evaluation examples, use the most appropriate format based on the questions being asked/work being evaluated.

'Evaluation is the collection of analysis and interpretation of information about any aspect of a programme of education or training as part of a recognised process of judging its effectiveness, its efficiency and any other outcomes it may have.'

ELLINGTON, H. PERCIVAL, F. RACE, P. (1993): Handbook of Educational Technology. London: Kogan Page

What is evaluation?

The main types of evaluation are:

Process	Impact	Outcome	Summative evaluation

Assessing resources found

Consider the following:

| Currency | → | the timeliness of the information |

| Relevance | → | the importance of the information for your needs |

| Authority | → | the source of the information |

| Accuracy | → | the reliability, truthfulness and correctness of the information |

How to evaluate your own work and others: who, what, where, why and how?

How to evaluate your own work
Where did you gather your research?
What was your topic?
What did the research tell you?
Who have you cited within your work?
Why was it successful/unsuccessful?
How has this informed your work and conclusions?
How can you implement this?
How to evaluate work of others/sources
Where have you gathered your findings?
What facts/information have you found?
How did you cite the information?
What was the impact?
What is the key takeaway from the source?
How will it inform/conclude about your work?
Why was it successful/unsuccessful?
What would you change/adapt, and why?

Evaluations in your ESP

Evaluation is an important element of ESP in the T Level qualification. Below are some areas where evaluations are a key component of success:

- evaluation is a key component of the quality improvement report and reflective account tasks

- in the quality improvement report you need to:

  o constructively consider and effectively evaluate all feedback in relation to the report

  o have a deep level of critical reflection of your work in relation to the feedback you have received

  o evaluate good and bad elements

  o conclude on what can be improved, acknowledging your own limitations where appropriate

- in the reflective account you need to:

  o demonstrate an excellent level of deep reflection on each element of the project which includes consistent evidence of critical evaluation

  o evaluate your own performance on each task and on the project as a whole

Example of a reflective evaluation

In the following example, one component is evaluated and then taken through each task. You would do this several times, evaluating different components and how that impacted each task. Below is an example from health; however, this structure could apply to healthcare science and science T Levels also.

'When researching how best to support the patient in task 1, my research focused on physical care for Jo. This seemed effective to me as I felt really prepared for the supportive discussion in the role play. I was able to ask the right questions around his physical needs and respond to his answers. I was able to inform my healthcare plan as I was able to write quite comprehensively around the support he needs., including reviewing of his hypertension medication by a cardiologist specialist.

However, when having my professional discussion with my fellow colleagues, it was highlighted that I did not look enough into what support I could give him and what my role is in supporting Jo. Reviewing this in my presentation, I highlighted that my responsibilities as a nurse entail that I would check his blood pressure, take any blood tests to see if there were any other underlying conditions, before documenting his physiological measurements and forwarding his bloods for testing. The healthcare plan would be changed to highlight my role in this part of his care, and how other specialists would then take the next step to focus his support further.'

Example of a reflective evaluation

The importance of justification in your employer set project (ESP)
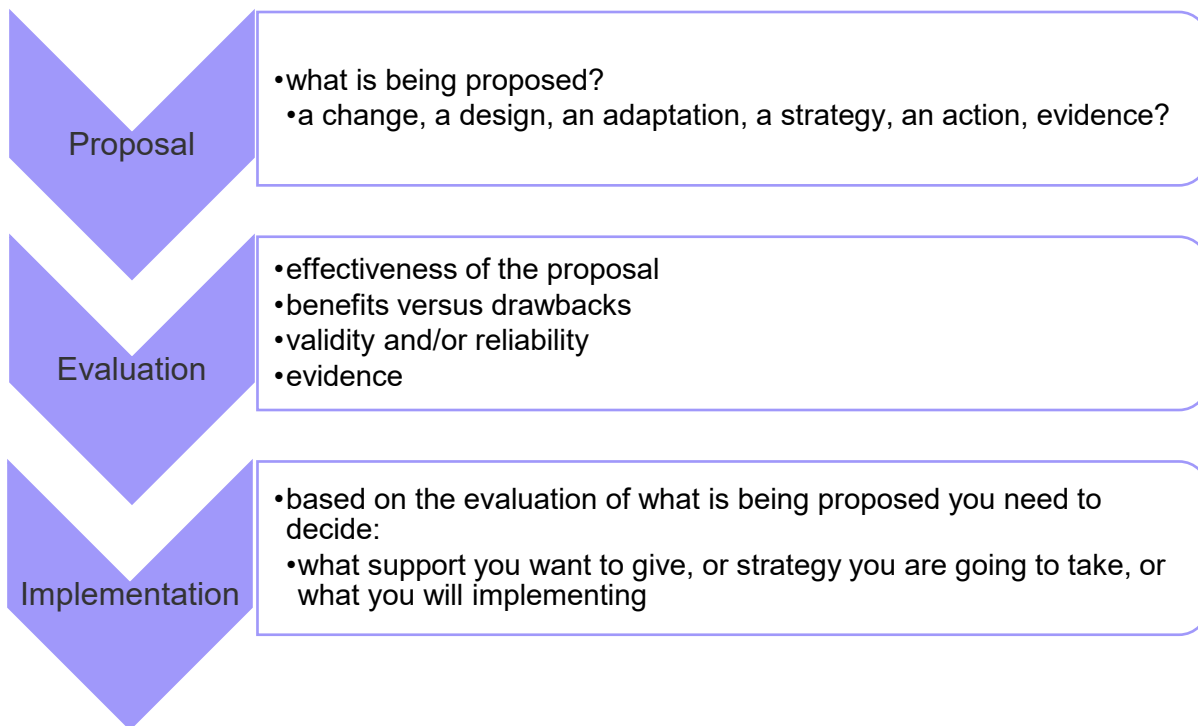
What is justification?

Justification is an important part of your assessment; however, it is also an important part of your professional life. You need to be able to say why you complete each action and your reasoning behind each action, which will then give you the justification of any proposed outcomes.

Justifications are an extension of evaluation. When you evaluate, you weigh up the good and bad, justification is evidencing *why* something is good or bad.

Justification is also about using evidence to defend what your next actions are, or sound reasoning behind why you are implementing a change.

Justification flow chart

Proposal
- what is being proposed?
  - a change, a design, an adaptation, a strategy, an action, evidence?

Evaluation
- effectiveness of the proposal
- benefits versus drawbacks
- validity and/or reliability
- evidence

Implementation
- based on the evaluation of what is being proposed you need to decide:
  - what support you want to give, or strategy you are going to take, or what you will implementing

Justification in your ESP

Justification is an important component of the ESP in the T Level qualification. Below are some areas where justifying is a key component of success.

In using peer feedback to update your quality improvement report, you need to:

- show you can make rational and well understood amendments to your report and are able to clearly communicate the justification for the changes you wish to use and any you do not wish to use

- justify each change or addition you made to the task 2 report

- acknowledge weakness in the original report, hence the making of a justified change

In your preparation for your presentation of your quality improvement report, you need to effectively demonstrate thorough understanding of the justification for all changes made following peer feedback and why they are required to ensure sufficient quality of care.

In presenting and discussing your quality improvement report you need to justify the changes you made to your report.

Example of a justification

Let's now look at an example of a justification using the flow chart above.

Patient information

A patient, Jen, has diabetes, and she likes to eat high-sugar content food. She often feels tired often, bloated and is lacking in energy. She also has a problem with weight control, and really struggles to plan healthy meals around her busy life.

Proposal

Jen needs support in reducing her sugar levels; therefore, an intervention is needed that is focused mainly on managing her diet, specifically reducing her sugar levels. Firstly, I propose that Jen gets her bloods tested, including HbA1c to make sure that there is no significant change in her blood glucose levels. This result will then be sent to her GP to see if any change in medication is needed. I would also recommend that Jen gets referred to DESMOND (Diabetes Education and Self-Management for Ongoing and Newly Diagnosed).

Evaluations

Research has shown that excessive sugar consumption can lead to spikes in blood sugar that can be life threatening, this has been replicated in several studies so is a reliable conclusion. Jen is currently showing physical symptoms of high blood glucose (bloating, tiredness), if this continues this could result in more serious complications, such as eyesight issues and circulatory problems. As Jen has a busy lifestyle, she may not have a full understanding of how to change her diet to best suit her schedule and meet her dietary requirements. If we set out an intervention that only meets Jen's physical requirements without taking into context her environmental and social needs, then we will not be best supporting Jen with her diabetes.

Implementation

HbA1c testing will check to see if Jen needs any changes to her medication, if her medication needs to be increased this could help reduce her blood glucose levels and reduce the symptoms. However, I think referring Jen to DESMOND will help educate her in how sugar levels impact her wellbeing and increase understanding of sugar in her day-to-day diet. DESMOND groups will allow for a sharing of ideas around how to manage a diet in a busy day-to-day life which should help to meet Jen's environmental and social needs.

Creating effective conclusions in your employer set project (ESP)

The last section of an academic writing is the *conclusion*. The conclusion should reaffirm your answer to the question, and briefly summarise key arguments. It does not include any new points or new information.

- leave the reader thinking about your topic – leave an impression on them
- no new information in conclusion
- be sure to recap your ideas
- should follow logically from the body of the essay

This is the opposite of your introduction, it tells the reader what you have **assessed**, **justified, discussed** based on what you proposed in the introduction.
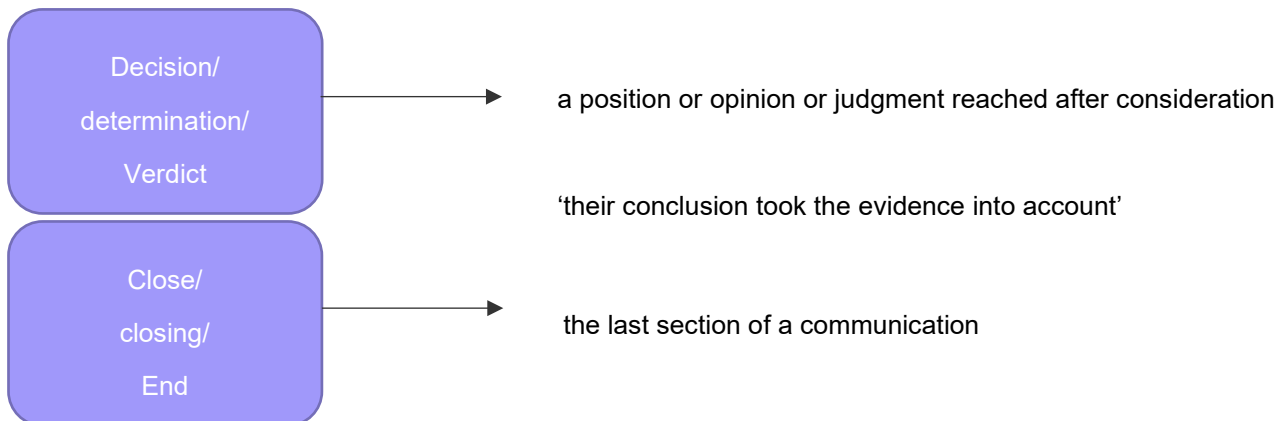
What is a conclusion?

'A conclusion is the last part of something, its end or result. When you write a paper, you always end by summing up your arguments and drawing a conclusion about what you have been writing about.'

www.vocabulary.com/dictionary/conclusion

The main types of a conclusion are:

Scheme	Blame	Constitution	Ending

Consider the following:

Decision/ determination/ Verdict	→	a position or opinion or judgment reached after consideration

'their conclusion took the evidence into account'

Close/ closing/ End	→	the last section of a communication

Typical words for a conclusion

Conclusion
Given the circumstances…
Now that one knows…
Overall…
The logical conclusion appears to be…
To summarise…
Ultimately…
Upon consideration of the facts discussed…
After the exploration of multiple professional viewpoints…
In summary…
Nevertheless…
When faced with the dilemma of…
Bearing in mind…
It seems clear that…
Given the evidence presented…
In general…
With all aspects considered…
In view of this information…

Structure of a conclusion

A conclusion has 3 sections:

- purpose – first, **repeat the purpose of your essay/report/literature review;** it will not use the exact same words as in your introduction, but it will repeat the point, the overall purpose to the question

- general conclusions – then set out your **general conclusions**, and a short explanation of why they are important

- draw it all together – finally, **draw together the question**, the evidence in the essay body and the conclusion; this way the reader knows that you have understood and answered the question, this part needs to be clear and concise

Example conclusion

In this health example, the conclusion is broken down into the steps mentioned above bringing them together into one paragraph:

Purpose:
In summary, this report sets out clear proposals of how best to support Jo in his care and day-to-day living.

General conclusions:
As highlighted earlier, Jo's independence is very important to him; however, this does cause a dilemma as Jo's emotional and physical needs are not being met. As Jo is a very proud man, it is important that what is proposed in this report is discussed with Jo and allows him to be part of the decision making. Subsequently, involving Jo will continue to encourage his independence which is an important value for him, and allow for person-centred care. As discussed, research has shown hypertension can be linked to diagnosis of 'mild cognitive impairment or dementia' (Vest, 2021); therefore, a review of his medication may be needed to ensure that this is not having an impact on his memory loss.

Draw it all together:
Having Jo involved in creating a healthcare plan, and following the actions previously mentioned regarding his physical and emotional needs, will allow for the best outcomes in a support plan whilst ensuring Jo's values and beliefs are the foundation of our care.

Reflection

What is reflecting on your practice?

One definition is: '*The ability of a professional to critically, realistically and constructively review one's own performance in order to take necessary actions to improve abilities and/or maintain motivation toward teaching and learning goals'* (IGI Global, 2022).

IGI Global. 1988, *Publisher of Timely Knowledge*. (Online). Available at www.igi-global.com/dictionary/professional-self-reflection/33702 (September 2022)

The important terms here seem to be **reviewing practice with criticality and realism**, using a **practical approach** to inform the review. This then leads to some sort of action; making changes which improve practice or maintain motivation – and these would be towards specific goals.

Reflective practice requires you to be objective – to explore what you **do**, review all aspects of your work and how you can maintain or improve the standards required within your industry context.

Let us start by exploring how this could be structured. The first stage would be to **carry out a professional activity**. In T Levels, one example of this would be one of the tasks in the employer set project (ESP), where a reflection task is completed. Once you have completed the activities, you will use them as the basis of reflection, where you might ask yourself:

- what went well?

- what did not work so well?

- what were the factors which impacted on how well everything went?

- how did your approach impact on success?

- you could also consider the involvement of and/or feedback from others

When reflecting, it is important to be **objective**, take a 'step back' and look at what happens from the 'outside'. Imagine you are an onlooker, not involved personally, and evaluate **wha**t happened and **why** it happened. You might also ask for the input of others at this point, the professionals you work with to get the input from the perspective of others around you. You should think about who this might be and ensure you collect input and feedback from the most relevant people – even those who might be difficult to ask!

The next step or stage would be for you to **use** the findings of the reflections and evaluations to inform a plan of action. What **might, or will** you do to address any issues? Will you change something, or keep doing things the way you were? You should have personal justifications for what you choose to do here and if you are **not** going to change anything, focus on **why this is so**.

For areas where you **will** change things:

- what has informed the changes?

- why have you chosen the changes you have?

You need to think very carefully and objectively here to have the best and most positive impact. If you have received some ideas from others, again be objective, and make a professional judgement on whether you are going to try them out. It can be quite difficult to critically review your own work and take criticism from others but using an objective, professional approach allows you to make informed choices which will help to maintain high standards or improve or develop any areas we need to.

Once you have reflected on your practice and made a plan, the next step or stage would be to put the plan into action. It is also important to review the changes you make and their impact, whilst also reviewing any areas which remain unchanged and how well they are going. Again, involving others might be useful here. Finally, it may be useful to review how well the whole process has gone, with some more long-term planning of action.

The stages or steps could be seen to overlap or even be more cyclical. It is important to acknowledge here that reflective practice is very much an ongoing process without always having start and end points and that the most successful professionals embed this into everything they do.

Models of reflection

Kolb's Experiential Learning Cycle (1984)

We will now explore some models of reflection, starting with **Kolb's Experiential Learning Cycle (1984):**

- concrete experience
- reflective observation
- abstract conceptualisation
- active experimentation

The first stage in this model is having the **concrete experience,** and generally, this could be planned or unplanned. We 'do' something or carry out a work activity, and we start off by describing what happened.

The second stage is **reflective observation**, where we reflect on what happened. We review the activity and carry out an objective review related to why we think the activity 'went' the way it did. What influenced what happened? What were the impacting factors related to how successful it was? Did anyone else have any impact or provide feedback to you?

The third stage is **abstract conceptualisation.** For this, we make links to other facts, knowledge and understanding. We have to make sense of the experience; that is what Kolb means by 'abstract conceptualisation' and it is particularly important for something that is new. This learning involves using theories, logic and ideas, rather than feelings, to understand problems or situations.

The final stage is **active experimentation**, when we actively use any new knowledge, learning or understanding gained from the whole reflective process. Professionals can 'plan for the future' regarding what they have gained from applying this reflective cycle, and how it informs their future practice.

This is easy to relate to learning something new, but it can be just as beneficial to use with an existing activity or practice to review its effectiveness or success.

Try this model for yourself using the following template:

1. Concrete experience – doing/having an experience. Describe what happened.	
2. Reflective observation – reviewing and/or reflecting on the experience.	
3. Abstract conceptualisation – what did you learn from the experience? What sense can you make of it?	
4. Active experimentation – planning for the future and trying out what you have learned.	
Any other comments/notes?	

Gibbs' Reflective Cycle (1988)

The second model we will explore is **Gibbs' Reflective Cycle (1988)**. There are 5 stages in this model:

1. Describe what happened

2. What were your feelings?

3. Evaluate why it happened and how you felt

4. Make conclusions

5. Plan a course of action

Similar to Kolb's model, we start this off in stage 1 by creating a description of what happened during completion of an activity or task.

For stage 2, the model then asks us to record our **feelings and reactions** related to the activity or task, and what we were thinking whilst completing it. It is also important to consider **how** these feelings, thoughts and reactions impacted on the activity, its success and completion.

The next stage is to evaluate the activity or task completed. This would include how good or bad it went, including an evaluation of the **why** it went the way it did, not simply focusing on the 'how' by producing a description, as this was completed in stage 1. To be successful, what is required at this stage is deep thought, evaluation, and objectivity, what were the factors which impacted on its success? Why did they impact on it, and what was the impact? What helped and contributed to its success, and what hindered or stopped its completion? What feedback or guidance was received, and how did it help, support, guide and impact what was done?

The fourth stage relates to making conclusions and this includes considering alternatives, what else could you have done? What could you have done differently, and how might this have impacted on the activity? Feedback from others could also help greatly with the completion of this stage. Focus again on taking a 'step back' and being objective, think professionally about what happened. It is not about blaming anyone for any problems or mistakes; we are all human and mistakes do happen sometimes. Therefore, it is about learning from what happened and making changes or adaptations to our practice, to ensure that activities and tasks are carried out efficiently in the future.

The final stage relates to planning a course of action based on the above steps. What would you do differently if you carried out the activity again? What have you learned from this activity that could help you to plan further professional activities and completion of tasks? How did your approach 'work', and what aspects of your practice can you develop and further improve as a result of reflecting on what you have done?

Gibbs also suggests that you should start the process again, the next time you carry out the same or similar activity.

Gibbs' Reflective Cycle (1988)

Try this model for yourself using the following template:
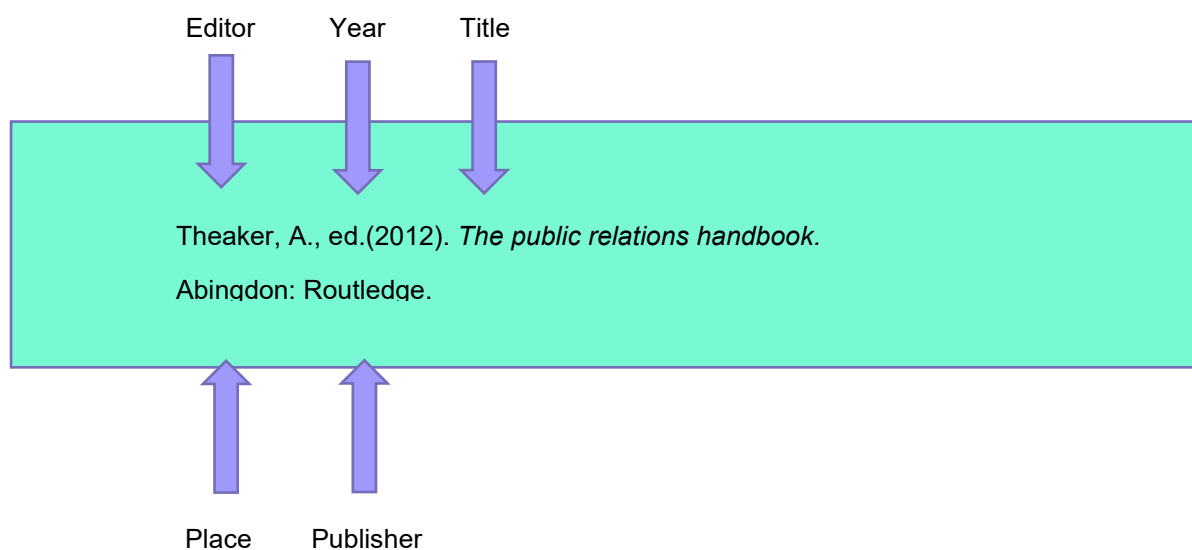
1. Describe what happened.	
2. What were you thinking? What were your feelings and reactions?	
3. Evaluate – was it good or bad? Also include why and how?	
4. Analyse it – what sense do you make of it?	
5. Conclusion – what else could you have done?	
6. Action planning – what would you do if it happened again?	
Any other comments/notes?	

Referencing

Style of referencing

Harvard referencing (often called the 'Author Date System') – worldwide and preference to use in study. When reading books or articles referenced using the Harvard system, the flow of the reading is less interrupted as the attention is not constantly diverted from the text to footnotes or endnotes. New students and the more general reader often find works written using the Harvard system more accessible, as pages dominated by large numbers of academic footnotes can be intimidating. Having a list of references at the end of the work to show the full reference that is cited within written work.

How to create a reference list

Editor   Year   Title

Theaker, A., ed.(2012). *The public relations handbook.*

Abingdon: Routledge.

Place   Publisher

Harvard Referencing: Surname, Initial. (Year of publication) 'Title of article', *Title of newspaper*, followed by the place of the publisher with their name below day and month, page reference if available.

Further reference examples

Harvard reference list examples:

1. Referencing a book:

   Tracey, D 2011. *Urban Architecture ideas and designs for the new food revolution.*

   Gabriola Island: New Society Publishers.

2. Referencing an academic journal:

   Mackenzie, R. 1998. Psychologist: to be or not to be? *Journal of philosophical psychologists*, 34(2), 345-347.

3. Referencing newspaper articles:

   Matomela, S 2010. Crime rampant in Gauteng. *The Sun* March:3.

4. Referencing websites:

   Johnston. A. 2014,*The Fall of Neoliberal Politics.* (Online). Available:

   https://scholar.google.co.uk/scholar?q=Johnston.+A.+2014,The+Fall+of+Neoliberal+Politics.+%5BOnline%5D.+Available:&hl=en&as_sdt=0&as_vis=1&oi=scholart [28 August 2014] (28 August 2014)

How to cite reference within your work

Under the Harvard system, sources are cited in short notes in brackets within the text and a corresponding full reference is included in a list of references at the end of the work.

Every time the ideas, facts, or opinions of another are used in a piece of work it must be acknowledged with a full reference. Whether a source is quoted directly, indirectly, paraphrased, or summarised, it must be acknowledged. To do otherwise is plagiarism.

How to create a reference list

Surname of author   Page/Reference numbers

(Edwards 2002, pp.66-77)

Year
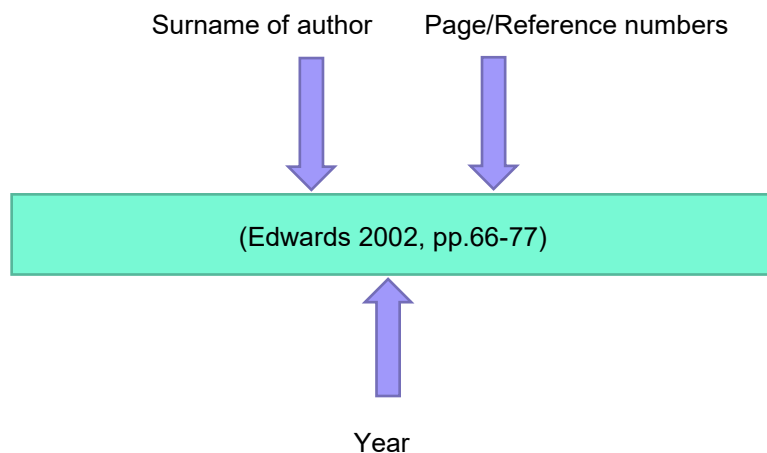
Top tips for peer discussions and feedback

Why is feedback important?

We constantly receive feedback in personal and professional situations. Feedback allows us to learn from, and with, other people. However, we need to learn how to give and take feedback effectively to have a positive impact. Giving and receiving feedback is not always easy but it is an important part of reflection and growth, and fundamental to working within a professional team. Learning how to effectively give and receive constructive feedback builds empathy and your ability to communicate and listen – all important characteristics of an effective practitioner.

In your personal or academic life, consider for a moment when you have given feedback which had a positive impact. How do you know that the feedback had a positive impact? Why did you give the feedback? What was the purpose of your feedback? Record your reflections in the box below.

Now consider a time when you have received feedback. What action did you take following that feedback? Perhaps you gained confidence in your approach to a task or problem or maybe the feedback encouraged you to change your approach slightly. Record the impact of the feedback in the box below.

Giving peer feedback

When giving feedback there are steps you can follow to ensure your feedback is well considered and meaningful to the recipient. Practising these steps takes time and requires self-reflection to consider your own effectiveness in giving feedback.

1. Prepare

It is important to identify the goals of the feedback conversation before you say a word. This will help you to focus the feedback. Consider: What was the original brief or task on which you are providing feedback? What are you hoping to get out of this? How will your feedback support the recipient in achieving their brief or task? To do this constructively it is important to read the whole piece of work at least twice through before considering any feedback.

2. Avoid the 'feedback sandwich'

Providing a negative comment between 2 positive statements can provide a false sense that everything is ok. Instead, it is good practice to start with a positive, ensuring the justification relates to how they achieved the brief or task. You can then ask your peer a question about their approach to give you a better understanding of their overall rationale. This question may be focused on an element of their work which is not clear to yourself when you have read through twice or an area of their work which immediately raised questions for you as you read it.

3. Do not attack or make it personal

Remember to be positive. The purpose of the feedback is to improve an approach to achieving a brief. Your peers are more likely to be receptive to feedback if you have a positive attitude. Put yourself in the shoes of your peer - how would you like the feedback to be delivered to you?

4. Be clear and concise

Say what you mean. Do not hide anything or avoid what the problem is. Give an example when you can, outlining how you would suggest your peer make changes moving forward – always linking back to the task or brief. The clearer and more specific your feedback is, the easier it will be for your peer to implement.

5. Use passive voice

Focus on the problem, not the person. Using passive voice will support your peer to focus on improving their work, rather than feeling like you are talking about them personally, because passive voice draws the attention away from them and focuses on the task. Focusing on the actions that are a problem, rather than telling the person they are a problem, can help your peer become more open to the feedback as it focusses on their work opposed to you telling them they are the problem. For example, saying 'that paragraph hasn't considered...?' sounds better than saying 'you haven't thought about...?'.

6. Make it a two-way conversation

Embracing peer feedback as a part of your day-to-day study and learning can really support when peer feedback becomes a necessity. Practise approaching conversations respectfully and see peer feedback as an opportunity to solve problems earlier on. If you notice a problem, do not wait to address it. Rather than pointing out what is wrong, suggest an alternative and be prepared to have a two-way discussion. Listen to what your peer has to say. Encourage them to ask questions and be mindful to consider their suggestions.

Accepting feedback

Listen fully

If you get defensive or argue with the person who gives you feedback, the next time they will worry about your reaction and will not feel comfortable giving honest, constructive feedback. Even if the voice inside your head is screaming 'but that's not what I meant' or 'I have already referenced that literature' allow yourself to listen carefully and digest the entirety of what has been said rather than zoning in on the parts you may disagree with.

Accept

It can be easy to overly focus on the negative comments and forget to accept what was positive. Likewise, if you are asked a question, you can begin to view that as a negative question and become defensive, as opposed to viewing it as an opportunity to explain your meaning so your peer is in a better position to provide feedback. Thank your peer for their positive comment and be courageous to discuss further why you included that element, and your thinking and approach – remember feedback goes two ways and your peer might have learned something from you.

Focus

Do not sweat the small stuff. Remember the feedback is not personal but is aimed at the brief or task you have worked on. You as a person and your work are separate entities. Draw your attention to the main point of the feedback. Comments on spelling, punctuation and grammar are smaller areas for improvement whereas you want to focus on how well your work meets a brief and how you can further improve it. If this is not clear or specific be confident to ask questions for clarification and to ensure their feedback can positively be implemented.

Get it often

Make asking for feedback a regular habit. This could be asking for feedback on an opening paragraph of an essay, an extended answer to exam practice or in how you have completed a practical task. This allows you to gain feedback in small doses and increasing the frequency means receiving feedback becomes less daunting. This also provides an opportunity to ask for feedback from a range of sources, including tutors, more knowledgeable others and from placement employers. The wider the circle you receive feedback from, the bigger the opportunity to learn and improve. Practising asking for feedback also allows you to practise handling your emotional side. Having a bank of go-to statements can help you accept and process emotion so that you can implement the feedback with perspective. For example, 'really, that surprises me' or 'wow, that stings a little'. You can acknowledge the emotional response you felt – which is only human. This is a great coping strategy to have when you must receive and act on feedback in pressured situations, for example, in exam situations or when working with other professionals and patients.

Take action

It is very likely that you will get feedback you do not always agree with but pay extra attention to the feedback that surprises you – there may be something hidden there. Take away what you want from the feedback you are given and leave what you do not but remember that awareness of feedback is not enough; it then needs action. Create a plan to address feedback you want to take on. You cannot always act on all feedback all at once particularly if you receive feedback from more than one place. Summarise the key points; you can always come back to points later.

Implementing feedback

Let us consider first how you implement feedback effectively in any task you do.

Think first

Consider all the feedback you have from a variety of sources and if there is a general theme. Remind yourself of the original task or brief and how you approached it in the first place. How does the feedback change your view of your approach. Remind yourself of the positive aspects of your work and do not self-sabotage and start from scratch.

Respond to feedback promptly

Feedback is most effective when it is fresh – it has more meaning and purpose, and its intention is clear. Implementing it promptly allows you to maximise on the intent to improve the outcomes of your work. But remember to consider each piece of feedback on its own merit. How will implementing the feedback improve your work, practice or progress towards meeting a brief? Remember to focus when receiving feedback. Asking questions to ensure you understand the intent of the feedback will allow you to implement it more effectively, as you will be clear on how it will impact.

Justify your reasons

Implementing feedback just because you received it, without justifying the impact the feedback will have, will not bring growth and improvement in practice. Focus back on the brief or the task at hand and justify how implementing that piece of feedback will bring you closer to the desired goal. Equally, you can justify why you are not implementing a piece of feedback for the reverse reason that it would take you further from your goal. A reflective practitioner will implement and justify feedback clearly and concisely by remaining focused on the goal.

There is no 'I' in TEAM

When you are in the process of giving and receiving feedback collectively you can be provided with insight from many different sources which you had not considered, and it can be tempting to change your work from the ideas you gain from this insight as opposed to the feedback you have received. Remember, feedback from the peers who created the very work you are inspired by can help you improve what you have already created. It is important to acknowledge this feedback and ensure the feedback is cited and reference that in your changes. Remember – 'teams have the ability to get more done better' and the profession you are entering relies heavily on teamwork – give credit where credit is due. This allows whoever reviews your final draft to track your reflection and growth through a project and give you credit for that.

Using feedback in your subsequent tasks

Where you receive feedback:

Task 3(a)(i): preparing for peer discussion

In this task, you are required to read your peers' quality improvement reports and complete a 'preparation for peer discussion' pro-forma for each.

Remember to use the steps from the giving peer feedback section of this guide. You want to give as much detail as possible to make the feedback useful; your peers should be using this same amount of depth on your feedback to help you. Give what you would want to receive.

Task 3(a)(ii): exchanging feedback during peer discussion

- your tutor will put you into peer discussion groups of approximately 3 people

- you will have access to your own quality improvement report, and your preparation for peer discussion proforma completed in task 3(a)(i); you will have 20 minutes to re-familiarise yourself with the report and your forms, before beginning the group discussion

- each group member will take it in turn to share their quality improvement report and receive feedback from the group

- when you give feedback on other students' reports, you must use the preparation for peer discussion forms completed in task 3(a)(i)

- when you receive feedback, you must complete handwritten notes of the feedback you receive from each group member on the feedback from peer discussion form

- when receiving that feedback remember to follow the steps outlined in the accepting feedback section of this guide

Implementing feedback in your tasks

This is an opportunity to follow the steps outlined in the implementing feedback section, let us look in more detail at some areas where you would follow these steps.

Task 3(b): preparing presentation, presenting and questions from your tutor

- the more comprehensive you have been with task 3(a), the better foundation you have for preparing your presentation

- you need to pick out key elements of your healthcare plan

- you must justify what feedback you would act on and which feedback you would not and why

- 'because you were told to' is not justification – think about the reasonings behind why these changes were proposed, go back to your original quality improvement report and see where that change, or addition is needed and why; or if it is not needed, also justify why

- you need to identify any changes proposed by your peers that you did not action and with sound reasons behind this

- in your professional discussion with your tutor, one of the questions you could be asked is regarding your response to critical feedback from your peers; therefore, be prepared for this using critical evaluations and justifications in your task 3(a) to support your answer here

- see [top tips for presentations and tutor discussions](#) for more helpful tips around this task

Task 5: reflective evaluation

- this is your final task which brings together all components of your project

- your reflective evaluation is a key opportunity to say how your peer feedback would change your quality improvement report

- it is also an opportunity to reflect on how the peer feedback impacted what you thought and why, and how you enacted on that feedback

- you need to evidence how you have reflected on the feedback, acknowledge weaknesses and justify changes made

- it is also an opportunity to state, based on feedback, how you would change your approach to the tasks if you were to repeat them in the future

Activity

Summarise 10 tips for peer feedback below, you have been provided with 5 to start you off.

1. Feedback has a positive impact on you, your team and patients.

2. Remember the goals/reasons for the feedback to align your feedback correctly.

3. Peer feedback is not a one-way flow of information, it is an opportunity for a discussion.

4. It is not personal; it is an opportunity to improve professional practice for all.

5. Justify: you must always have reasons behind proposed changes and why you have acted on proposed changes.

6.

7.

8.

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10.

Activity

Top tips for presentations and tutor discussions

In the healthcare science sector, you are required to conduct presentations to various audiences on a variety of topics, therefore it is important to hone the skill of presenting. Additionally, presenting is part of one of the core skills assessed in the healthcare science employer set project (ESP).

> **Do not worry if you are nervous! Presentations can seem daunting at first and this is the case for everyone, but with practise in a safe and supportive environment you will only improve.**

We have collated some top tips for presentations. Use this in addition to the task 4: present an overview of your quality improvement report included in this support pack.

Planning your presentation and digital aids

For the top marks in your ESP, you should use digital aids. You do not have to use slides for your digital aid; however, many presentations in the health and science sector do, and you may find this more familiar. Most tips below apply to all forms of digital aid.

A presentation is a story

Just like a story, it should have a beginning, middle and end. All characters should be introduced. Key points need to be backed up and cannot seem to appear from nowhere. The story needs to flow and make sense.

> **Remember, your presentation and following discussion must:**
>
> - **clearly communicate a summary of your quality improvement report**
> - **be logically structured**
> - **clearly discuss and justify amendments made following the peer feedback**
>
> **Before you start creating your presentation, ask yourself:**
>
> 1. **What are the key points I would like to convey?**
> 2. **What background does *this* audience need to be able to understand those key points?**
> 3. **How do I weave these into a story that makes sense?**

Do not forget the brief. You should reference it alongside evidence-based practice, consider it an anchor to your story.

In the ESP, there is no time limit on the presentation, but you want to give yourself enough time to be able to demonstrate your knowledge and understanding of the project outcomes, as well as providing justification for the changes that you make following your peer feedback session. Therefore, do not rush and ensure you are covering these points.

Slides are a visual aid

The presentation is <u>you</u> not your slides, slides should support you in your presentation and not define it.

Do not just have the words you are going to say repeated on the slides, most information should be spoken, with the only slide text being the key points.

Include diagrams and images (remember to reference). If there are many complicated facts/figures on your presentation, consider also including a handout with these to aid your audience.

Consider becoming familiar with Slides Master view in Microsoft Office PowerPoint; this enables you to design one slide (or several) and apply it to your entire presentation, giving you consistent style with minimal time and effort, therefore allowing you to focus on the most important part – the content.

Proofread

Spelling, punctuation and grammar mistakes look unprofessional in a presentation and will lose you marks in your ESP.

The presentation

Consider your audience

In the ESP, you are presenting to your tutor, who is playing the role of a supervisor. Your tone should be formal and professional with this audience. You should always consider how technical your language should be, and amend and tailor your language appropriately to your audience.

Remember to justify

A key component of your ESP presentation is to justify the changes you have made to your quality improvement report following peer feedback. Remember, do not just include a change because someone said it; you need to be able to give reasoning as to why you made your change. Link them to why they are required to ensure quality of care.

Ensure you are familiar with the importance of justification in your employer set project (ESP) section elsewhere in this support pack.

Connect with your audience

Introduce yourself. You are a person presenting to other people and an easy way to connect with your audience is to do a simple introduction. For example, 'Hi, I'm Ameena, I work in the healthcare science team, and I will be presenting today on my patient care plan for Jane Doe'.

Eye contact can be powerful when conveying information, you should not stare at your audience (particularly when there is only one person in it) but occasionally making eye contact can really help with communication. For key points on the slides, direct your audience's gaze by looking at the slides yourself, you can point and indicate aspects with your arms. Be sure to look back at your audience once you have finished highlighting these points on the slides.

Do not be afraid to ask questions if this is appropriate. Things such as 'how familiar are you with this technique?' can determine if you need to explain some background or if your audience is happy to move on. This technique also engages your audience.

Beware of distracting habits

We all have little things we do when we are nervous, either saying lots of 'um's, shifting our body weight or fiddling with our hands or notes. These can be distracting for our audience; we should therefore minimise them as much as possible. Remember: the main goal of your presentation is to get your key points across – you do not want anything to interfere with this.

It is often hard for us to spot our own distracting habits, consider presenting in front of a friend and ask them to identify some that you may have.

Keep open and relaxed body language

Body language is a very important part of communication, and you need to be aware of your body language when undertaking presentations. When you are presenting, stand relaxed, maybe clasping your hands in front of you. Avoid crossing your arms as this can appear closed-off to your audience. Minimise fidgeting and unnecessary movement.

You can use your hands to make gestures but ensure these are deliberate movements that are not too fast or frequent, as this too can be distracting for your audience.

Be aware of your posture, ensure that you do not slouch. Your posture should be upright and open, which will make you look and feel more confident.

Use your voice

When you have taken time to prepare a presentation and show off your work, the last thing you want to let you down is how you deliver the information.

Keep pace. In presentations we almost always talk too fast, eager to get it over and done with. However, to ensure your message is not lost, practise talking slower, even to the point where it feels *painfully slow*, because once the adrenaline of presenting hits, this will speed up to normal pace.

When planning what you are going to say, add pauses and variation in volume. This not only helps emphasise points in your speech but also makes for more engaging and interesting watch for your audience. Each pause should last at least one breath. The breathing may also help you stay relaxed.

Tips to relax

- ensure you have practiced – you will feel less nervous if you feel prepared
- before you go up to present, take several deep breaths and shake out your arms and legs; shallow breathing and tight muscles feed into our nervous system and make us feel even more anxious but counteracting this can help us feel calmer
- if you can, become familiar with the room and technology that you will be presenting with; even just 5 minutes walking around and taking it in can help ease the sense of unfamiliarity
- when you are up in front of your audience, before you say your first word, take a deep breath and smile

Practise

It is no secret that the best technique for good presentations is to practise. Every presentation makes you a better presenter. Ensure you have run through what you are going to say, how you will use your digital aids and maybe include some practice questions and answers.

Tutor discussion: answering questions

The bit that many of us dread in a presentation is the question and answer section, but this is the opportunity for you to show off what you know. It is important to remember that you likely know more about your work than your audience do; you are the expert!

Be polite and respectful

Remember manners and etiquette – do not interrupt the person asking the question, even if you know the answer. Ensure your body language shows that you are listening – look at them and nod whilst they are asking the question.

Give yourself time

Even if you think you know the answer, take a pause to think before answering. Does the answer need some background to make sense? If so, you would need to start with that.

Don't be afraid to ask the person with a question a clarifying question of your own: 'are you familiar with previous work in this area?' and use their answer to inform on how much background you give.

Give reason and use your research and previous tasks to inform your answer.

Base your answers on evidence

Where appropriate, you should provide theoretical background and justification to your responses to the questions, include enough detail to show you have excellent understanding. A high degree of familiarity with quality management requirements would support you here.

If you do not immediately know the answer

- don't panic!
- take time to think, it is perfectly ok to say a holding phrase to give you time, for example,
    - 'that's an interesting question'
    - 'could I please have a moment to think about that?'
- take a breath and relax
- if you do not understand the question, ask the person to rephrase it
- repeat the question back to them to ensure you understand it; for example, 'so from what I understand, you would like to know why I chose this method over others?'
- start with what you do know if it is relevant to the question (do not just waffle)

If, after following the above process, you still do not know the answer be honest! A simple 'I'm sorry I don't know the answer to that but it's a very interesting question and I'll look into it later' is perfectly respectable. Maybe you can include this in your reflection task and reflect on how this would impact your researching and presentation preparation in the future.
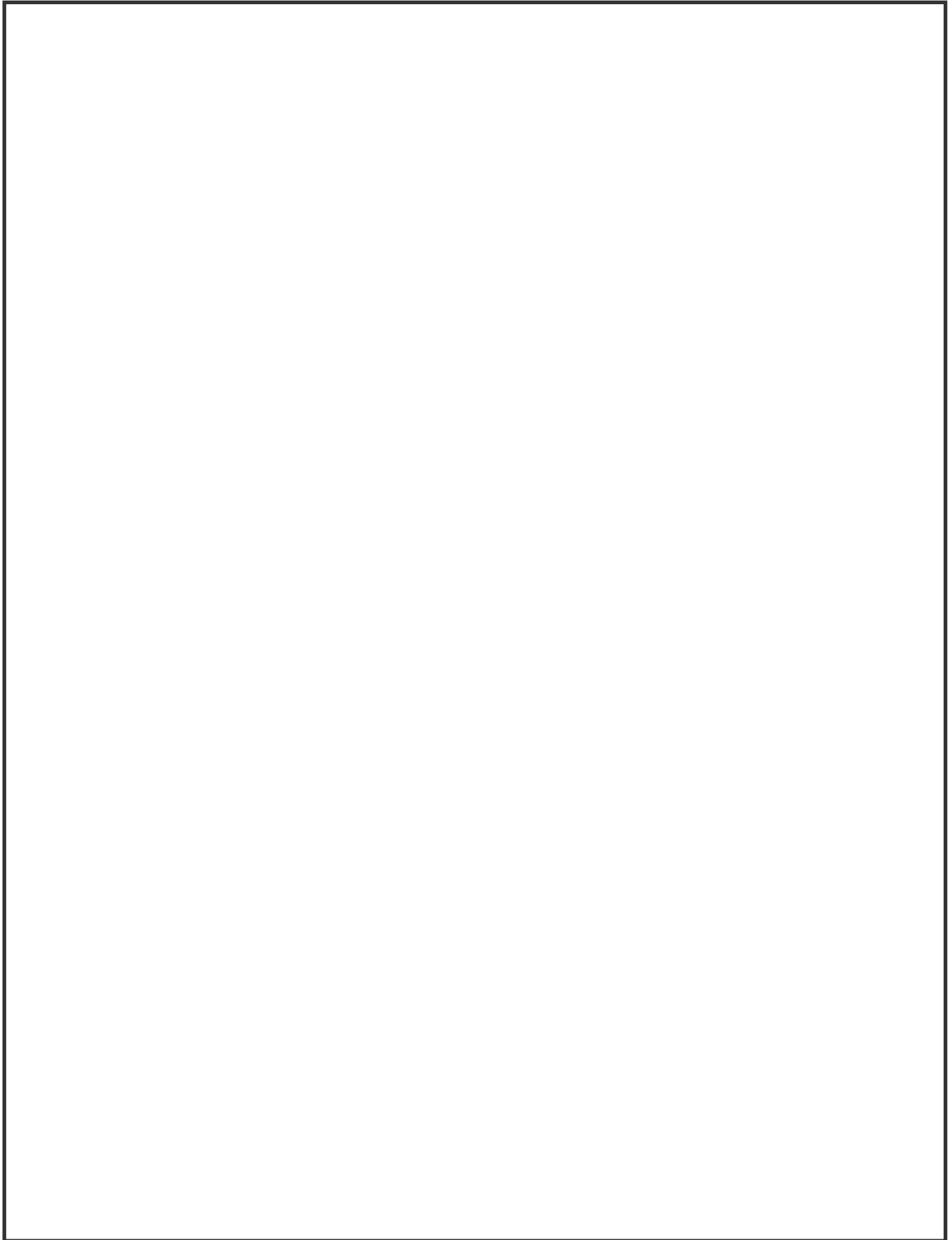
Activity

Film yourself conducting a presentation and watch it back to reflect, include elements from the points above. Maybe you could use a reflective cycle to structure this? If you do not feel comfortable being filmed yet, consider presenting to a peer and obtaining feedback. It is still important to reflect on performance.

Activity

Making links through effective project management

It is important to remember, that although each task is submitted separately, this is a project, with each task linking to subsequent tasks. It is important to remember how each task links and informs on the following tasks and is an important part of the reflective journey throughout the project.

Task 1	- you have access to the internet, only to access the links to the sources - this is the foundation of your project; think of all the tasks that you will be doing - you will have access to your literature review from this task in task 2 and 4, therefore think about how this research will support your quality improvement report
Task 2	- for this task, you have access to your literature review - this is the first opportunity to embed your research into an effective quality improvement report – consider your methods based on your literature review, take information you learned into consideration when completing the pro-forma - your justification starts here - avoid repetitive information from task 1, instead effectively use this information to provide a clear explanation and justification about how changes would be implemented
Task 3	- you have access to a peer feedback pro-forma for task 3(a) and 3(b) - the knowledge that forms the basis of your discussion comes from the preceding tasks – use this to inform the questions you ask your peers and the answers you give to their questions - task 3(b) you have access to the quality improvement report from task 2, feedback from and peer discussion in 3(a) – use the time effectively to make changes to your report, justifying what feedback you did and didn't act upon
Task 4	- you have access to output from all previous tasks and pro-formas for your tutor discussion - this presentaton task is a great example of how a project is built up of different components that come together as one - you need to bring these components together to justify actions you are proposing but also what changes you are going to make based on feedback - remember this is a professional discussion, assessing your communication skills in a work setting
Task 5	- reflection - bring it all together - you have access to copies of all previous work - what did you do well? what could you improve? - did you use your literature review effectively and build the foundation? - when completing your report, do you feel that you were missing key areas? - as a result, were you able to create an effective quality improvement report? - did you use your peer discussion time effectively? - did you use the peer discussion information to correctly inform changes to your quality improvement report, presentation and then profesional discussion? - was there one area or several areas you would change?

Notes