

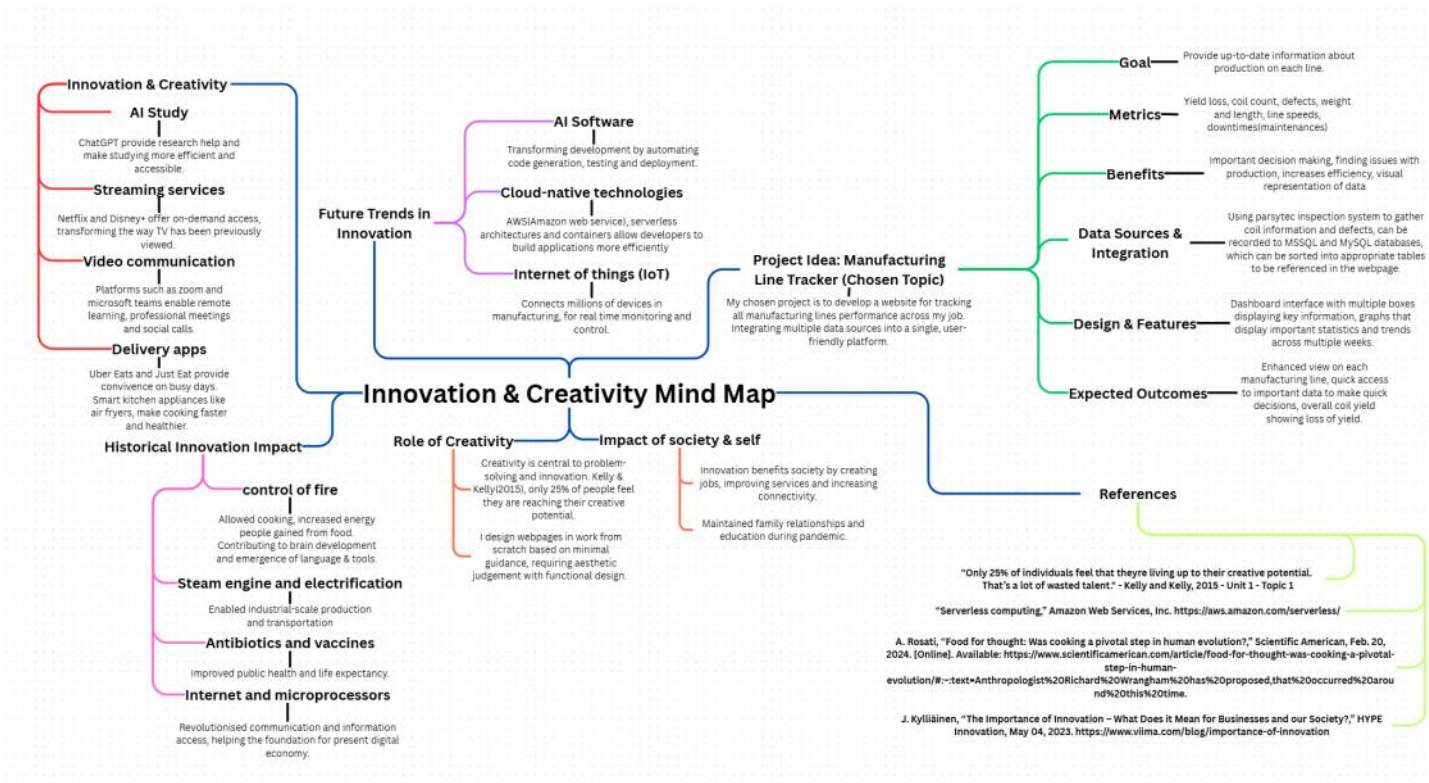
Assignment 1: Innovation & Research.

Thursday, August 14, 2025 11:49 PM

Name: George Quick

Student Number: 2315899

Course: L5 - Changemakers: Creativity and Value Creation (ACCA5033 Apprentices - Sem 3 2025)



Task 2: Aim & Objectives and research area

Tuesday, July 15, 2025 11:07 AM

Aim:

To design and develop a centralised web-based platform that monitors and displays real-time and historical performance metrics for manufacturing lines at my work place. This will include things such as yield, line speed, downtime, production output, and individual coil inspection data, to support productivity improvements and make informed decision making.

Objectives:

1. To integrate real-time data feeds from production systems to display live metrics including line status (running/stopped), current yield percentage, and line speed.
2. To store and visualise historical production data such as the number of coils processed per day, per line, and generate trend graphs for a visual representation improvement.
3. To implement coil inspection tracking using data from the Parsytec system to highlight defects and identify the process.
4. To design a user-friendly dashboard interface that is accessible via desktop and laptop screens, enabling managers and engineers to quickly access key information from a centralised location.
5. To develop an alert and information system that predicts upcoming downtimes, maintenances and displays daily run time expectations for each manufacturing line.
6. To ensure data security and access control so that sensitive production information is only accessible to authorised personnel.
7. To evaluate system performance and usability through pilot testing and gather feedback from end-users to refine the final implementation.

These objectives are geared towards improving productivity, reducing downtime, and providing an robust, interface for easy decision making on the site.

Q2. Appropriate Research Philosophy

For this project, the most appropriate research philosophy is Pragmatism.

Justification:

Pragmatism emphasises usefulness and outcomes. Depending on which approach best addresses the research questions and resolves the issues, it allows the combination of both quantitative and qualitative methods. This approach is perfect when creating a website for manufacturing lines to monitor performance because: [1], [2]

- The goal of the project is to address practical issues with production monitoring and decision-making.
- Utilising both feedback-driven (qualitative) design processes and data-driven (quantitative) analysis calls for flexibility.
- It makes the system more functional and useful by facilitating continues testing and adaptation based on ongoing user feedback.
- In addition to producing theoretical knowledge, the objective is to create a useful tool that boosts operational effectiveness.

Given the complexity and significance of this project, pragmatism encourages the integration of several research methodologies, including design thinking, data engineering, and human-centered design techniques.

Q3. Research Tools and Strategies

Research Tools and Databases:

To gather relevant academic and industrial research on manufacturing performance monitoring, the following tools and websites will be used [3]:

- Google Scholar – A wide-ranging tool for discovering academic journal articles, theses, and books on production monitoring, dashboard systems, and manufacturing analytics.
- IEEE Xplore – For technical papers related to real-time monitoring systems, industrial Internet of Things (IIoT), and automation. [4]
- ScienceDirect – Useful for peer-reviewed journals on industrial engineering, manufacturing systems, and productivity improvement. [5]
- Company existing monitoring pages and papers - Using current papers and webpages to see current and working manufacturing reports

Search Strategies:

To refine and narrow down relevant resources, the following search strategies will be used:

- Boolean operators: Using AND/OR/NOT to combine or exclude terms. For example [6]:
- “Manufacturing dashboard” AND “real-time monitoring”
- “Line speed” AND “yield tracking” NOT “pharmaceutical”
- Phrase searching: Using quotes for exact phrases like “coil inspection system” or “Parsytec defect analysis”.
- Truncation: Using wildcards to capture different word forms. For instance [7]:
- Manufactur* to include manufacturing, manufacturer, etc.
- Filters: Applying filters such as publication year (e.g., 2015–2025), subject area (e.g., engineering, computer science), and document type (e.g., articles, case studies, reviews).

My understanding of the current technological challenges and solutions in creating a manufacturing performance tracking webpage will be helped by these tools and strategies. In order to guarantee that the project is both inventive and based on established methods, they will also provide guidance for best practices in system design, data handling, and visualisation.

Task 3: Research Strategies

Tuesday, July 15, 2025 11:08 AM

Task 3: Research Strategies – Manufacturing Line Performance Monitoring Website

Q1. Enhancing Validity, Reliability, Generalisability, and Ethical Considerations

To ensure the validity of the research behind developing a manufacturing performance monitor, it is important that the data accurately represents real-world processes. Validity can be enhanced by triangulating data sources, such as integrating data from our Parsytec inspection systems, maintenance logs and the data we record to MySQL and MSSQL. Additionally, engaging with people who may use the website such as line supervisors, process engineers, and IT staff during design phases ensures that requirements are met with operational needs.

Reliability relates to the consistency of data collection and processing. Implementing automated data that goes straight from the line to the database and then to the page can reduce human error and improves the reliability of the website. Furthermore, standardising database structures and unit measurements ensures that the same inputs will always produce consistent outputs.

To increase generalisability, the system should be built to handle various types of process across the site such as our chemistry and metalography testings, zwick testing and others. This approach ensures findings and improvements are transferable across departments. [8]

Ethical considerations are central when working with potentially sensitive data such as production outputs, operator performance, or system downtime. Data collection must comply with company policies and data privacy laws such as GDPR, ensuring that no personally identifiable information (PII) is collected without consent. Anonymisation techniques can be applied to coil inspections to prevent individual worker performance tracking unless explicitly required and agreed upon by stakeholders (Saunders, Lewis & Thornhill, 2019).

Q2. Research Strategies and Pilot Data Collection Method Chosen Research Strategy: Mixed Methods

The project will use a mixed-methods approach combining quantitative data (production metrics) and qualitative data (user feedback). Quantitative analysis will help in understanding performance trends for example, average coil yield per line, while qualitative data will guide user interface (UI) design and usability improvements. [9]

Data Collection Methods Include:

- System Logs and Sensor Feeds: To gather data on line speed, yield, and coil count.
- User Surveys: To assess dashboard usability and to see if information is displayed clearly/correctly.
- Interviews with Line Managers: To understand data errors and information priorities.
- Observational Notes: Taken during line visits to understand real-time data needs.

Pilot Data Collection

A short pilot survey and system walkthrough will be conducted with each lines leader and the coordinators from each shift. Feedback from this group will identify whether the dashboard is effectively conveying information such as downtime causes and coil inspection results. Early feedback will allow me to improve data presentation and usability, enhancing the overall system.

An example of this would be:

Questions:

1. On a scale of 1–5, how clearly does the dashboard present important information?
2. Are the statistics such as yield performance and graphs easy to understand?

3. What additional metrics would you like to see included?
4. How often would you use this dashboard in your work day?
5. Do you have any concerns regarding data security or access control?

Format: Google Form or paper-based

Q3. Types of Quantitative and Qualitative Analysis

Quantitative Analysis:

Quantitative data in this project includes:

- Number of coils processed per day
- Average yield percentages
- Line speed over time
- Downtime durations and frequency

Statistical techniques will be used to perform:

- Trend analysis over time for yield and coil counts.
- Descriptive statistics such as mean, median, and standard deviation for line performance.

Qualitative Analysis:

Qualitative data will be gathered through user surveys, interviews, and observation logs. The following methods will be used:

- Thematic analysis: Coding feedback to identify recurring themes like "need for real-time alerts". [10]
- Affinity diagrams: To cluster related user suggestions and interface issues. [11]
- User journey mapping: To visualise how users interact with the dashboard and where improvements are needed.

[12]

Combining these methods will allow me to gain a comprehensive view of how the system performs and how it looks from the users view.

Conclusion

The project will create a solid and practical web-based dashboard system for tracking manufacturing performance by utilising techniques to improve validity and reliability, integrating various research techniques, and evaluating both quantitative and qualitative data. The system will be responsible, scalable, and compliant with company regulations thanks to ethical and generalisable considerations.

Appendices

Thursday, August 14, 2025

11:52 PM

- [1] "Pragmatism Research Philosophy," Research-Methodology. <https://research-methodology.net/research-philosophy/pragmatism-research-philosophy/>
- [2] Unit 1 Topic 2 - How Do YOU Solve a Problem?
- [3] Unit 1 Topic 3 - Known Knowns.
- [4] "Semantic Web for manufacturing Web services," IEEE Conference Publication | IEEE Xplore, 2002. <https://ieeexplore.ieee.org/document/1049502>
- [5] R. Y. Zhong, X. Xu, Eberhard Klotz, and Stephen T. Newman, "Intelligent Manufacturing in the context of Industry 4.0: A review," Elsevier LTD, Oct. 2017. [Online]. Available: <http://dx.doi.org/10.1016/J.ENG.2017.05.015>
- [6] "EBSCO Connect." https://connect.ebsco.com/s/article/Searching-with-Boolean-Operators?language=en_US#:~:text=The%20Boolean%20search%20operators%20are,contain%20both%20travel%20and%20Europe.
- [7] "LibGuides: Search Techniques: Search tips: Improving your results." <https://libguides.exeter.ac.uk/searchtechniques/tips>
- [8] "Validity, reliability and generalisability | Health Knowledge." <https://www.healthknowledge.org.uk/content/validity-reliability-and-generalisability>
- [9] "Mixed methods study," GOV.UK, Jun. 02, 2020. <https://www.gov.uk/guidance/mixed-methods-study>
- [10] "5 Qualitative data analysis methods to reveal user insights." <https://contentsquare.com/guides/qualitative-data-analysis/methods/>
- [11] Z. Naylor, "How to create an affinity diagram for UX Research," Aurelius, Aug. 14, 2024. <https://blog.aureliuslab.com/2019/07/19/affinity-diagram-ux-research>
- [12] Unit 4 Topic 1: It's All In The Numbers.

Unit Notes

16 August 2025 21:51

Unit 1

Tuesday, June 10, 2025

11:34 AM

Topic 1: How innovation shapes the world

Tuesday, May 27, 2025 11:25 AM

Section 1: Innovation is Everywhere

Definition - "Innovation is a new idea or method, or the use of new ideas and methods."

Reflect – Make a list of 5 things you have used or activities you have engaged in that would not of been around 10 years ago.

Study

AI Study Assistants and ChatGPT

These resources make studying more effective and individualized by offering immediate assistance with research, clarifications, and writing support.

Preparing Meals

Smart Kitchen Appliances (e.g., Air Fryer)

Modern gadgets like air fryers have made it easier and faster to cook healthier meals at home.

Entertainment

Streaming Services (e.g., Netflix, Disney+)

With streaming services, I can now watch movies and TV shows whenever I want, which has completely changed the way I enjoy entertainment.

Communication

Video Communication Platforms (e.g., Zoom, Microsoft Teams)

These tools have made it possible to stay in touch with friends, family, and classmates through video calls and virtual meetings.

Lifestyle Convenience

Meal Delivery Apps (e.g., Uber Eats, Just Eats)

When cooking isn't an option due to busy days, these applications offer quick and simple access to food delivery.

Which, and why, has improved my life?

The most significant change in my life has been caused by video communication platforms. They enabled me to stay in touch with family and keep up with my education online both during and after the pandemic. It would have been much harder to maintain relationships and education without them.

The 71 Most AMAZING Innovations of All Time

Watch later Share

Science is the Great Giver

By Bill Gates October 20, 2014

It's according to the United Kingdom and France were work to talk about how politics of knowledge can accelerate innovation.

The first promise of any good politician is to make people's lives better, and scientific research leading to innovation is one of the best ways to honor that promise. Until about 1700, there was basically no development. Almost everybody was poor, many were sick. One of every four children died. Average life expectancy was about 40 years, and 99 percent of people were illiterate. But then science came along and we started inventing—electricity, the steam engine, antibiotics, vaccines, microprocessors, genetic medicine.

Science is the great giver—and we're just at the beginning of what it can give.

The UK and France are natural homes for this message. The world owes an ongoing debt to the discoveries from both countries, including Alexander Fleming's discovery of penicillin and Charles Darwin's theory of evolution in Britain, and Louis Pasteur's development of pasteurization and [Rosalind Franklin's](#) contribution to the understanding of DNA in France.

MORE VIDEOS

gatesnotes.com

6:36 / 6:42

CC Settings YouTube

Transcript

Source: The 71 Most AMAZING Innovations of All Time

Apply – Which invention do you think had the biggest impact on society?

Since controlling fire to cook food was an important phase in human evolution, it has had one of the largest effects on the evolution of society. Early humans were able to obtain more energy from their food because cooking made it easier to chew and digest. Our brains grew larger as a result of this extra energy, enabling the development of language, tools, and culture.

Without the innovation of cooking with fire, we might not have evolved the way we did. It changed not only how we eat, but also how we live, learn, and connect with each other.

"There has never been a time of greater promise, or one of greater potential peril." - Klaus Schwab, 2016

Is innovation changing things for the better?

Answer the following three questions.
Click next once you have chosen.

Across the world, how did deaths per year from natural disasters change in the last century?

- A. More than doubled
- B. Remained about the same
- C. Decreased to less than half

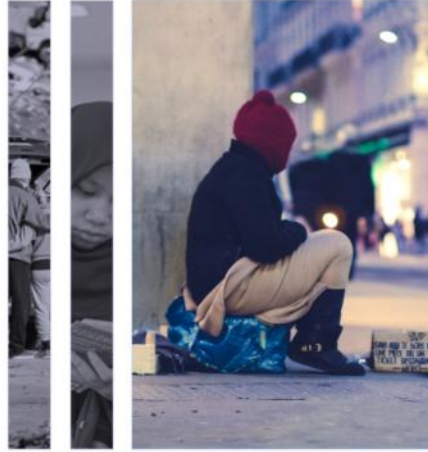


Is innovation changing things for the better?

Answer the following three questions.

In the last 20 years the percentage of people living in extreme poverty worldwide has...

- A. Almost doubled
- B. Remained about the same
- C. Almost halved



Section 2

Most Impactful Discipline (Next 3–5 Years)

Computing Capabilities

- AI is transforming how software is written, tested, and deployed.
- Cloud-native development (e.g., AWS, serverless, containers) is now standard in modern software engineering.
- These areas are driving the biggest shifts in tools, workflows, and job expectations

What is the fourth Industrial Revolution?

Revolution	Year	Information	
	1	1784	Steam, water, mechanical production equipment
	2	1870	Division of labour, electricity, mass production
	3	1969	Electronics, information technology, automated production
	4	?	Cyber-physical systems

Reflect

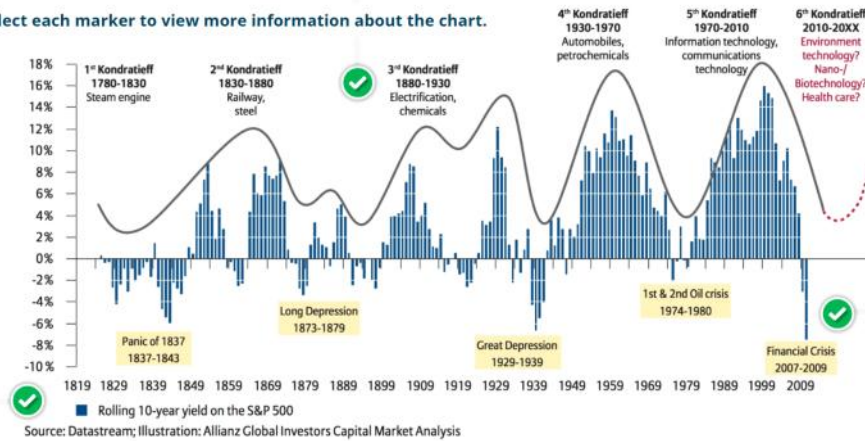
Drag the characteristics to the correct revolution.

Each characteristic will appear one at a time.

Submit

Kondratieff Waves

Select each marker to view more information about the chart.



Check

Drag the revolution to the correct definition.

a. Steam, water and mechanical means of production First Industrial Revolution

These are the correct definitions for the first and fourth industrial revolutions.

If you'd like to remind yourself of the definitions of each, let's [revisit that slide](#).

d. Cyber physical systems Fourth Industrial Revolution

Check

By 2025, what percentage of people are expected to be wearing clothes connected to the internet?

☐ 5% ☒ 10% ☐ 15%

Within the next decade, how many sensors are estimated to be connected in the Internet of Things?

☐ One billion ☐ One million ☒ One trillion

Submit

Section 3 – Creativity and You

Activity – Do you consider yourself to be a creative person?

I would consider myself to be a creative person as I tend to enjoy creating and designing web pages in my job and have a lot of good ideas on how to do things that other sometimes don't think of.

"Only 25% of individuals feel that they're living up to their creative potential. That's a lot of wasted talent." - Kelly and Kelly, 2015

Apply – Describe an experience where you discouraged / encouraged to be creative and how it has affected your levels of creativity

During work I often get asked to make the webpages for people across our site. When I get told what an employee needs / wants for their page without giving me a design to work off I must use my imagination to create something that looks visually pleasing as well as functional



Topic 2: How do you solve a problem?

Tuesday, June 10, 2025 11:32 AM

Section 1: Why we all need to spend time being creative

Reflect – Describe the last time you felt you was being creative.

The last time I was creative was last night when I was cooking a pasta dish I had never made before. It made me accomplished as I was able to make it just as good as my usual pasta dish with only half the effort.

Creative activities:

- Photography
- Cooking / Baking
- Singing
- Sewing/knitting
- Scrapbooking(Pintrest)
- DIY
- Fashion

Unit 1 Topic 2 - Building Creative Confidence



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

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1822 - 2022

Man Geni Addysg Uwch yng Nghymru
Where Higher Education Began in Wales

2:19 / 2:20 www.uwtsd.ac.uk

Transcript Source: Building creative confidence

Types of plagiarism

According to the founders of Ideo, **Tom and David Kelley**, "creativity is something you practise, not just a talent you're born with", and they have identified four fears that hold most of us back from being creative:

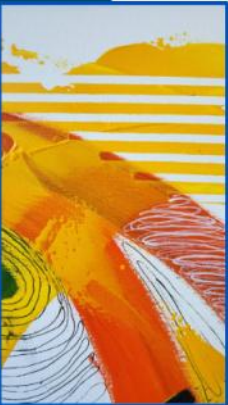
Fear of the messy unknown	Fear of being judged	Fear of the first step	Fear of losing control
Get out of your comfort zone and into the mess . Try something new that will stretch you.	Resist judging yourself. Practice the mantra of Ideation in Design thinking, 'No idea is a bad idea' .	Stop focusing on the huge overall task and find a small piece you can tackle right away.	Confidence doesn't simply mean believing your ideas are good. It means having the humility to let go of ideas that aren't working and to accept good ideas from other people.

As Hungarian essayist György Konrád once said, **"Courage is only the accumulation of small steps."** So don't wait at the starting line. Let go of your fears and begin practising creative confidence today.



✓ You have completed Section 1!

You should now be able to:



✔ **You have completed Section 1!**

You should now be able to:

- Recognise the link between creativity and feelings of wellbeing
- Identify ways in which you can reclaim your creative confidence or inspire creativity in others.

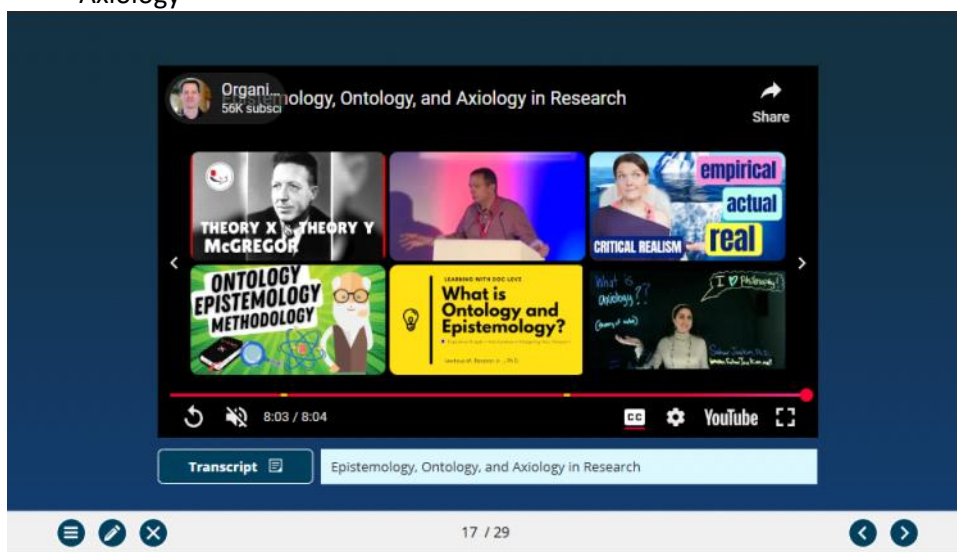
[Back](#) [Continue >](#)

Section 2: How your philosophy impacts your research

Philosophy is the study of knowledge and reality, and research is the action of making knowledge

Three forms of philosophy:

- Ontology
- Epistemology
- Axiology



Foundationalism – Knowledge built based on statements that can't be doubted

Pros:

It draws a line between what's right and wrong

Cons:

What happens if the statement is not true

Coherentism – Knowledge is true as long as it isn't self-contradictory

Pros:

If a theory is wrong, but does not contradict itself it can be dismissed

Cons:

You can build arguments that are careful not to contradict themselves but misdirect others

Pragmatism – If it works it's true.

Pros:

It realises that at many points in time what is considered true has changed

Cons:

What works is a poorly defined construct

Check

If we were to translate the following words from Greek, what would they mean? Drag each of the three forms of philosophy to their correct definition.

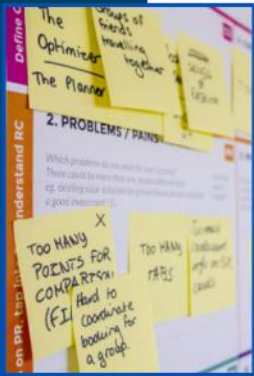
the study of knowledge is...
Epistemology

the study of being is...
Ontology

the study of what is valuable is...
Axiology

21 / 29

*Got right just forgot to go screenshot and cant do it again



✓ You have completed Section 2!

Upon completion of this sub-section, you should be able to:

- Hold a conversation that can confidently include the definitions of Ontology, Epistemology and Axiology
- Define your research philosophy using this terminology
- Understand how your philosophy can impact your investigation.

[Back](#) [Continue >](#)

Section 3: Identify your research philosophy

Definition – Research philosophy is your belief about the way in which you will be collecting analysing and using data in your projects

Identifying your research philosophy

In this session, we are going to try and put a name to the broad research philosophies and see if you can work out the **personal approach** that you will take on your assignments.

The approaches we will describe are:

Positivism

Critical Realism

Interpretivism

Postmodernism

Pragmatism

Pragmatic Research philosophy

A pragmatist only considers concepts relevant if they support an action. While they recognise that there are many ways of interpreting the world and undertaking research, there is no single point of view can ever give the entire picture and there may be multiple realities. A pragmatic approach favours the individual that is potentially frustrated by the nuanced ideas explained above, but if this describes you, be mindful that these are legitimate thinking processes and that you should not dismiss them because they are challenging to understand.

25 / 29

Reflect

As you are reading each of the different sorts of research philosophy, it is likely you will be drawn to it or not. Choose how you feel about the following research philosophies. **Is there an outright winner for you?**

	Support	Indifferent	Against
Positivism	☒	☐	☐
Critical Realism	☒	☐	☐
Interpretivism	☐	☒	☐
Postmodernism	☐	☒	☐
Pragmatism	☒	☐	☐

I don't have an outright winner as I believe in facts and science but then I also believe that there is the possibility for example that there's multiple universes like our own that we will never know about.

I support these choices over stuff like interpretivism as you can use facts and science to understand why someone may be anxious, upset or mad.



✓ You have completed Section 3!

Upon completion of this sub section, you should be able to define your research philosophy as one of five constructs.

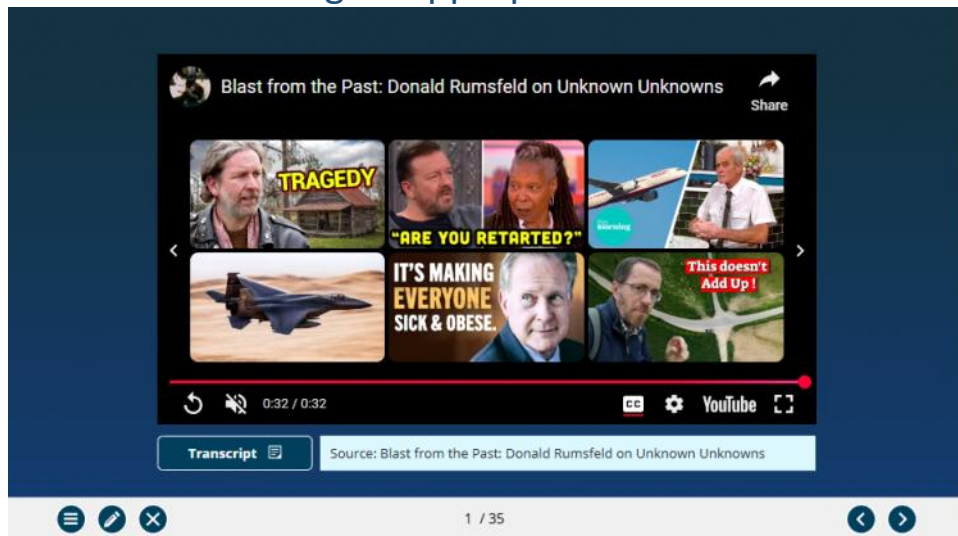
Back

Continue >

Topic 3: Known knowns

Tuesday, June 10, 2025 11:46 AM

Section 1: Selecting an appropriate database



Niel Armstrong once said - "Research is creating new knowledge



A database is any digital resource of information.

A screenshot of a presentation slide titled "Evaluating Information". The slide contains text explaining the CRAAP test and a checklist of five criteria: Currency, Relevance, Authority, Accuracy, and Purpose. The CRAAP test is described as a useful checklist to help evaluate the credibility and relevance of information. The checklist items are:

- C** **Currency.** Is the material recent? Has it been superseded by more recent newer information? Newer information is generally perceived to be better.
- R** **Relevance.** Does it relate to your work? Think about the audience it was written for and consider if it matches your audience. While doing this think about the level it is written at.
- A** **Authority.** Does this material have credibility? Who wrote and published it? Was it sponsored by a person or individual that may have an ulterior motive?
- A** **Accuracy.** In your mind, is this material true? It could do this by demonstrating some evidence it may be supported by statistics. Did someone else check it before publication. Peer reviewed content is material that has been reviewed by someone before it was allowed to appear in the real world.
- P** **Purpose.** Before using the material, consider what it has been written for. It may have been created to sell something; it could be there as a piece of entertainment meant to make people laugh.

Difference between library and the internet:

- There is no quality control
- The internet is not very organised
- Not everything is freely available

The first video player shows a screen recording of a web browser with the title 'How to link Google Scholar with UWTSD'. The video content displays a Google Scholar interface with various search results and links. Below the video, there is a 'Transcript' button and a source field containing the text 'Source: How to link Google Scholar with UWTSD'.

The second video player shows a screen recording of a web browser with the title 'Searching for Known Items in the Library'. The video content displays a Google Scholar interface with various search results and links. Below the video, there is a 'Transcript' button and a source field containing the text 'Source: Searching for Known Items in the Library'.

Section 2: Using Boolean search strategies for identifying research

The video player shows a title slide with the text 'Selecting & Using Keywords' in a large, bold, black font. Below the title, there is a logo for 'WINONA STATE UNIVERSITY' and the text 'DARRELL W. KRUEGER LIBRARY'. At the bottom of the slide, there is a small circular logo with the word 'WINONA' inside. Below the video, there is a 'Transcript' button and a source field containing the text 'Source: [Selecting & Using Keywords](#)'.

Section 3: Develop a systematic approach to identifying themes for literature search

Analysis paralysis is the practice of becoming stalled in the decision making process in such ways that nothing is ever decided

Concept map starts at the top and makes it way downwards with ideas being added on as you go further down

Mind maps start with an idea in the middle of a page with ideas radiating from the center

The Basic Building Blocks of a Concept Map

The idea of a concept map is to draw **as simple a diagram as you can** that organises your thoughts. A complex map will simply overwhelm. When your chart starts to feel complex, **revise it down**.

A way of maintaining simplicity is to limit your map to one page and **ONLY use three units** to make up the diagram.

Each unit will have a single purpose.

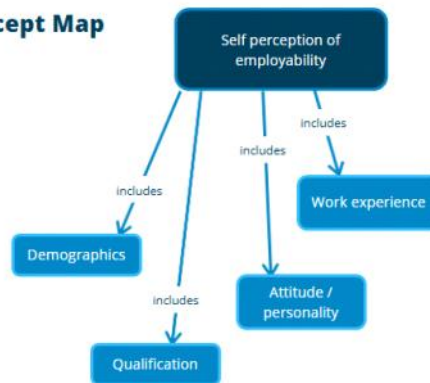
Shapes ✓

is used on top of the arrows to explain the relationship.

Arrows ✓

Text ✓

Click the tabs to see how each forms part of a concept map.



Topic 4: The problem is

Tuesday, June 24, 2025 11:44 AM

Section 1 - Finding themes from your literature review

Reflect

You have come to university to study a particular subject, but what is the **area of interest** that has caused you to take time to study this?

Enter your answer into the box below. You will revisit this later.

I have always had a general interest in computing so studying software development in university seemed like a logical idea as well as a good career path to go down for future due to software developers being needed more and more with the rise of technologies



How to research:

- Search engines – Google, Bing etc.
- Advice from your tutors
- Libraries
- Online Journals
- Current hot topics – within the media, politics etc

1. Focused on a single issue
2. Specific enough to be answered in the word count of the report
3. Complex enough to be answered without a simple trawl of the internet
4. Relevant in your field to be considered interesting
5. Researchable using primary and secondary data collection

Check

Question 1 of 3

Which of these are good research questions?

Read each set of questions as they appear below and select which you feel is the best research question of the two.

✗ What effect does the pandemic have on people's minds?

✓ What effect has the isolation of young adults had on their mental health?

Correct!

A is not specific enough. What effect? What people? Which pandemic? You can see with question B that data can be collected from primary and secondary sources and that the targets are clearly defined.

Reflect

At the beginning of this section you said your area of interest was:

I have always had a general interest in computing so studying software development in university seemed like a logical idea as well as a good career path to go down for future due to software developers being needed more and more with the rise of technologies

Thinking about what you have learnt throughout this section and **applying** it to your area of interest, what is it that will make your research at university meaningful?

Take a few minutes to identify those key points.



Reflect here -->

Section 2 – Develop a hypothesis

Reflect – Think back to purchasing something valuable. Reflect on the process that made you decide whether to purchase it or not.

Would I consistently use it.

Will it bring me enjoyment.

Do I need it.

Can I afford it and still have money for the rest of the month.

Phrasing your hypothesis

Select each of the drop-down tabs, to reveal further information on phrasing your hypothesis.

Phrasing as an IF__THEN statement ▼	Phrasing as a correlation ▼	Comparing two groups ▼
In this approach to phrasing, you take the sentence structure of an 'IF THEN' statement: 'IF independent variable THEN result'. For example, if the car has five seats, then they are purchased by families who use their car on holidays.	In this approach, you spot a correlation where you state the predicted relationship between the variables. For example, cars with greater fuel economy are purchased more by families who use their car on holiday.	If you are comparing two groups, your hypothesis can state the difference you are expecting to find between them. For example, cars with low fuel economy are purchased less than cars with high fuel economy by people who holiday in their cars.

Example hypothesis

Select each of the research questions to reveal their **hypothesis** and **null hypothesis**. Try and apply one or all of these to your area of interest.

Research question	Hypothesis	Null hypothesis
What are the health benefits of eating an apple a day?	Increasing apple consumption in over-60s will result in decreasing frequency of doctor's visits.	Increasing apple consumption in over-60s will have no effect on frequency of doctor's visits.
Which airlines have the most delays?	Low-cost airlines are more likely to have delays than premium airlines.	Low-cost and premium airlines are equally likely to have delays.

Apply – Apply what you have learnt in this section to a phrase a hypothesis on your chosen subject

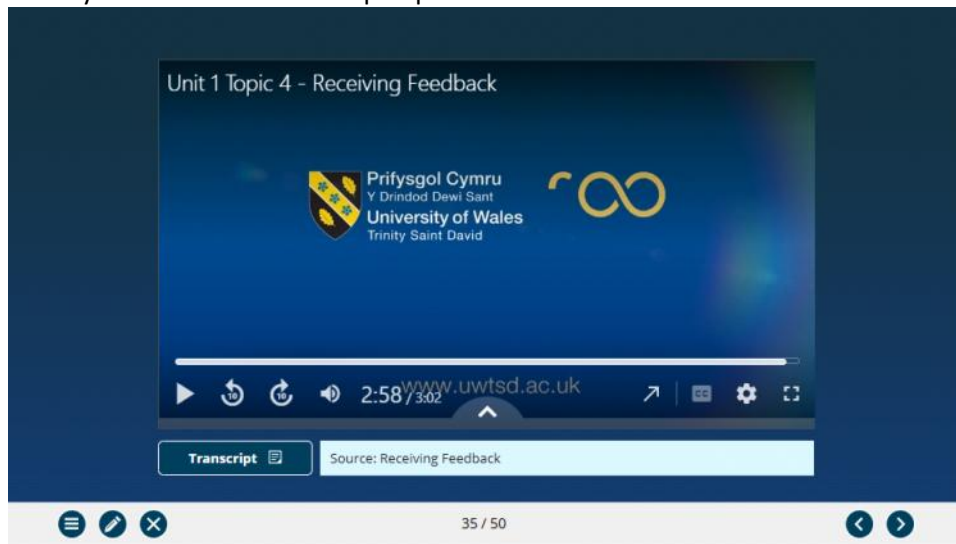
Section 3 – Using feedback to improve

Reflect – How do you truly feel when you learn something new?

I feel relieved I now understand a topic if it's one I have been struggling to learn but overall learning something new is a good feeling

How do you feel when your told you're wrong?

I don't feel great but I understand I don't know everything there ever is so it doesn't feel as bad when you look at it from that perspective



Unit 2

Tuesday, July 01, 2025

11:23 AM

Topic 1: Choosing the right approach

Tuesday, July 01, 2025 11:24 AM

Section 1: Awareness of investigative approaches



Reflect

Take some time to review your **best** past assignments and choose which approach you took from the following:

1. Your investigation built an answer from existing evidence and then went to show its use.
2. Your investigation observed a situation and then supported it with a theory.
3. You answered your investigation by reviewing several solutions to an observation and choose the best fit.

Which approach best describes the route you took?

I think approach 1 best describes the route I took with one of my best assignments as I much prefer to use existing evidence and expand on it as I find it to be much easier to explain how it is used and what its purpose is

This is a deductive reasoning ^

A goal of research is to present a way of informing our future beliefs going forward

Deductive arguments is where we take an existing view and show that it is still current.

Inductive arguments is where we examine our observation and retro fit to an existing recognized work

Section 2: Identifying the purpose and approach to your research

Reflect – Look back at a piece of work that you have received a good mark for. Re-read. Is this work a shopping list of facts and statements that you learned in class or have you applied your knowledge to a problem you have observed?

One of my most recent good marks is my Matlab assignment work. I would say that the work is a bit of a shopping list due to math's being facts and statements you need to learn in order to answer the question but also I have applied what I have learned to answer the same sort of questions just with different numbers.

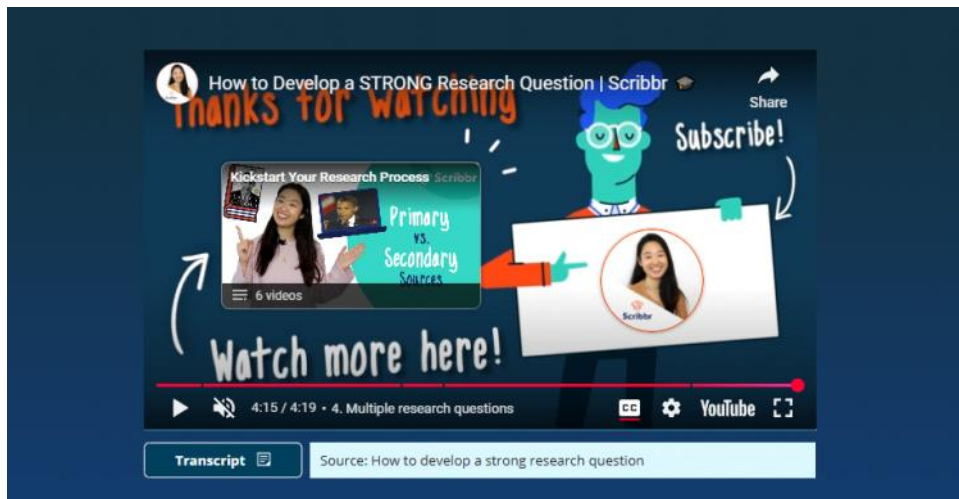
What is the purpose of research

Choose a broad topic (Something you are interested in)

Do some reading around the subject

Narrow down your thinking to a niche

Narrow down even further



Section 3: Compare and contrast quantitative and qualitative research methods

Reflect – Having read the description about the course you are attending

What do you think is the predominant method of research in your subjects and quantitative or qualitative

Now think of an alternative method

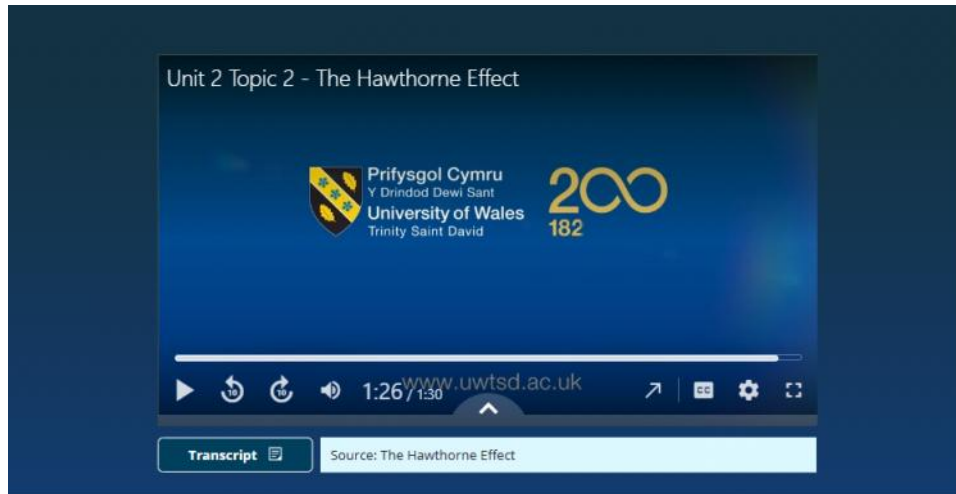
Using the forum, in 100 words, describe why mixed method research is applicable or inapplicable for your subject

I believe my subject can take a mixed research approach as I can ask managers of each line across the site what information they would need to be displayed on the website for them specifically and then I go back and analyse what's needs and how to format it

Topic 2: Finding a needle in a haystack

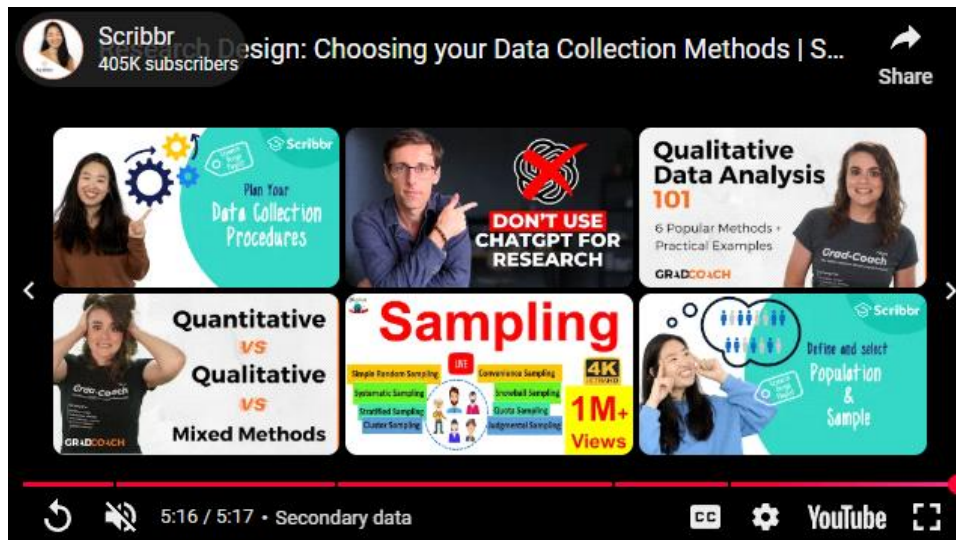
Tuesday, July 01, 2025 12:16 PM

Section 1: Awareness of different research choices and data collection methods



Elton Mayo's experiments were conducted at the Hawthorne works in late 1920s. He realised that his experimental results were confounded by the participants' awareness that they were being observed. In short, the mere fact that the people realised that they were watched made them perform in an unnatural way. The results of what has subsequently been called the Hawthorne Effect are now well known.

It is therefore important to note that if your research is based on any overt observation of people, the data can be considered biased.



Can you think of different ways of collection data that would be appropriate for you next assignment.

If any aspect of your research involves peoples responses how will you account for the hawthorne effect?

I can collect data by doing search's on the internet and looking through my university's online and physical library.

If my research involves taking peoples responses I can hold anonymous surveys so people don't know what is being measured

Section 2: Develop appropriate sampling strategies to enhance validity, reliability and generalisability

Qualitative research data

Identifying participants for qualitative research, such as interviews and focus groups, often focuses on a limited number of respondents. This is for a number of reasons, for example:



Your time and resources may be stretched

There are limited people who have experiences that you are studying

There are limited people with the knowledge or expertise in the area you are studying

Quantitative research data

When presented with numerical data, we can be similarly limited in our data collection as those in the qualitative analysis. Quantitative responses can be limited because:



Your time and resources may be stretched

There are limited results from the experiments you make

There are limited replies from the people you are studying

Check

In this knowledge check activity you will be presented with three research questions.

Question 1 of 3

What do we call it when we reduce the data of the population into a smaller manageable unit? We call it a...

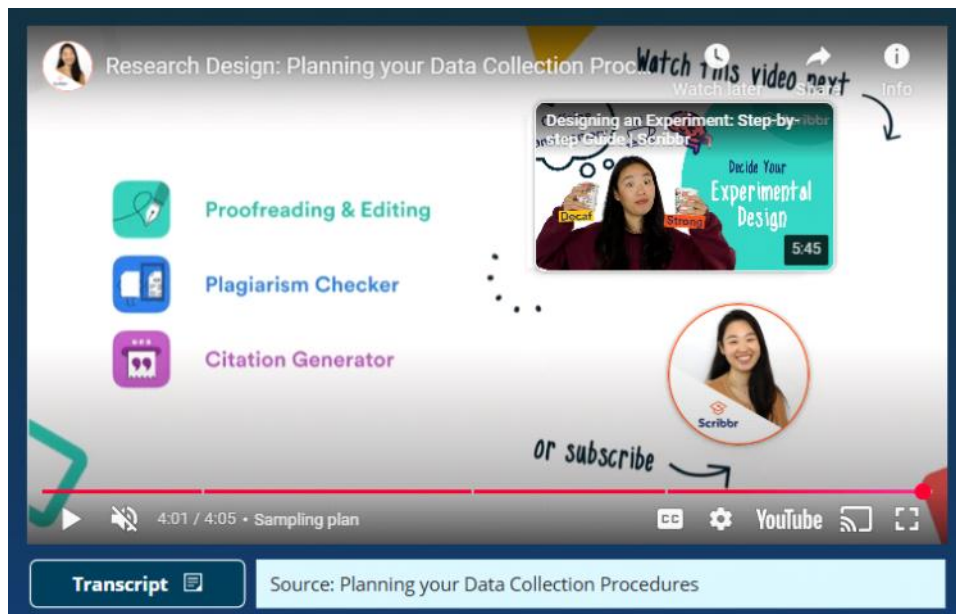
✓ Sample

✗ Snowball

Correct!

A sample is a group of people, objects, or items that are taken from a larger population for measurement. The sample should be representative of the population to ensure that we can generalise the findings from the research sample to the population as a whole (Bineham, 2006).

Section 3: Design a data collection method appropriate to investigate a given problem



Topic 3: Now for the solutions

Wednesday, August 13, 2025

9:16 PM

Section 1: Effective techniques for generating ideas



Reflect

The **Torrance Test of Creative Thinking** is one way of measuring problem solving ability in people. It's broadly used to see how creative you are such as, creating an image from standard objects.

For fun, **take a few minutes** and try to come up with as many uses for a **house brick** as possible. After the two minutes is up, count how many responses you have (Torrance, 1981). If you have time, ask your fellow learners how many uses they have defined.

- Building walls or houses
- Doorstop
- Garden edging
- Paperweight
- Step for reaching high shelves
- Weight for exercise
- Holding down a tarp

A cognitive bias is effectively a shortcut that our brains do make our lives simple, but can, in effect, block the way of developing creating thinking (Kahneman, 2013).

S

Substitute

C

Combine

A

Adapt

M

Modify/Magnify

P

Purpose

E

Eliminate/Minify

R

Rearrange/Reverse

SCAMPER technique

Below are some case examples where **parts** of the SCAMPER technique have been used.

Click on each image to reveal further information.



Reflect

Spend some time thinking of the ideas that you admire. These could be products or technology. They could be new ways of working or they could be pieces of art. Reflect on **how the idea has used the SCAMPER approach**.

Note down **three examples** that spring to mind in the notes section here. Describe how each idea has used the SCAMPER approach.

Reusable Water Bottles (e.g., Hydro Flask)

- Substitute single-use plastic bottles with stainless steel.
- Eliminate waste from disposable packaging.
- Combine insulation technology with sleek design.

Section 2: Effective techniques for identifying appropriate solutions

He feels that giving the subconscious an opportunity means that the idea develops in quality for the subsequent iteration which adds a finesse that would not appear without the mental break (John Cleese, 2020).

Reflect - Take a moment to think of a famous person who you know is a divergent thinker.

This could be somebody like musician Lady Gaga, inventor James Dyson or artist Pablo Picasso.

Steve Jobs is a great example of a divergent thinker. He always took a fresh approach to issues and blended creativity, design, and technology. Innovative thinking and making connections that others didn't led to the creation of devices like the iPhone and iMac. His way of thinking enabled him to develop products that reshaped our way of life.

Section 3: Creating a problem definition

"No one wants a drill, what they want is a hole" (O'Toole, 2021).



Take some time to unpack this following scenario:

Gawain has decided to buy an expensive new suit for his job interview at the library. His partner Delyth disagrees with him. She knows that they do not normally dress formally at the library.

What was the problem Gawain was really addressing?



The real problem Gawain was addressing wasn't just what to wear — he was worried about making a good impression at the interview. He wanted to appear professional and confident, even if formal clothes weren't expected, because he thought it might improve his chances of getting the job.

Buy Expert shirts & hoodies

CAST:
Anderson: Orion Lee
Water: James Marlowe
Mr Pule: Abdul Laffoy
Sandra: Ewa Wroch
Juliana: Tadjana Szadziak

CREW:
Written & Directed by: Laura Beinerts
Short story "The Meeting" by: Alexey Barozin
Produced by: Connor Snedecor & Laura Beinerts
Director of Photography: Matthew Riley
Sound Recordist: Simon Oldham
Production Designer: Karissa Beinerts
1st Assistant Director: James Madine
Make-up Artist: Emily Russell
Editor: Connor Snedecor
Sound Designer: James Bryant
Colourist: Jodie Stubb
Animator: Benjamin Charles

THANKS TO:
Sonic Studios
Plantation Wood
David Carpenter
Alisa Ayres
The Hospital Club
Constellation Creatives (CoLab)

LONDON, 2014

TWO EYES

The Expert: Wrong Angle (Short Comedy Sketch)
2:32

Transcript

Source: Laura Beinerts: The Expert (Short Comedy Sketch)

Albert Einstein said that "if I had an hour to solve a problem, id spend 55 minutes thinking about the problem and 5 minutes thinking about solutions".

In a **forum post**, critically evaluate a problem statement you have used, or will use, in an assignment.

Remember to use the 'Four Ws' to unpack the problem and note any conclusions made, making sure to identify any **bias** that may have been incorporated into your ideas.

Statement used - To design and develop a centralised web-based platform that monitors and displays real-time and historical performance metrics for manufacturing lines at my work place. This will include things such as yield, line speed, downtime, production output, and individual coil inspection data, to support productivity improvements and make informed decision making.

What: I want to create a web-based platform to track and show real-time and past performance of our manufacturing lines, like yield, line speed, downtime, production output, and coil inspection data.

Who: The main users are managers and operators at work. It assumes everyone can understand technical data, which might not be true for all staff.

Where: The system will be online and centralised, so everyone can access the data. This assumes good internet access on the shop floor.

Why: The goal is to help make better decisions and improve productivity. But just showing data doesn't guarantee better decisions — training and understanding are still needed.

Conclusion: The idea is clear and useful, but it assumes users are skilled and have good internet access. These points need to be considered to make the platform really effective.

Topic 4: Creating value

Wednesday, August 13, 2025 9:17 PM

Section 1: How value is created

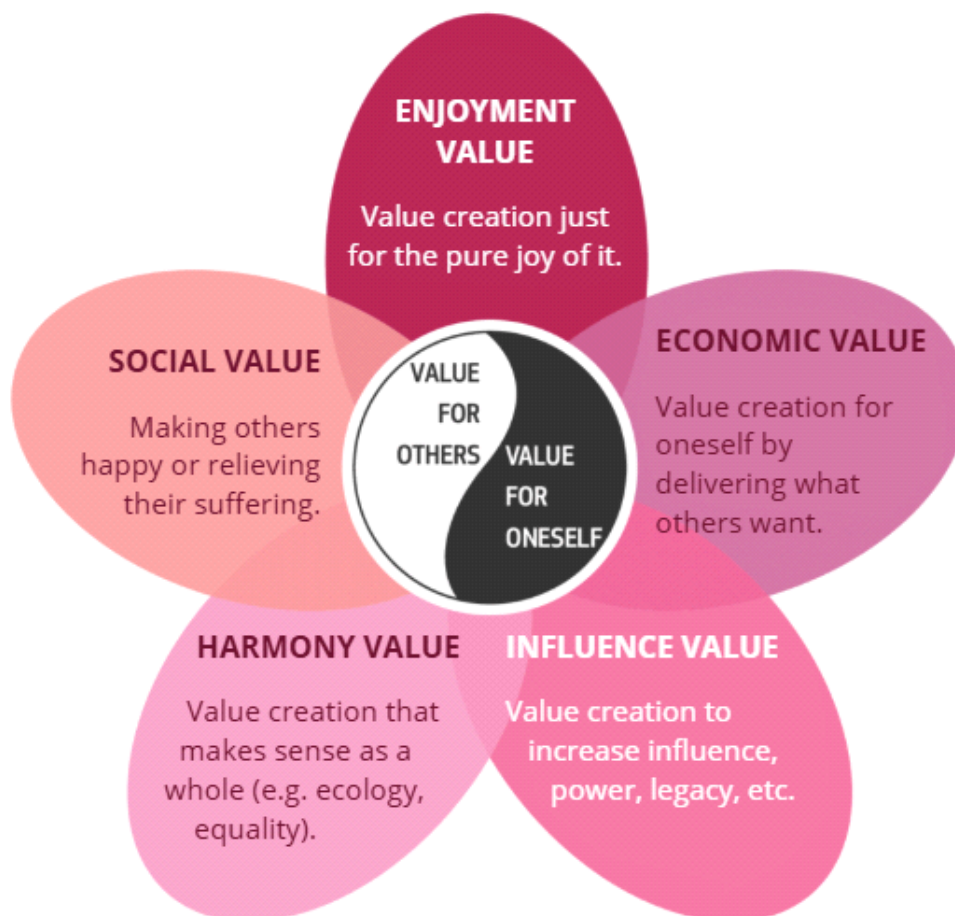
Gordon Gekko: "Greed is Good" [HD] Watch later Share

ENTER DESIRED STOCK
BST
BLUE STAR AIRLINES
CASH AND EQUIVALENT \$49.8
AIRCRAFT 25.8 10.8 100.8
GATES/PILOTS 25.8 20.8 100.8
GROUND FACILITIES 40.8
HEADQUARTERS 20.8
PERSON 10.8
LESS AMPLITIES 10.8
WORKING CAPITAL 10.8
TAKES 10.8
TOTAL

MORE VIDEOS

0:58 / 1:00

Transcript Source: Gordon Gekko: "Greed is Good"





Usually broadly defined in their accounts, the process is meant to highlight that the business is primarily driven by values other than economic value. It does this with declarations of impact on People, Profit and Planet - social, economic and environment - otherwise known as 'The Triple Bottom Line'.

B-Corps declaration of interdependence is:

- That they must be the change we seek in the world
- That all business ought to be conducted as if people and place mattered
- That, through their products, practices and profits, business should aspire to do no harm and benefit all
- To do so requires that they act with the understanding that we are each dependent upon another and thus responsible for each other and future generations.



Apply

Take a moment to review **Marcus Rashford**, the Manchester United Football star.



Think about the children's game of Top Trumps try to explain the value that he gives to the world in the **5 dimensions defined by Lackéus**. Give a score of up to 5 in the table for each type of value you feel that Rashford encourages.

Use the link below to a **BBC article** to start your research.

Enter your score for each value in the grid to the left.

 [Check the Lackéus diagram and its descriptions to help.](#)



Marcus Rashford: Feeding Britain's Children - inside his campaign to tackle child hunger

Category	Score	Explanation
Enjoyment	4	Entertains millions as a footballer and inspires fans with his skills.
Economic	3	Contributes indirectly through sponsorships, merchandise, and promoting positive campaigns that influence society.
Influence	5	Huge influence on social issues, especially child food poverty and literacy campaigns.
Social	5	Promotes social good, charity, and community support.
Harmony	4	Encourages unity and positive change, inspiring cooperation and empathy.

Section 2: Attributes associated with change making and value creation

Entropy is the word give to the measure of disorder and is a phenomenon described in the second law of thermodynamics.

This is a scientific way of explaining why our once clean cars become dirty again; our once-immaculate notebook gets tired and dog-eared; the household documents become disorganised. The unintended consequence of using them for what they were intended makes them dirty, disorganised and broken.

Ashby studied how organisms the worked in an academic subject called Cybernetics. His conclusion was called the Law of Requisite Variety (Ashby, 1958). It states that in any complex organism, if there were more problems that attack it than potential solutions prepared potentially to fix it, then it will ultimately die.

Section 3: How your solution or research will create value

Reflect

Click the tabs below to remind yourself of the two different frameworks.

Which framework do you prefer to use, and why you think it matches your ideas of creating value?

Lackéus Five Dimensions of Value

Tsunesaburo Makiguchi

I prefer Lackéus' five dimensions of value because it's clear and practical. I like that it breaks value into categories like economic, social, influence, enjoyment, and harmony—it helps me see how ideas or actions create different types of impact.

Check

The approach called "effectuation" is an appreciation that events can be viewed from two different points of view. What are they called?



Correct

That's right! You selected the correct response.
The answers were: **cause** and **effect**.

Unit 3

Wednesday, August 13, 2025

9:15 PM

Topic 1: The power of networks

Wednesday, August 13, 2025 9:16 PM

Section 1: Lets come together



Take some time to reflect on what you already know about the **importance of networks**.

Networks matter because they bring people together, help share ideas, and create opportunities to grow and succeed.





Thinking about the video you have just watched:

- What did the video tell you about the **power of networks?**
- Have you, or anyone you know, been presented with opportunities through **personal connections?**

Note down these connections and their importance. These may help you to identify stakeholders later on.

The video shows that networks are powerful because they give us fresh perspectives and inspiration, especially when we connect with people outside our usual circles. If we only stick with those like us, we risk recycling the same ideas, but strangers can spark completely new ways of thinking.

In my own experience, I've seen this too. A friend of mine got a job opportunity not from applying online, but from a family member who also worked in the same company. That personal connection opened a door that wouldn't have been possible otherwise.



Section 2: Who's at stake?

"Any group or individual who can affect or is affected by the achievements of the organisation's objectives" (Freeman, 2010).

3 Strategies for engaging stakeholders:

1. Value Creation for key stakeholders
2. Harmonisation of all stakeholders

3. Noble cause strategy

Strategies for Managing Stakeholder Relationships - R. Edw...

Watch later Share

4:39 / 4:41

CC Settings YouTube

Transcript

Source: Strategies for managing stakeholder relationships

Power vs. interest

A useful tool to help understand political priorities is the Johnson et al., (2008, quoted in Caputo, 2013) matrix, which emphasises the importance of **two** issues:

1. How interested is an identified stakeholder group in impressing their expectations on the organisation?
2. The level of power held by the identified stakeholders enforcing these expectations.

Click each element of the table to explore the balance between power vs. interest.

Power	High	Keep Satisfied	Manage Closely
	Low	Monitor	Keep Informed
		Low	High
		Level of interest	

Dive deeper

Section 3: Map it out

Sample questions to ask to better understand stakeholders include:

What financial or emotional interest do they have in the outcome of your work? Is it positive or negative?

What information do they want from you, and what is the best way of communicating with them?

Who influences their opinions generally, and influences their opinion of you? Do some of these influencers therefore become important stakeholders in their own right?

If they aren't likely to be positive, what will win them around to support your project? If you don't think that you will be able to win them around, how will you manage their opposition?

What motivates them most of all?

Topic 2: Jump to section

Wednesday, August 13, 2025 9:16 PM

Section 1: Sources of funding



Before delving deeper into this section, take some time to think of a time where you needed funding support.

Who did you think to approach?

Why did you choose them over someone else?

Who did you think to approach?

I thought to approach a close family member.

Why did you choose them over someone else?

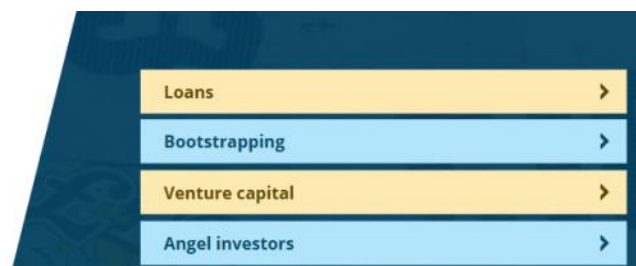
I chose them because I trusted them, knew they understood my situation, and felt they would be supportive without judgment compared to a bank or a friend.

Examples of funding bodies:

- UK Research councils
- Government departments
- Non-departmental public bodies
- Uk charities

Types of traditional funding

Here are some of the **traditional funding types** available to business ventures:



Accelerators

a small seed investment with a period of mentoring

Incubators

where entrepreneurs can develop their ideas

Angel investors

investment during their early stages of growth

Accelerators	a small seed investment with a period of mentoring
Incubators	where entrepreneurs can develop their ideas
Angel investors	investment during their early stages of growth
Venture philanthropy	an approach to funding charities or social enterprises
Loans	convenient financing for almost any purpose
Bootstrapping	funding the business via the use of personal funds
Crowdfunding	the best ways to test an idea in the market/gain funds
Venture capital	a person or a firm that offers funds for % of ownership

Section 2: Adding value

"A benchmark is a standard measure or point of reference which things can be compared" (Oxford English Dictionary, 2021).



In task 1 of this module, you looked at 'the power of networks'. We explored situations where we have perhaps benefitted from a **network connection** or have been able to **benefit others**.

➤ How does this fit within adding value?

Take some time to explore where value has been added in these situations.

My answer from task 1 fits within adding value because a good connection doesn't just solve a problem in the moment, it can also create lasting benefits like trust, confidence, or new opportunities. For example, asking a family member for support added value through understanding and encouragement, while other networks might add value by sharing knowledge or opening doors to new experiences. In both cases, value is created by people helping each other in ways that go beyond just money or resources.

Section 3: Crowdfunding

Crowdfunding is the process through which funds are raised for a project or by asking the broader public to contribute small amounts that aggregate to a large sum instead of approaching a small number of large investors

- 
1. Do your research
 2. Choose the right platform
 3. Offer more than just an idea
 4. Know your target audience
 5. Create marketing materials
 6. Set goals
 7. Make the reward worthwhile
 8. Get personal
 9. Spread the word
 10. Communicate openly
 11. Accept feedback
 12. Follow through on your promises

Topic 3: What's the story!

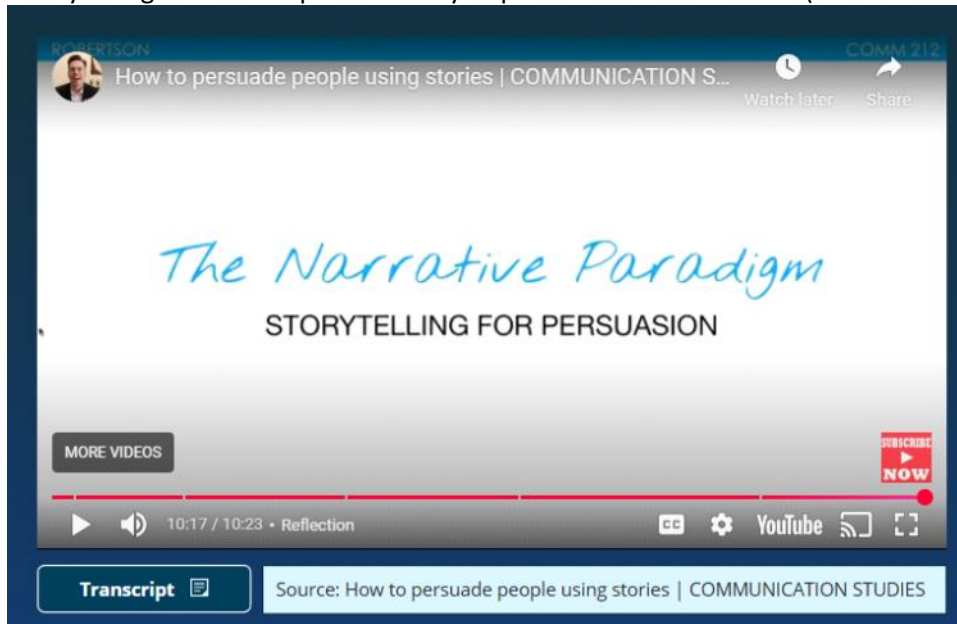
Wednesday, August 13, 2025 9:16 PM

Section 1: Using storytelling for engagement and persuasion

Skills that story telling can give us:

- Reflection
- Empathy
- Credativity

"Storytelling is the most powerful way to put ideas into the world" (Robert McKee).



Apply

Reflecting on Robertson's definitions of **narrative coherence** and **narrative fidelity**, how would you rate Dove's Selfies campaign?

5 is excellent, 1 is poor.

If you haven't already, **watch the video below** and then drag the markers on the graph to rate it.

Dove Selfie | Redefining Beauty One Photo At A Time

1

2

3

4

5

Narrative coherence

Does the video make sense? Does each component form a meaningful part in the overall structure?

1

2

3

4

5

Narrative fidelity

Does the story seem accurate to true life experiences and human nature? Can you relate to it and identify with the characters?

I would rate Dove's Selfies campaign:

- Narrative coherence: 5 – The video makes sense, and every part fits the message of redefining beauty.
 - Narrative fidelity: 5 – The story feels real, relatable, and true to people's experiences.
- Overall: 5 for both.

? Check

Match the different types of empathy to their descriptions by dragging the grey boxes in line with the correct descriptor.

Somatic empathy	The ability to feel what another person is feeling
Cognitive empathy	The ability to understand someone's response to a situation
Affective empathy	The ability to respond to other people's emotions appropriately

Correct

That's right! You selected the correct response.

Somatic empathy is the ability to feel what another person is feeling.

Cognitive empathy is the ability to understand someone's response to a situation.

Affective empathy is the ability to respond to other people's emotions appropriately.

Section 2: Developing self-confidence and authenticity

Benefits of self-confidence

- Better performance - Having confidence in your abilities allows you to devote your energy to your efforts instead of worrying that you aren't good enough. You perform better when you feel confident.
- Healthy relationships - Having self-confidence not only impacts how you feel about yourself, but it helps you better understand and love others. It also gives you the strength to walk away if you're not getting what you deserve.
- Resilience - Believing in yourself can enhance resilience; your ability to bounce back from any challenges you face.

Domingo (2015) defined authenticity as 'an individual sense that behaviour appearance and self reflects their sense of core being'.

Section 3: Delivering a kick ass presentation



Planning a presentation:

- What is the purpose of the speech?
- How long do you have?
- Is it a formal or informal setting?
- Who is your audience and how much do they already know about the topic?
- What do you want the outcome to be?

How to practice a presentation

- Be yourself
- Rehearse it
- Don't read from a script
- Structure your timing

Topic 4: Bringing your idea to life

Wednesday, August 13, 2025 9:16 PM

Section 1: Prototype and test ideas



“Prototyping is the conversation you have with your ideas”

(Wujec, as quoted in Hoang, 2020)

Spend some time thinking about the quote above.

What do you think is meant by this statement?

Prototyping is a way to explore and improve your ideas. By building and testing them, you can see what works, learn from it, and make your ideas better.

Prototyping is an experimental process of implementing ideas into tangible forms. To research, these tangible forms could come in the shape of questions, presentations and discussions. Tangible forms are gained from conversations between your ideas and your networks, to validate and progress your work

Check

Take a few moments to complete this activity, which will help you summarise what you have learnt in this section.

Question 1 of 3

What is prototyping?

- ☒ A process for narrowing focus to a specific, meaningful challenge
- ☒ Allowing an authentic audience to interact with your proposed solution
- ☒ An experimental process of implementing ideas into tangible forms

Correct!

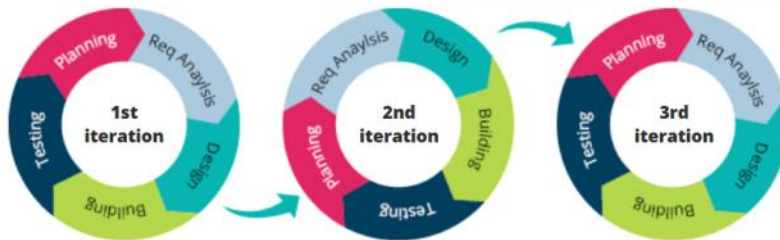
Prototyping is an experimental process of implementing ideas into tangible forms. To research, these tangible forms could come in the shape of questions, presentations and discussions.

Section 2: Thinking agile

Thinking agile about our ideas

Low-fidelity prototyping teaches us to think in new ways about our ideas and connects us with what is known about concepts in incremental steps, or **iterations**, to make **stepped changes with feedback loops**, where we can gain understanding from involved networks.

Thinking agile allows us to engage with all of those who have a connection and interest in our project throughout, adding meaning and **value** to the development and **validating** the proof of concept in a continuous cycle.



? Check

Take a few moments to complete this activity, which will help you summarise what you have learnt in this section.

Question 1 of 4

Producing a piece of work that looks and operates close to the finished article is:

☒ High-fidelity testing

☐ Low-fidelity testing

Correct!

High fidelity prototyping is producing a piece of work that looks and operates close to the finished article. Getting to this point allows users to interact with the idea or product in much the same way as the finished article.

? Check

Question 2 of 4

Producing a rough representation of ideas and concepts that help us validate our direction is:

☐ High-fidelity testing

☒ Low-fidelity testing

Correct!

Low-fidelity prototypes are rough representations of ideas and concepts that help us validate our direction. This approach facilitates the adding of value from the outset and engages with those who have an interest in our project throughout.

Unit 4

Wednesday, August 13, 2025

9:15 PM

Topic 1: It's all in the numbers

Wednesday, August 13, 2025 9:16 PM

Section 1: The different sorts of quantitative analysis

"Quantitative research of ____"

What results do you see? Note these down in 'My notes' for future reference.

"Quantitative research is a systematic investigation that uses numerical data and statistical analysis to quantify the characteristics of a population or phenomenon. It aims to establish relationships between variables, test hypotheses, and generalize findings to wider populations."

Reason to use statistics:

We use stats to describe our arguments and to make inferences from our arguments

Descriptive stats are a great way to a snapshot of a data sset and produce a summary

Inferential statistics

What are inferential statistics used for?

Inferential stats are used to help us **conclude what the data is saying**, either in the present tense or looking forwards into the future. It is this form of statistics that requires a more abductive approach, because in essence we are using statistics to **make a 'guess'**.

This 'guesswork' can leave some people suspicious. Mark Twain is famously paraphrased as saying that there are **"three forms of lies: lies, damned lies and statistics"** (Twain *et al*, 2010, p.228). It is the estimation side of inferential stats that gives the field a bad name.

However one feels about the subject, the reason why we must make guesses in research is because often it is simply **too difficult or even impossible** to collect answers from the whole population of data that you are interested in.

Check

Question 1 of 2

Would a survey of 300 students, chosen at random, from your university and asking them the question: "On a scale from 1-5, how satisfied are you with your professors?" be a good sample?

☒ Yes

☐ No

Correct!

The survey has been conducted at random to avoid any bias. The survey will of course have some bias as it is a sample of the entire university, but it has mitigated this by randomising the trial.

Check

Question 1 of 2

Would a survey of 300 students, chosen at random, from your university and asking them the question: "On a scale from 1-5, how satisfied are you with your professors?" be a good sample?

✓ Yes

✗ No

Correct!

The survey has been conducted at random to avoid any bias. The survey will of course have some bias as it is a sample of the entire university, but it has mitigated this by randomising the trial.

Section 2: Undertake a basic analysis

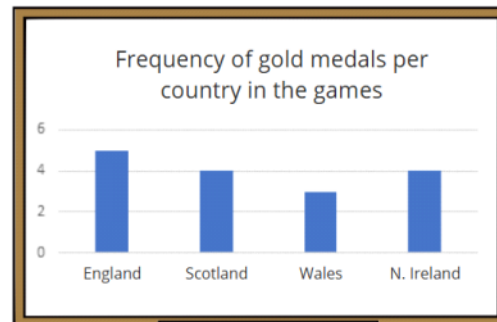
Reflect - Think back to any research you have conducted, how did the authors present the data they have collected? How have you presented data in the past? Do charts make data, especially complex and large volumes of data, easier to read?

I think charts make data much easier to read especially if the data set is complex as it gives a visual and more readable way to display data that otherwise would be hard to explain in words.

Bar charts

As we have seen in the BBC example, bar charts are usually a fantastic way of describing **frequencies** or counts of instances occurring. The BBC Covid chart shows the number of new cases each day.

In this simpler example, we count the number of gold medals that each of the home countries won in the Commonwealth games. **It could be argued** that the Welsh teams are not doing as well as the rest by looking at this chart.



Line charts

If, on the other hand, the argument that you are preparing to demonstrate is trying to show the **trend of the data** (that is whether things are going up or down), one of the best ways of doing this is to use a line chart.

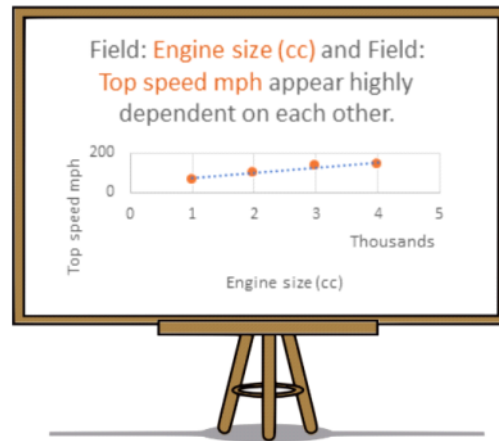
If the chart shows a **straight line**, we can explain that there is a correlation.

In the example on this page, we can see the **trend of car sales** is reducing quarter by quarter. This chart then demonstrates that there is a negative correlation between the money made by the car dealer and the time of the year.



Scatter charts

A scatter chart is a special sort of line chart where we **compare two different variables** and put them on the two axes of the chart. These charts are great for spotting the sort of **correlation** that exist between two variables. **We can do this by drawing the line of best fit.** In the chart, we can see that the bigger the engine, the higher the top speed of the car is. To use the previous terminology, the engine size is positively correlated to the top speed.



Reflect - What graph or chart would be best to describe the correlation between academic success to students reading age results?

Scatter plot as it lets you plot each student's reading age on one axis and their academic success grade on the other. You can then see if there's a clear pattern



Network

From the examples you have seen in this section, **which graph would you most likely use in your field of study and why?**

Submit your thinking to the **forum** and remember to review the answers of others, this will help you to understand and determine the best type of graph for your research.

In my field of study I would find myself to use bar charts the most as it's a simple way to display amounts of multiple things when coding the graphs in to a webpage for example

Section 3: Using excel to create a chart

Websites, television and books bombard us with information. But not all of this information is readable. According to David McCandless, information in the form of charts and graphs can be genuinely beautiful, exciting and informative (McCandless, 2011).

Reflect

Consider the quote by Aristotle:

“The aim of art is to represent not the outward appearance of things, but their inward significance.”

Is this something you agree with?

Im not sure I agree with this fully as art was intended to present something of beauty or significant such as a landscape or an royalty member but I understand the quote and art having a inward significance as many pieces of art can show something beautiful but have a deeper meaning.

<https://informationisbeautiful.net/>

I feel the graphs designs do help convey more meaning to the overall chart.

Topic 2: There's a theme here!

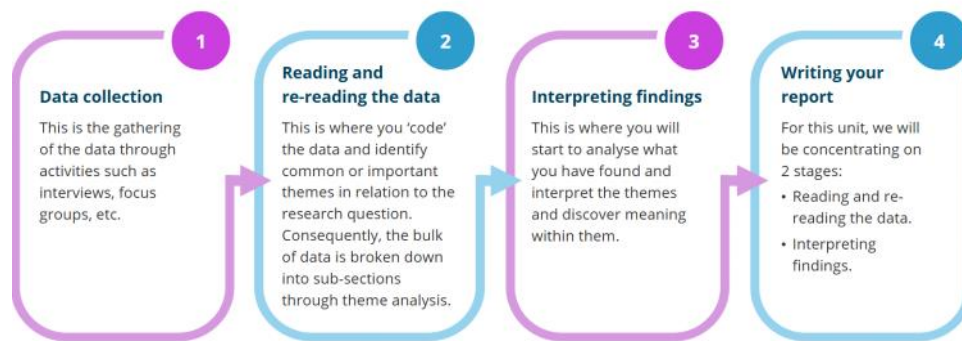
Wednesday, August 13, 2025 9:17 PM

Section 1: Organising qualitative data

Qualitative research methods involve collecting and analysing data (often through unstructured interviews, focus groups or participant observation, etc). This data is normally non-numerical.

The objective of qualitative research is often to understand the stories, experiences and concepts of the participants to gain a deep insight into the research area.

The four stages of qualitative research



Transcribe means to make a written copy of a recording. This is an important step in preparing for analysis

Reflect – Why is it important to begin to organise your qualitative data before data collection. How will this affect your planning for qualitative research in the future.

It's important to organise qualitative data before collecting it because it ensures consistency, links data directly to your research goals, protects confidentiality, and saves time during analysis.

In future, I'll plan file naming, coding categories, and storage methods in advance so I can move smoothly from collection to analysis without delays.

Section 2: Applying techniques to identify patterns and themes

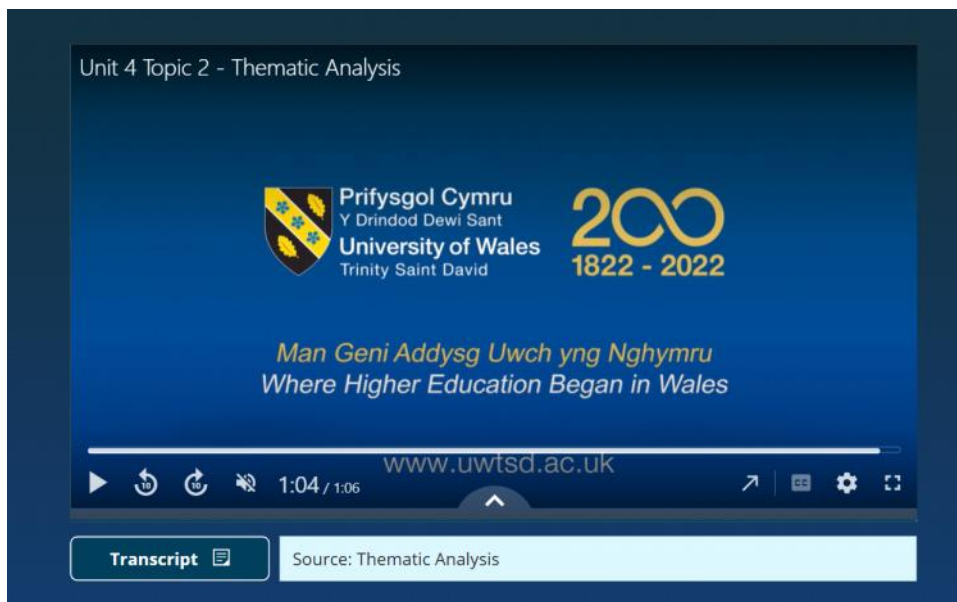
Reflect

Being able to sort your data and identify themes and patterns is the next stage in qualitative analysis and is often where your research starts to get exciting!

- Do you see patterns and themes in your everyday life?
- How do you recognise them and what do they look like?

Write a couple of sentences describing what a theme or pattern is.

An example of a pattern that I see in my everyday life is that when traveling on certain roads to work, I pick up unique cars traveling the opposite way every day at the same time. I recognise the car by either a number plate or a unique colour or pattern



Thematic analysis is a popular method used by researchers to identify any patterns or themes that emerge from qualitative data. Sometimes these themes are easy to spot and other times they require a little more work by the researcher to uncover them. Thematic analysis is used for data from a wide range of disciplines and fields and is effective in answering an array of research questions.

Apply: Create your own theme table template that could use for your data

Date	Shift	Line	Coordinator	Downtime (mins)
04/08/2025	A	ETL5	Greg	15
04/08/2025	B	ECCS4	Nick	30

Check

Question 1 of 1

Correct!

You selected the correct responses.

Step 1	✓	Familiarising yourself with the data
Step 2	✓	Generating initial codes
Step 3	✓	Identifying themes
Step 4	✓	Reviewing the themes
Step 5	✓	Giving your themes a name
Step 6	✓	Writing about your themes

Section 3: Using qualitative analysis software

Apply:

Source #	Note #	Author	Note	Theme	Initial Code
1	3	Jordan	Recently my collection was featured in a museum exhibit in my hometown.		#collection
4	3	Araf	This started when I did my first Triathlon at Tenby beach in my first term.		#competition
2	2	Jordan	At the time we all played video games in the student halls and later we competed against Manchester.	#competit	#competition #game
3	2	Anwen	I've always lived in Swansea	#home	#home
2	3	Dewi	A major incident in during my time at UWTSd was that I caught chicken pox.	#medical	#medical #illness
1	1	Anwen	A big thing that happened when I was in my 20s and studying was that I caught malaria	#medical	#medical #illness
4	2	Araf	but I broke my leg in a scooter accident later that year	#medical	#medical #injury
1	1	Jordan	I moved here from North Yorkshire to study business at the University of Wales Trinity St David		#movedhome
2	1	Dewi	I studied for a nursing qualification at the university having previous lived in Exeter.		#movedhome
2	2	Dewi	The big thing that I now do since uni is that I play football in an amateur league.	#competit	#competition #sport
4	1	Araf	This started when I did my first Triathlon at Tenby beach in my first term,	#competit	#competition #sport

Topic 3: Succeed or Fail

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Section 1: Failure – Is this the end?

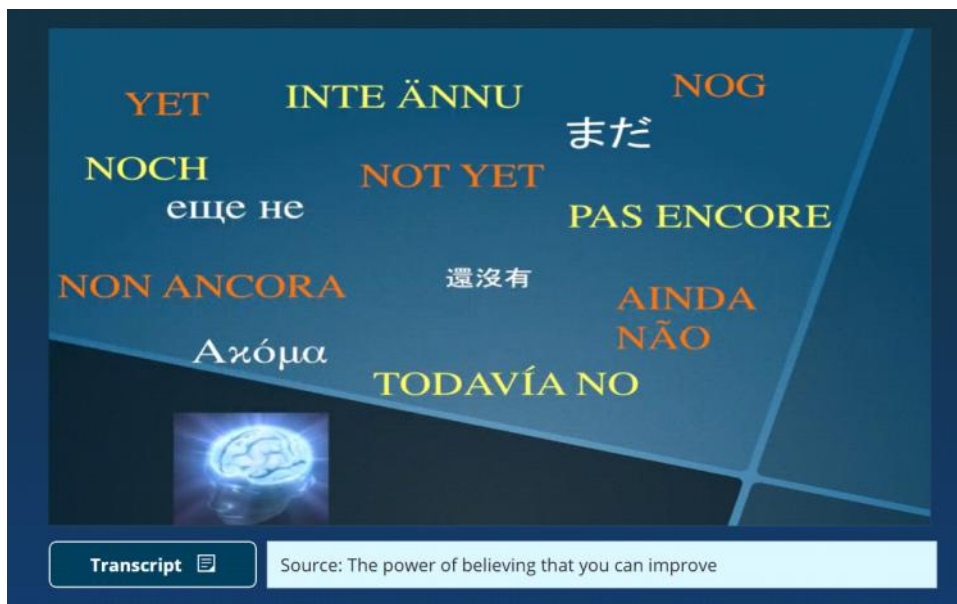


Reflect - Reflect on your own experiences. What does failure mean to you?

What mistakes or failures have you made in the past that really set you back?

One mistake I made recently was leaving a project to late to the submission causing me to completely miss a an important part of the assignment as I was trying to get it in as soon as possible

Thomas edison invented the light bulb – after 10000 failed attempted. Edison said: "I have not failed. I have just found 10000 ways that wont work" (Lathrop 1890).



Apply

At the beginning of the section, we asked you to reflect on mistakes or failures that challenged you in the past.

Make some notes about what you learned from the experience, applying the **growth mindset** that Dweck discusses.



Dive deeper

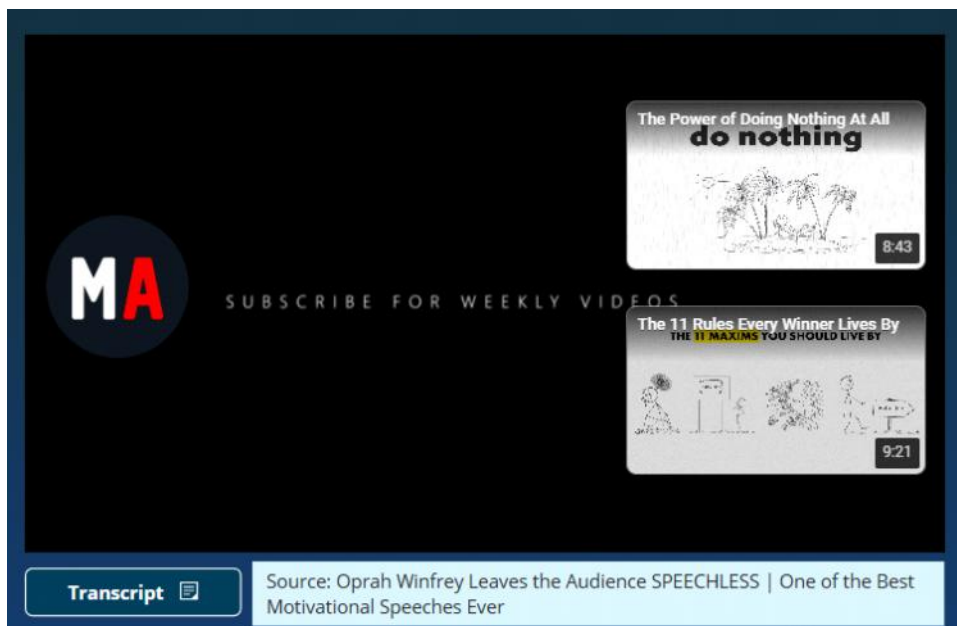
- Analyse why the project was left so late.
- Break work into smaller tasks with mini-deadlines.
- Use planners, reminders, or calendar apps to track progress.
- Seek feedback early to avoid missing important parts.
- Reflect after each project and adapt your approach.

Section 2: Success and wellbeing

"There is one thing that is forever good that one thing us success" - Ralph Waldo

Success according to Emerson and qualified by Bronnie Ware is an appreciation that includes not just the acquisition of things

"Wellbeing can be understood as how people feel and how they function, both on a personal and a social level, and how they evaluate their lives as a whole." (Michealson and Mahony, 2012).



The image shows a YouTube video player interface. On the left is the MA logo. In the center, it says 'SUBSCRIBE FOR WEEKLY VIDEOS'. On the right, there are two video thumbnails. The top one is titled 'The Power of Doing Nothing At All' with the subtitle 'do nothing' and a duration of 8:43. The bottom one is titled 'The 11 Rules Every Winner Lives By' with the subtitle 'THE 11 MAXIMS YOU SHOULD LIVE BY' and a duration of 9:21. At the bottom, there is a 'Transcript' button and a source attribution: 'Source: Oprah Winfrey Leaves the Audience SPEECHLESS | One of the Best Motivational Speeches Ever'.

Network

Based on the themes in the resources you have seen so far and what you have learnt in this section, think of a **famous, 'successful' individual** and **write down on the forum** how you now perceive them in terms of both success and wellbeing. For example, what do you now think of Michael Jackson's success?

When considering your review of achievement in the introduction activity, did you consider **wellbeing** as part of it? **What do you think now?**

Michael Jackson's success in music was one of the best, but now I see that it came with immense pressure and personal struggles.

Section 3: Success from failure

Reflect

From when we are children, we are taught that **failure is not an option**. Yet we are not taught how success is achieved. Too often it seems like if someone is smart or lucky or special, they can succeed without ever tasting failure.

Can you think of someone famous or a personal acquaintance that seems to be successful from having been lucky?

By this we mean someone that has some claim to success from something they did rather than winning the lottery.

Harrison Ford is a good example. He was working as a carpenter when he happened to be in the right place at the right time, which led to him being cast in *Star Wars*. That lucky opportunity, paired with his acting skills



George de Mestral was frustrated by the barbed seed pods that kept sticking to his dog every time he took him for a walk. He realised that such a thing could be manufactured as something useful. He called it **Velcro**.

Click each image below for further examples.



Spencer Silver was working for a company making a new glue. The substance he made was only tacky and, barely sticky. Hard great property for glue! This glue became the breakthrough product that 'sticks' **Post-It notes** by their billions to this day.



Graham Fleming's studies were repeatedly contaminated by mould. This mould seemed to kill the very viruses that he was studying and confounded the experiments he was trying to do. Fleming realised he had accidentally discovered **Penicillin**.



Network - Often enough, when considering success, we tend to think of famous individuals. But is that simply a reflection of what society identified as success?

Consider a person that you think is successful but is not famous then consider these questions:

- 1. What makes them successful?*
- 2. Is their success recognised? By whom?*
- 3. Does lack of fame make them less successful?*
- 4. What motivated your choice? What criteria did you use?*
- 5. Can you explain why your chosen individual achieved success, but not fame?*

Write and post 100 words to the forum of why your chosen individual is successful but not famous.

I'd say my dad is a successful person. They are successful because of how far he has made it in his career being able to make his way to top over the years. Their success is recognised by my family and maybe his co-workers. The lack of fame doesn't make them any less successful, just because you're not known to the public does not mean you can't be successful. My dad is successful but not famous as job is not something that you can be famous for.

Topic 4: Sharing success

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Section 1: Applying learning from your project

Reflect

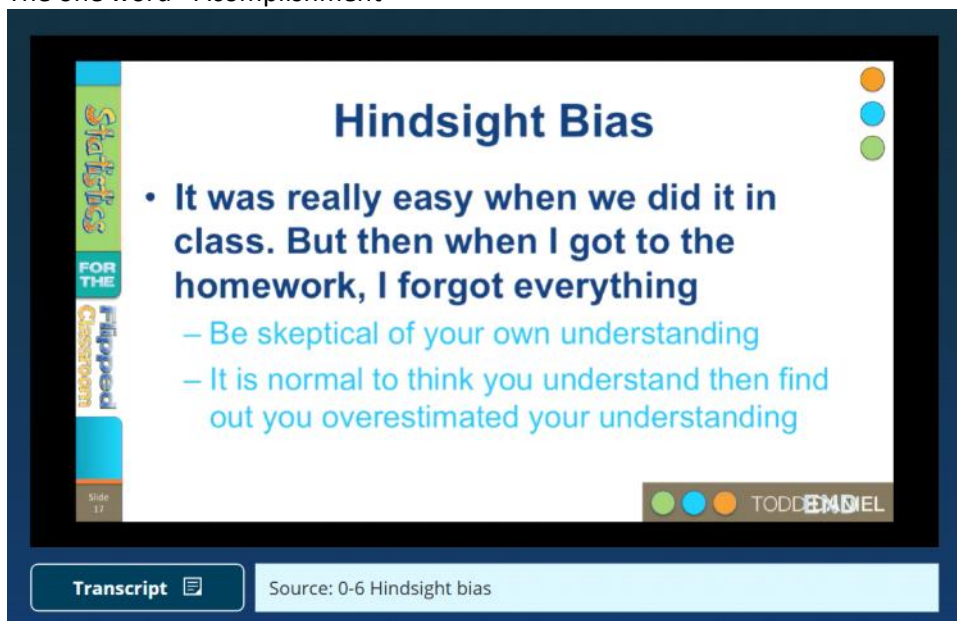


Take a moment to work out why you are studying.

Why is it that you are setting yourself the hard work of creating your project or assignment?

Can you think of one word that encapsulates all of this?

The one word - Accomplishment



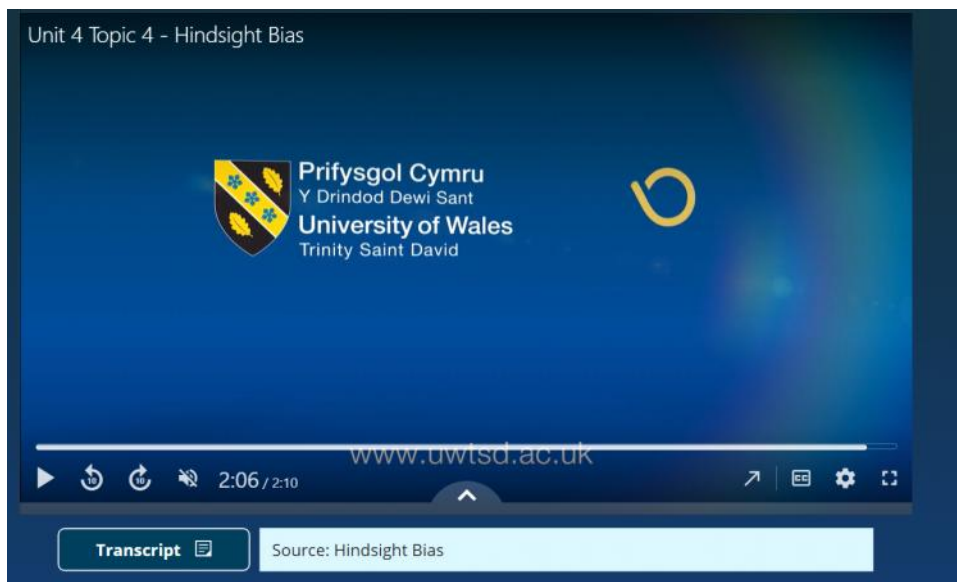
Hindsight Bias

- It was really easy when we did it in class. But then when I got to the homework, I forgot everything
 - Be skeptical of your own understanding
 - It is normal to think you understand then find out you overestimated your understanding

Transcript Source: 0-6 Hindsight bias

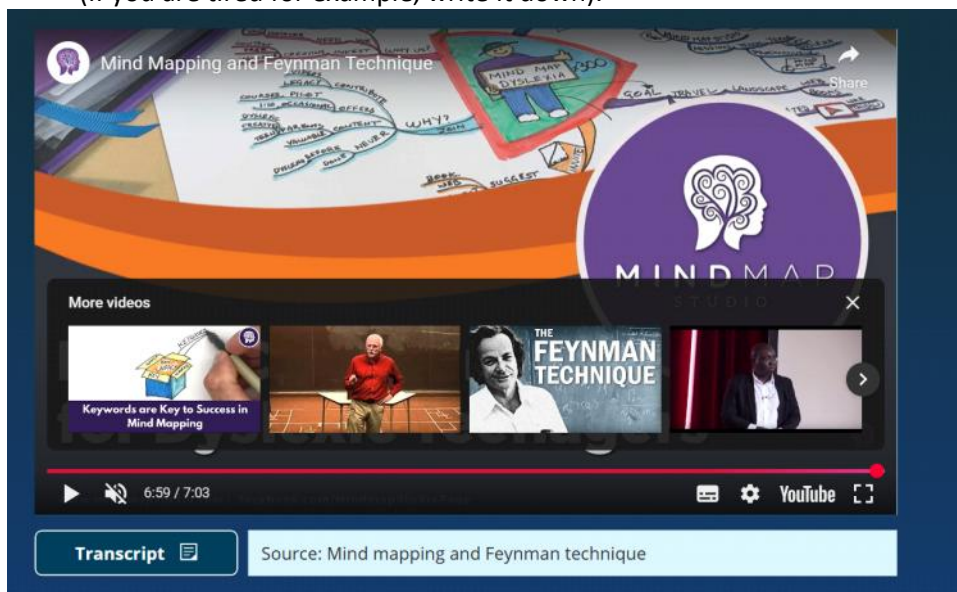
Daniel Kahneman

Cognitive biases have been discussed in previous sections, and they are the part of the work of Nobel prize winner, Daniel Kahneman. He writes about them in his book Thinking Fast and Slow, 1934.



Becoming aware of hindsight bias

1. Context – The situation or context you are making your project.
2. Statement – The problem statement.
3. Variable – The variables that govern the situation. (Have you made enough time, equipment etc).
4. Complications – The complications or complexity as you see it in the project.
5. Alternatives – Alternatives that were seriously considered and why they were not chosen
6. Outcomes – A paragraph explaining the range of outcomes
7. Expectation – A paragraph explaining what you expect to happen and the reasoning and actual probabilities you assign to each projected outcome
8. Decision – The time of day you making the decision and how you feel physically and mentally. (If you are tired for example, write it down).



Using the Feynman technique can make sure your work is simultaneously shows you have grown and understand.

In the previous topic, you may have recalled a mistake that you have made in life that caused you to learn.

Now for some serious thinking: in all honesty, and keep it private to yourself, when you explain this mistake to a third party, do you make yourself seem better than you were?

Most people when being honest will say that they do. Being aware of our hindsight bias will help us innovate better versions of ourselves.

When explaining a mistake I have made I do tend to give myself the benefit of the doubt but after a while I tend to be fully honest with the person.

Section 2: Developing an approach to showcase the outputs of your project

She demonstrates the technique using a sociology topic on Friedrich Engels (families and households). Jess recommends mind maps as a quick review tool before exams, especially when time is short, as they provide a clear summary without rewriting full notes.

What is the IKEA effect?

"The IKEA effect is a cognitive bias: it describes how we are naturally proud of the work we make - for example, of a piece of furniture we have assembled ourselves! Therefore, we may think that everyone will be as interested in our work as we are ourselves."

Section 3: Implementing an approach to showcase your project

The use of posters

Whenever we make a decision on things that matter to us, we often reach out for information that has been condensed and, let's be honest, ones that are graphically rich. As a species we are drawn to pretty things with nice pictures. Often having to read a mountain of text is just too difficult.

An academic poster will contain:

- Less text than the abstract.
- Short punchy sentences.
- Bullet pointed information where possible.
- Graphical illustrations or photos.
- Don't forget to add your references (put these in a small font).

Less is more.

Title

Your poster title should be short. It should fit on one line so that it can be readable and draw interest from across a room.

Photos and images

You should really include the UWTSD logo in your poster. It is also a good idea to add a professional looking photograph of yourself. It may be good to use the one you have used in your LinkedIn profile.

Words

Look at your abstract and try and reduce it in half.
Aim for a word count of about 300 - 800 words.

Acknowledgements

List the people and references that you need to include.
Also remember to include the UWTSD logo.

Template