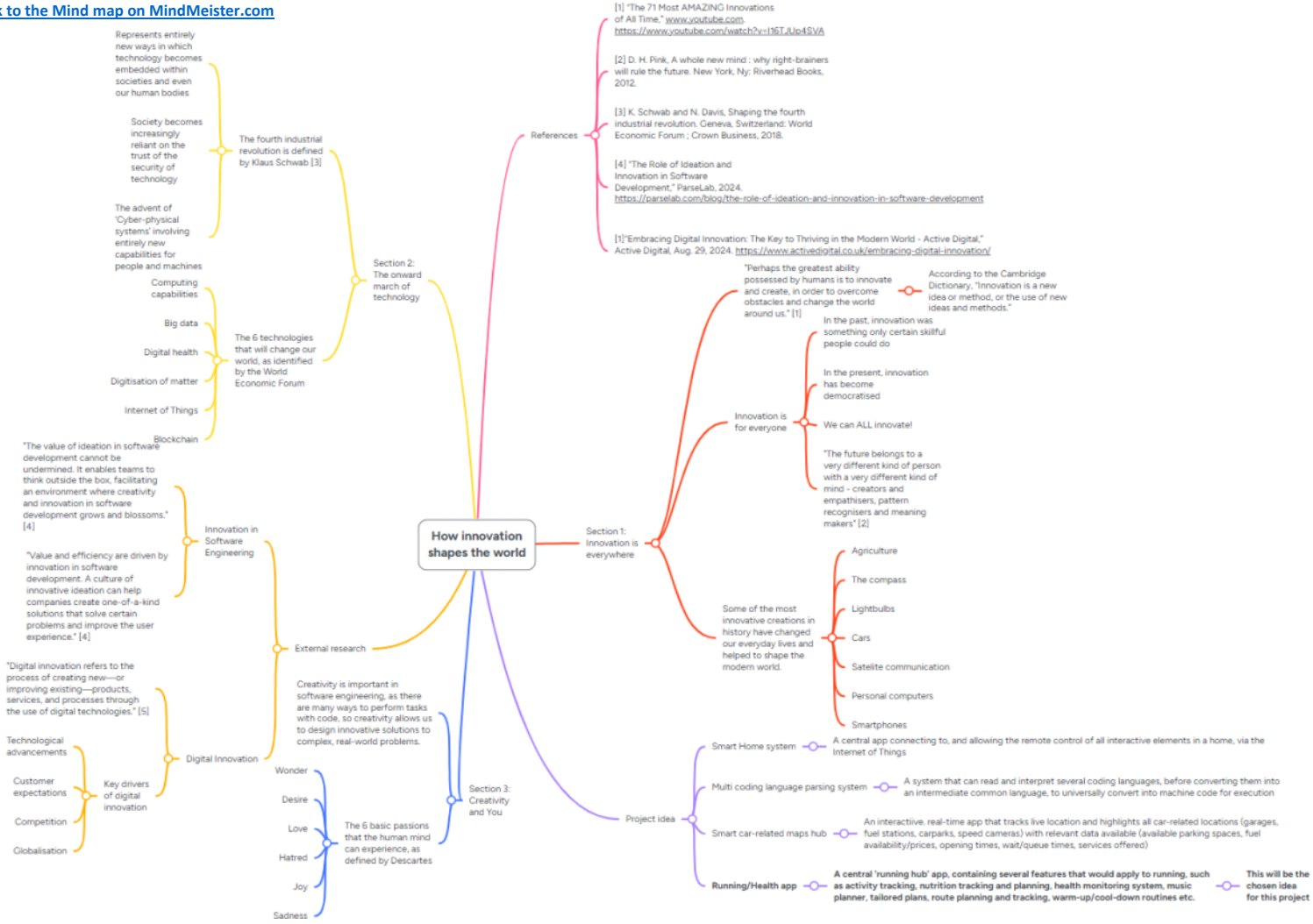
Q1. Mind Map

Wednesday, June 25, 2025 1:23 PM

Mind map created with reference to 'Unit 1 Topic 1 – How innovation shapes the world'

Link to the Mind map on MindMeister.com



[1] "The 71 Most AMAZING Innovations of All Time," www.youtube.com. https://www.youtube.com/watch?v=I16TJUp4SVA

[2] D. H. Pink, A whole new mind : why right-brainers will rule the future. New York, Ny: Riverhead Books, 2012.

[3] K. Schwab and N. Davis, Shaping the fourth industrial revolution. Geneva, Switzerland: World Economic Forum ; Crown Business, 2018.

[4] "The Role of Ideation and Innovation in Software Development," ParseLab, 2024. https://parselab.com/blog/the-role-of-ideation-and-innovation-in-software-development

[1]"Embracing Digital Innovation: The Key to Thriving in the Modern World - Active Digital," Active Digital, Aug. 29, 2024. https://www.activedigital.co.uk/embracing-digital-innovation/

Q1. Aim and Objectives

Wednesday, June 25, 2025 1:24 PM

Aim:

- To develop a mobile application that can be used to assist users in storing, tracking, monitoring and planning of all things related to running

Objectives:

- Conduct surveys and interviews to obtain market research of potential users, which will help identify the average user's needs, preferences and requests
- Design and implement an aesthetically pleasing, user-friendly user interface
- Integrate real-time GPS tracking (pace, timer, distance, live map, directions) and real-time health monitoring (Heart rate, calories, heart rate zone, steps) technologies
- Design and integrate a calendar system, for users to plan and track their runs and races
- Develop secure in-app storage (running history, statistics, PBs) to allow for performance analysis and progress tracking in the form of charts, graphs etc.
- Develop app integration and data synchronization using API's, allowing for interaction with related apps (MyFitnessPal for nutrition, Spotify/Apple Music for music, Zwift/Peloton for tri-athletes, Strong/Hevy for gym/weight training)
- Develop an AI music hub, that can tailor the 'shuffle' mode based on a runner's current situation (timing, pace, heart rate, location, run type etc.)
- Develop an AI model that can help to create tailored running plans, based on a user's goals, ability, recent data etc.
- Create a social media section where individual users can share content (runs, PB's, routes, photos, songs, playlists), and content creators/influencers/companies can share running-related videos, podcasts, stories and posts)
- Incorporate 'motivational' features (achievements, challenges, leaderboards, daily reminders, progress updates etc.)

Q2. Research philosophy

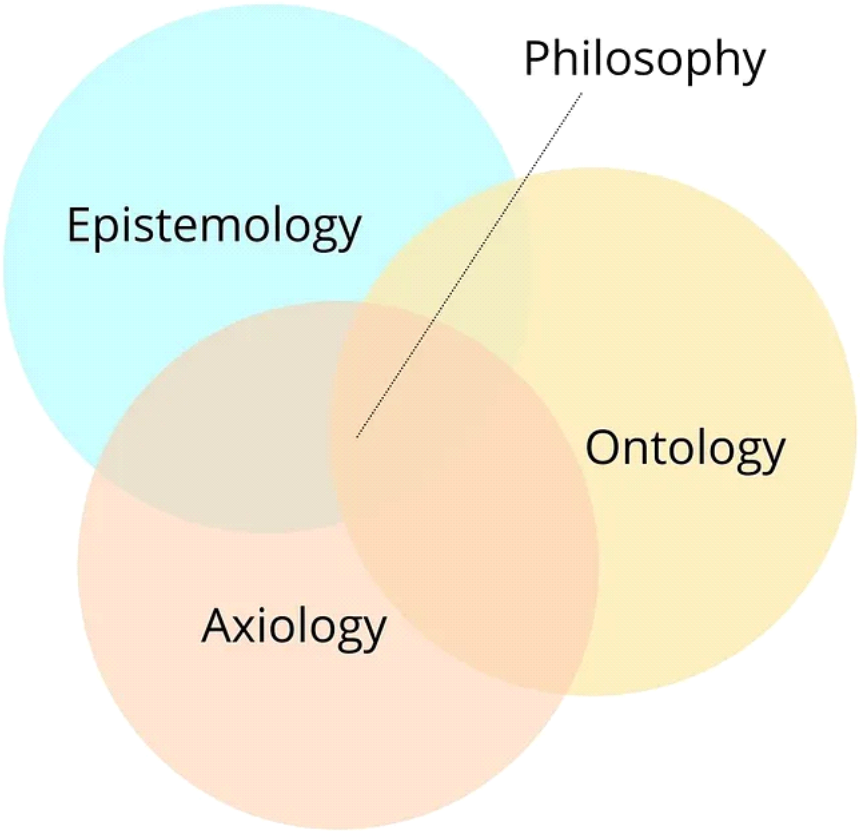
Thursday, June 26, 2025 1:28 PM

Philosophy

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

Philosophy is "a way of thinking about certain subjects such as ethics, thought, existence, time, meaning and value. That 'way of thinking' involves 4 Rs: responsiveness, reflection, reason and re-evaluation. The aim is to deepen understanding. The hope is that by doing philosophy we learn to think better, to act more wisely, and thereby help to improve the quality of all our lives" [1].

The philosophy of research is split into three broad forms, called Ontology, Epistemology and Axiology, as defined in 'Unit 1 Topic 2 - How do YOU solve a problem?'



(Figure 1: An image showing how philosophy is a mix of its three broad forms; Ontology, Epistemology and Axiology [2].)

Ontology is the study of being, which means it is based on the reality of existence.

Epistemology is the study of knowledge or knowing, which means it focusses on how we think about reality.

Axiology is the study of values, which means it focusses on what is valuable and why it is said to be valuable.

“Epistemology provides us knowledge and then Ontology checks if it exists or not then Axiology checks its moral values if that is wrong or right” [2].

Research Philosophy

With the above philosophical foundations in mind, for this project, the specific research philosophy that will be adopted is Pragmatism.

"Pragmatism involves research designs that incorporate operational decisions based on ‘what will work best’ in finding answers for the questions under investigation" [3].

Pragmatism will be used as it focuses on practical outcomes and what works and what will be the most useful for a specific practical application. As the project will involve designing an application, pragmatism is perfect as it'll allow a mix of both quantitative and qualitative research methods to be used to gather data in innovative and dynamic ways. These types of research will help me to identify the needs, frustrations and emotions of an average runner with the current market of running applications.

[1] The Philosophy Foundation, “What is Philosophy?,” *Philosophy-foundation.org*, 2015. https://www.philosophy-foundation.org/what-is-philosophy
[2] Ajay, “Introduction to Epistemology, Ontology and Axiology in Philosophy,” *Medium*, Aug. 23, 2021. https://medium.com/@softdev_ajay/introduction-to-epistemology-ontology-and-axiology-in-philosophy-5a2fc0b726ac
[3] University of Nottingham, “Understanding Pragmatic Research,” *www.nottingham.ac.uk*, 2025. https://www.nottingham.ac.uk/helmopen/rlos/research-evidence-based-practice/designing-research/types-of-study/understanding-pragmatic-research/section03.html

Q3. Search tools and strategies

Thursday, June 26, 2025 1:29 PM

Search Tools

The main search tools that would be used for this research project are:

- Databases
- UWTSD Library
- Google Scholar
- JSTOR

Research databases are "organized collections of computerized information or data such as periodical articles, books, graphics and multimedia that can be searched to retrieve information" [1]. Although there is no set number of databases, most published work typically uses between 4 and 8 databases.

The Databases that could be used for this project are:

- Articles from academic journals
- Technical standards
- Market reports
- Reports from professional bodies
- Case studies and TED lectures

Additionally, the UWTSD library, Google Scholar and JSTOR are all great search tools that can be used to provide high quality reliable information.

Search Strategies

The main search strategies that could be used for this project are:

- Boolean search
- Keywords
- Concept maps

A keyword is a word, that can be used like a hashtag on social media, that summarises and distills the meaning of a sentence by removing all superfluous words, to then be used in a search database, as defined in 'Unit 1 Topic 3 – Known Knowns'.

The keywords that have been selected for this project are:

- Running OR Fitness
- Mobile App*
- Centralised App* OR Centralized App*
- API

A concept map is "a diagram that depicts suggested relationships between concepts. It is a graphical tool that instructional designers, engineers, technical writers, and others use to organize and structure knowledge." A concept map provides more discipline, structure and form than a mind map, starting at the top of the page and working down, which can be useful when performing a literature review. "One thing that makes concept maps different than mind maps is that a topic can have multiple parents and children. That makes it ideal for modeling complex relationships between pieces of information" [2].

Using these search tools/strategies, sources 3-11 were identified. [3], [4], [5], [6], [7], [8], [9], [10], [11]

[1] M. Bonet, “LibGuides: Research Process: Research Databases,” pgcc.libguides.com, Jun. 06, 2022.

https://pgcc.libguides.com/c.php?g=60038&p=385667
[2] "Concept maps vs. mind maps," *Mind Mapping Software Blog*, Nov. 04, 2016. https://mindmappingsoftwareblog.com/concept-maps-vs-mind-maps/
[3] C. H. Kao, C.-Y. Chang, and H. C. Jiau, "Towards cost-effective API deprecation: A win–win strategy for API developers and API users," *Information and software technology*, vol. 142, Art. no. 106746, 2022, doi: 10.1016/j.infsof.2021.106746.
[4] S. R. Stoyanov, L. Hides, D. J. Kavanagh, O. Zelenko, D. Tjondronegoro, and M. Mani, "Mobile App Rating Scale: a New Tool for Assessing the Quality of Health Mobile Apps," JMIR mHealth and uHealth, vol. 3, no. 1, p. 27, Mar. 2015, doi: https://doi.org/10.2196/mhealth.3422.
[5] S. P. Han, S. Park, and W. Oh, "Mobile App Analytics: A Multiple Discrete-Continuous Choice Framework," MIS Quarterly, vol. 40, no. 4, pp. 983–1008, Apr. 2016, doi: https://doi.org/10.25300/misq/2016/40.4.09.
[6] J. Bloch, "How to design a good API and why it matters," Companion to the 21st ACM SIGPLAN conference on Object-oriented programming systems, languages, and applications - OOPSLA '06, 2006, doi: https://doi.org/10.1145/1176617.1176622.
[7] M. Biehl, API Architecture. API-University Press, 2015.
[8] D. Schuff and R. St. Louis, "Centralization vs. decentralization of application software," Communications of the ACM, vol. 44, no. 6, pp. 88–94, Jun. 2001, doi: https://doi.org/10.1145/376134.376177.
[9] D. Mourtzis, M. Doukas, and C. Vandera, "Smart mobile apps for supporting product design and decision-making in the era of mass customisation," International Journal of Computer Integrated Manufacturing, vol. 30, no. 7, pp. 690–707, May 2016, doi: https://doi.org/10.1080/0951192x.2016.1187295.
[10] T. Kostrubala, Joy of Running. 1978.
[11] S. Brené, A. Bjørnebekk, E. Åberg, A. A. Mathé, L. Olson, and M. Werme, "Running is rewarding and antidepressive," Physiology & Behavior, vol. 92, no. 1, pp. 136–140, Sep. 2007, doi: https://doi.org/10.1016/j.physbeh.2007.05.015.

Q1. Validity, reliability, generalisability and ethical considerations

Wednesday, June 25, 2025 1:24 PM

Validity

Validity "denotes suitable and accurate measurements. For example, the valid instrument accomplishes a target accurately or without involving variable values. It makes sure the measurement needs" [2]

To enhance validity in research:

- Clearly and precisely define the concepts that are being studied to remove any ambiguity in the understanding of what is being measured and assessed.
- Use an appropriate sampling method in order to get a generalised representation of the entire population. For qualitative research, this could involve snowball or random sampling, and for quantitative research, this could include systematic, stratified or cluster sampling, depending on your population. These research methods are defined in 'Unit 2 Topic 2 - Finding a Needle in a Haystack'
- Choose an appropriate research method that aligns with the research question and objectives, is suited to capture the relevant information, and has ben pilot tested to refine before the main research takes place. [1], [2, [5]

Reliability

Reliability "defines the scale about which the measurement done in same circumstances provide same result. In other way, reliability in research states that the outcome should be reliable with similar measurements when the study is replicated. For example, if an experiment produces same result every time then it is reliable" [2]

To enhance reliability in research:

- Apply methods consistently by planning research methods carefully to carry out measurement in the same way.
- Standardise the conditions of the research by keeping circumstanses for each measurement as constant and consistent as possible to reduce the effect of external factors causing variation in results. [1], [2, [5]

Generalisability

Generalisability is "the degree to which you can apply the results of your study to a broader context. Research results are considered generalisable when the findings can be applied to most contexts, most people, most of the time" [3]

To enhance generalisability in research:

- Clearly define the population to establish what generalisations will be made
- Use random sampling to avoid sampling bias and ensure that the sample will be representative of the population, and therefore generalised.
- Consider the sample size to ensure that it is large enough to support the generalisation being made. [3]

Ethical considerations

Ethical considerations are "a set of principles that guide your research designs and practices. Scientists and researchers must always adhere to a certain code of conduct when collecting data from people" [4]

To enhance ethical considerations in research:

- Submit the research proposal to an institutional review board in order to gain ethical approval to begin collecting data, according to the approved procedures.
- Ensure that all participants have given their informed consent, meaning they are aware of all

aspects of the research before agreeing to continue.

- Ensure that all participants are aware that their participation is voluntary and are free to withdraw at any point without any obligation to continue.
- Ensure that all data is kept confidential and anonymous. [4]

[1] L. Leung, "Validity, Reliability, and Generalizability in Qualitative Research," *Journal of Family Medicine and Primary Care*, vol. 4, no. 3, pp. 324–327, 2015, doi: https://doi.org/10.4103/2249-4863.161306.
[2] "Guide you How to write reliability and validity in research proposal?," *PHD Services*. https://phdservices.org/how-to-write-reliability-and-validity-in-research-proposal/
[3] K. Nikolopoulou, "What Is Generalisability? | Definition & Examples," *Scribbr*, 2022. https://www.scribbr.co.uk/bias-in-research/generalisability/
[4] P. Bhandari, "Ethical Considerations in Research | Types & Examples," *Scribbr*, May 07, 2022. https://www.scribbr.co.uk/research-methods/ethical-considerations/
[5] F. Middleton, "Reliability Vs Validity in Research | Differences, Types & Examples," *Scribbr*, May 03, 2022. https://www.scribbr.co.uk/research-methods/reliability-or-validity/

Q2. Data collection methods

Thursday, June 26, 2025 1:30 PM

Research Strategies & Data Collection methods

As a pragmatic research philosophy has been selected, this allows the use of both qualitative and quantitative research to be done in order to gain an understanding on:

- The features that a runner will want the most on a centralised running app
- The drawbacks they have with the current running apps
- How they would benefit from a centralised running app
- The average runner's habits, preferences and frustrations

For quantitative research, I would use a questionnaire to collect measurable, quantifiable data from a sample of runners.

For qualitative research, I would use a series of interviews to collect expressive, verbose and higher quality data that is more open to interpretation, in order to dig deeper and explore findings from the quantitative data mentioned previously.

Pilot data collection method

Questionnaire for quantitative data collection:

1. Which of the following apps do you use to enhance your running experience? (Tick all that apply)

- [ ] Strava/Garmin/Nike Run Club/Any run tracking app
- [ ] MyFitnessPal/Any food and calories tracking app
- [ ] Runna/ChatGPT/Footpath/Any run planning app
- [ ] Spotify/Apple Music/Any music app
- [ ] Hevy/Any gym tracking app
- [ ] Zwift/Peloton/Any cycling app

2. How many different apps do you use for your running experience? *

- ○ 0
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6+

3. What do you use running apps for? *

Enter your answer

4. Rank these features in order of importance (1 = Most important) *

3. What do you use running apps for? *

Enter your answer

4. Rank these features in order of importance (1 = Most important) *

Live tracking

Performance analytics

Planning / coaching

Nutrition tracking

Music

Social sharing

Achievements / Challenges / Leader boards

5. How frustrating is it to switch between multiple apps? (1 = Not frustrating - 5 = Very frustrating) *

1	2	3	4	5

6. To what extent do you believe a centralised running app is required? 1 (Not needed) - 5 (Essential) *

1	2	3	4	5

7. Would you be open to trying a centralised running app? *

- ◯ Yes
- ◯ No

8. What features would you want in a centralised running app? *

Enter your answer

9. What concerns would you have with a centralised running app? *

Enter your answer

10. Any additional thoughts?

Enter your answer

11. How many times a week do you typically run? *

- 0
- 1-2
- 3-4
- 5+

12. What level of runner would you classify yourself as? *

- Beginner
- Intermediate
- Advanced
- Elite

This quantitative data research questionnaire was tested on a sample of 5 runners. The feedback is documented in the appendices.

The feedback highlighted:

- Most runners use several apps
- Runners use different apps for a multitude of reasons
- Live run GPS tracking is typically the most important feature, with performance analytics and planning also being preferred features
- The majority voted that it is frustrating to switch between multiple apps, and that a centralised running app is needed, with the majority also open to trying this type of app
- A range of requests and concerns for this new app

This questionnaire will now be rolled out to a far greater sample size in order to get a more balanced representation of the running population.

Q3. Quantitative and qualitative analysis

Thursday, June 26, 2025 1:30 PM

Quantitative analysis

Quantitative analysis is typically used to either describe an argument or to make inferences from an argument, as stated in 'Unit 4 Topic 1 – It's all in the numbers'

Descriptive statistical analysis refers to "techniques that summarize a dataset's main features" by breaking down the dataset, which could be either a sample or an entire population, into measures of central tendency, including mean, median & mode and measures of variability, including the standard deviation, variance, minimum and maximum. This process turns raw data into a summarized and meaningful source of information that can be used to describe trends and findings. [1]

Inferential statistical analysis "help you come to conclusions and make predictions based on your data" [2] by performing a series of hypothesis testing and regression analysis to help determine and prove whether an opinion that is stated in research is true or false. [3]

Qualitative analysis

Qualitative data analysis is "the process of gathering, organizing, and interpreting non-numerical data to uncover patterns, themes, and insights" [4], which includes methods such as grounded theory and content analysis.

Grounded theory is "a research method concerned with the generation of theory which is 'grounded' in data that has been systematically collected and analysed." This theory is then used to "uncover such things as social relationships and behaviours of groups, known as social processes." [5]

Content analysis is "a research tool used to determine the presence of certain words, themes, or concepts within some given qualitative data (i.e. text)" allowing the researcher to quantify and analyse the meaning of qualitative data, such as searching for bias in a text article, and then interpret the messages within the text. [6]

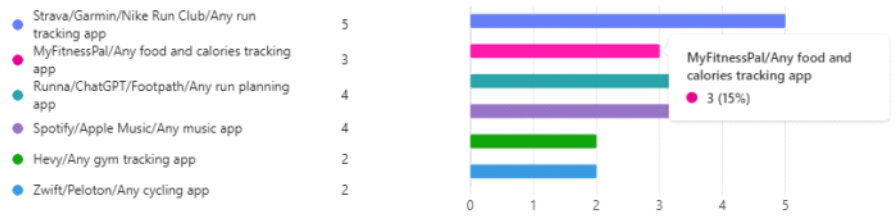
[1] A. Hayes, "Descriptive statistics: Definition, overview, types, example," *Investopedia*, Jun. 27, 2024. https://www.investopedia.com/terms/d/descriptive_statistics.asp
[2] P. Bhandari, "Inferential Statistics | An Easy Introduction & Examples," *Scribbr*, Jan. 18, 2023. https://www.scribbr.co.uk/stats/inferential-statistics-meaning/
[3] Oxford Brookes University, "Inferential statistics," *Oxford Brookes University*, 2025. https://www.brookes.ac.uk/students/academic-development/maths-and-stats/statistics/inferential-statistics
[4] T. Dye, "Qualitative Data Analysis: Step-by-Step Guide (Manual vs. Automatic)," *Thematic*, Feb. 19, 2025. https://getthematic.com/insights/qualitative-data-analysis/
[5] H. Noble and G. Mitchell, "What is grounded theory?," *Evidence Based Nursing*, vol. 19, no. 2, pp. 34–35, Feb. 2016, doi: https://doi.org/10.1136/eb-2016-102306.
[6] Columbia University, "Content Analysis," *www.publichealth.columbia.edu*, 2025. https://www.publichealth.columbia.edu/research/population-health-methods/content-analysis

Data Collection Responses

Wednesday, July 30, 2025 9:46 AM

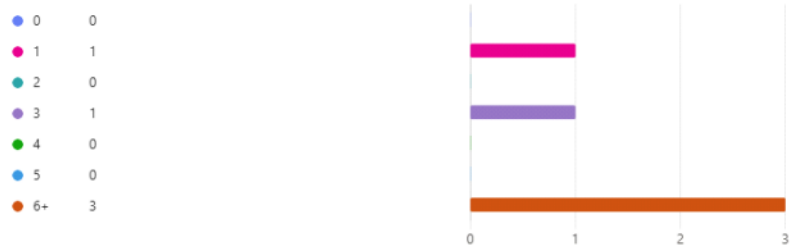
1. Which of the following apps do you use to enhance your running experience? (Tick all that apply)

More details



2. How many different apps do you use for your running experience?

More details



3. What do you use running apps for?

5 Responses

ID ↑	Name	Responses
1	anonymous	Recording and tracking runs, tracking progress
2	anonymous	To enhance my running, creating a plan I can follow
3	anonymous	Recording runs and reviewing analysis. Using the AI coaches to create running plans. Track calories
4	anonymous	Strava specifically to record runs, nothing else
5	anonymous	Triathlon training so I use all running apps and associated apps

4. Rank these features in order of importance (1 = Most important)

More details

5. How frustrating is it to switch between multiple apps? (1 = Not frustrating - 5 = Very frustrating)

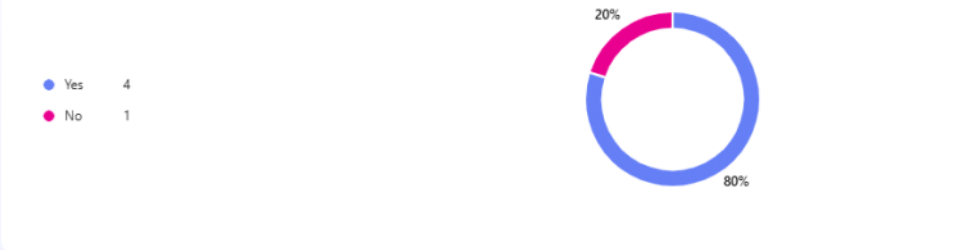
More details

6. To what extent do you believe a centralised running app is required? 1 (Not needed) - 5 (Essential)

More details

7. Would you be open to trying a centralised running app?

More details



8. What features would you want in a centralised running app?

5 Responses

ID ↑	Name	Responses
1	anonymous	All-in-one recording, tracking, analysis and sharing
2	anonymous	AI tool to generate my plan for me
3	anonymous	Interactive elements (AI coach can interact with music, analytics and nutrition can interact with your plan, etc.)
4	anonymous	Just the ability to record my runs and look at my recent routes and distances
5	anonymous	Definitely the ability to combine all forms of training (run, cycle, swim) in one local calendar to prevent the abundance of apps

9. What concerns would you have with a centralised running app?

5 Responses

ID ↑	Name	Responses
1	anonymous	Information overload
2	anonymous	If the app goes down, lose access to all features. Currently only use access to one app with some features
3	anonymous	Fear that once it has a monopoly of all runner's data, will it start charging for subscriptions to use it?
4	anonymous	I wouldn't make use of all of its features as I only run casually
5	anonymous	Will a centralised app with many functions be able to record and track as accurately as specialised running, swimming and cycling apps?

10. Any additional thoughts?

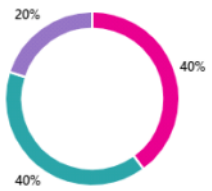
1 Responses

ID ↑	Name	Responses
1	anonymous	Personalised playlists that match my running plans

11. How many times a week do you typically run?

More details

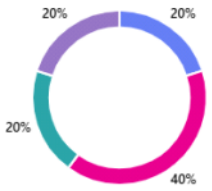
0	0
1-2	2
3-4	2
5+	1



12. What level of runner would you classify yourself as?

More details

Beginner	1
Intermediate	2
Advanced	1
Elite	1



Unit 1: What's the problem?

Wednesday, July 30, 2025 9:56 AM

Topic 1: How innovation shapes the world

Section 1: Innovation is Everywhere

According to the Cambridge Dictionary, "Innovation is a new idea or method, or the use of new ideas and methods."

List 5 things that would not have been around 10 years ago:

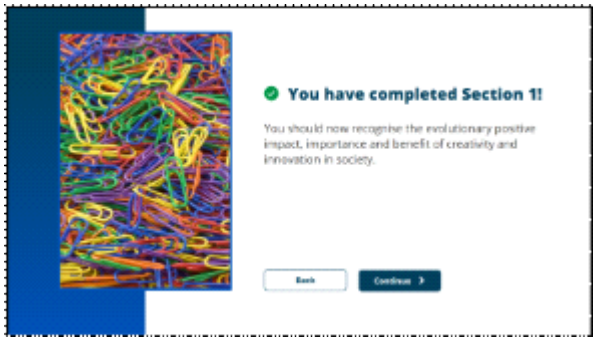
- Generative AI
- Air Fryers
- 5G
- Facial recognition on phones
- Deep fake technology

Which invention do you think has had the biggest impact on the development of society? I think the invention that has had the biggest impact on society is the Smart phone, which was invented in 1994, as almost everyone will have one in their pocket at any given moment, and as it combines so many other inventions such as cameras, wireless communication and internet connection, electricity, semi-conductors & transistors, GPS etc. I also think this as so many modern businesses and industries will tailor their inventions, developments and advertisements/promotions to the usage of smart phones and social media.

Is innovation changing things for the better? Across the world, deaths from natural disasters fell to less than half over the last 100 years, women aged 30 have spent 7 years in education and the percentage of people living in extreme poverty has almost halved.

"We will never have a perfect world. But there's no limit to the betterments we can attain if we continue to apply knowledge to enhance human flourishing" "Much suffering remains and tremendous peril, but ideas on how to reduce them have been voiced, and an infinite number of others are yet to be conceived." – Steven Pinker, 'Enlightenment Now' (2019)

I still believe the invention with the biggest impact is the smart phone as it changed almost every single person's everyday life and how they behave and act and live.



Section 2: The onward march of technology

The fourth industrial revolution is defined by Klaus Schwab, the founder and executive chairman of the World Economic Forum, in his book 'The Fourth Industrial Revolution'

(2016).

The Fourth Industrial Revolution:

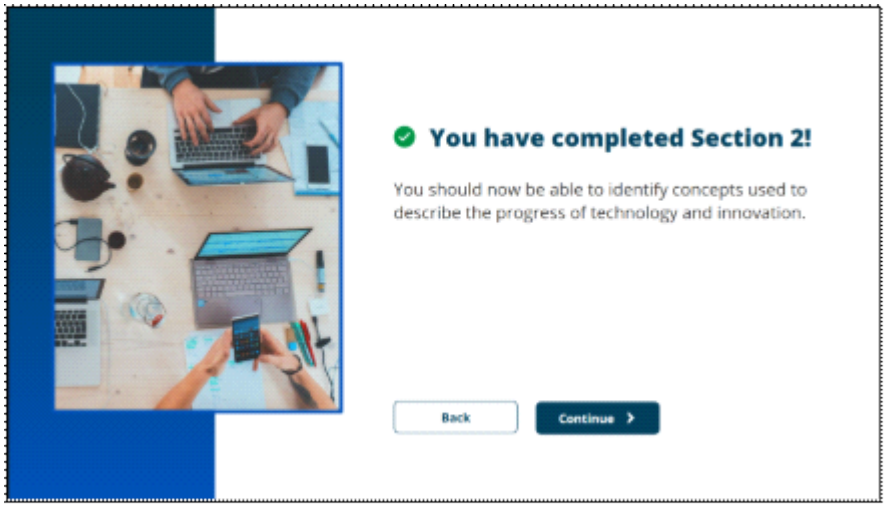
- The advent of ‘Cyber-physical systems ’involving entirely new capabilities for people and machines.
- Represents entirely new ways in which technology becomes embedded within societies and even our human bodies.
- Examples include:
  - Genome editing
  - Machine intelligence
  - Breakthrough materials
  - Cryptographic methods, such as blockchain
- Society becomes increasingly reliant on the trust of the security of technology.
- “There has never been a time of greater promise, or one of greater potential peril” – Klaus Schwab, 2016
-

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

The World Economic Forum has identified 6 technologies that will change our world:

- Computing capabilities
- Big data
- Digital health
- The digitisation of matter
- The Internet of Things (IoT)
- Blockchain

I think either computing capabilities or big data will have the biggest impact on my discipline area (software engineering) in the next 3-5 years, as sometimes code will be run on massive datasets so having greater computing capability will help, as well as big data collection increasing the size of the dataset.



Section 3: Creativity and You

Do you consider yourself to be a creative person? Yes. As a software engineer, I must always be able to provide creative and innovative solutions to real world problems.

Creativity is a mindset. It is an identity that we hold about ourselves. Creativity is inherent within every single human and is within everything around us. Creativity is not limited to the outcome but is preset within the process to get to the outcome. It is creativity, not replication that will give us a competitive edge, making individuals indispensable and organisations sustainable. Creativity drives innovation, leading to new and unique ideas.

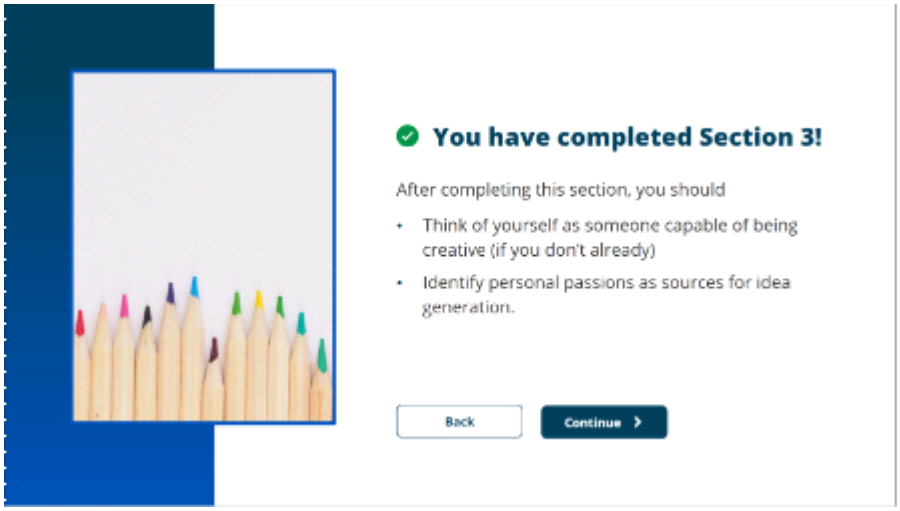
"Only 25 percent of individuals feel that they're living up to their creative potential. That's a lot of wasted talent." – Kelley and Kelley, 2015.

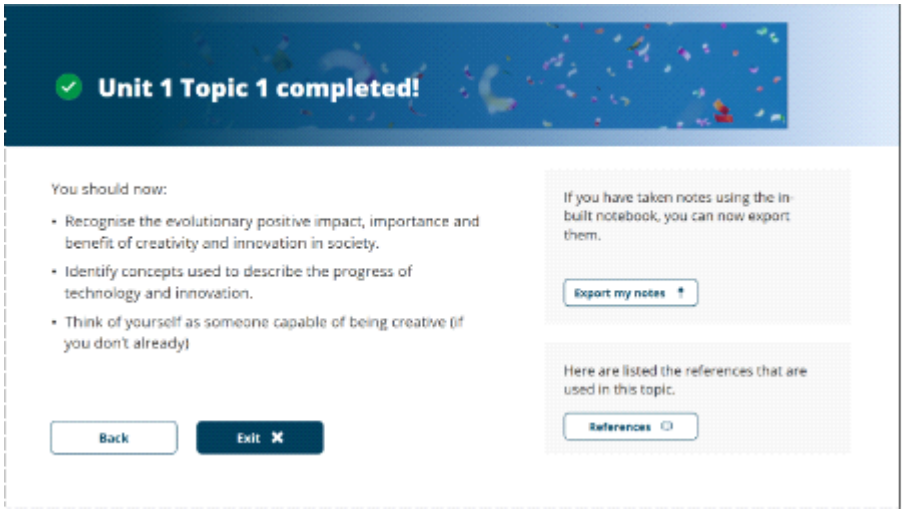
"Picasso said that all children are born artists, the problem is to remain an artist as we grow" – Ken Robinson, 2006.

Creativity is important in my subject area as there are many ways to perform tasks with code, so creativity allows us to design innovative solutions to complex problems.

According to Descartes, the human mind can experience a variety of 6 basic passions:

- Wonder – Response to something surprising, novel, unusual or extraordinary
- Desire – Future-oriented response to something perceived as good or as an evil
- Love – Response to considering something as good or beneficial for oneself
- Hatred – Response to considering something as bad or harmful to oneself
- Joy – Response to the thought of a present good or perfection, represented as one's own
- Sadness – Response to the thought of a present evil or defect, represented as one's own

- 



Topic 2: How do you solve a problem?

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

Describe the last time you felt as though you were being creative. The last time I felt I was being creative was in work, when I was trying to adapt an existing code to work differently on a new system. It made me feel proud that I'd developed my coding skills to be able to adapt code to perform new tasks, as well as made me feel rewarded as I discovered that I'd written the original code in a way that was scalable and dynamic, so that it could be reused.

The BBC Arts Great British Creativity Test discovered that there are 3 main ways we use creativity as coping mechanisms to control our emotions:

- A distraction tool by using creativity to avoid stress
- A contemplation tool by using creativity to give us the mind space to reassess problems
- A means of self-development to face challenges by building up self-esteem and confidence

"Rather than hoping that creativity emerges over time, this might be the most effective starting point for any educational experience. After all, if students and academics within the academic community are confident in their creativity, resilience and wellbeing will undoubtedly follow. If creativity and wellbeing are fully developed, universities can perform more effectively as a power source for creativity and wellbeing in communities and

society." – University of Derby

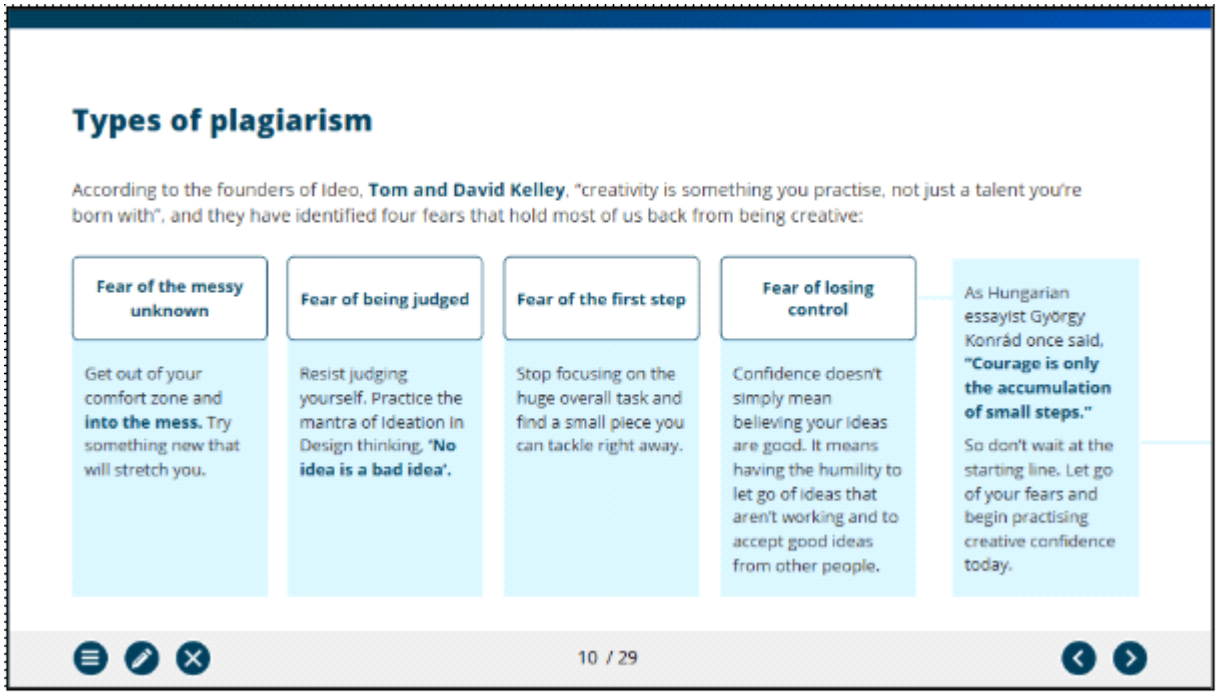
The importance of play:

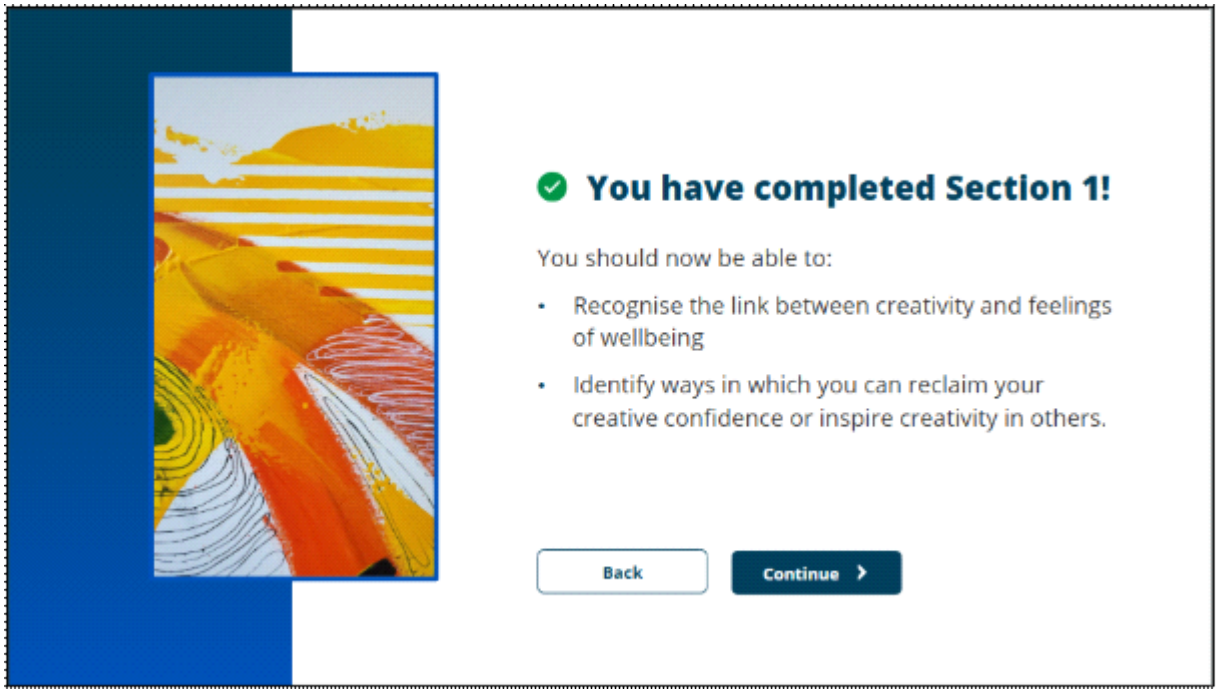
- Play leads to greater productivity, more creativity, greater health and happiness
- Learning/Educational games are becoming more popular as they lead to an increased overall mood and happiness level.

What is creative confidence? Why is it important for our wellbeing? Creative confidence is having the ability to think freely, without fear of shame, or fear of judgement, or fear of some sort.

What is self-efficacy? How does this tie in with creative confidence? Self-efficacy and creative confidence are one and the same thing. It's having the ability to move through your emotions without lack of fear and lack of judgement.

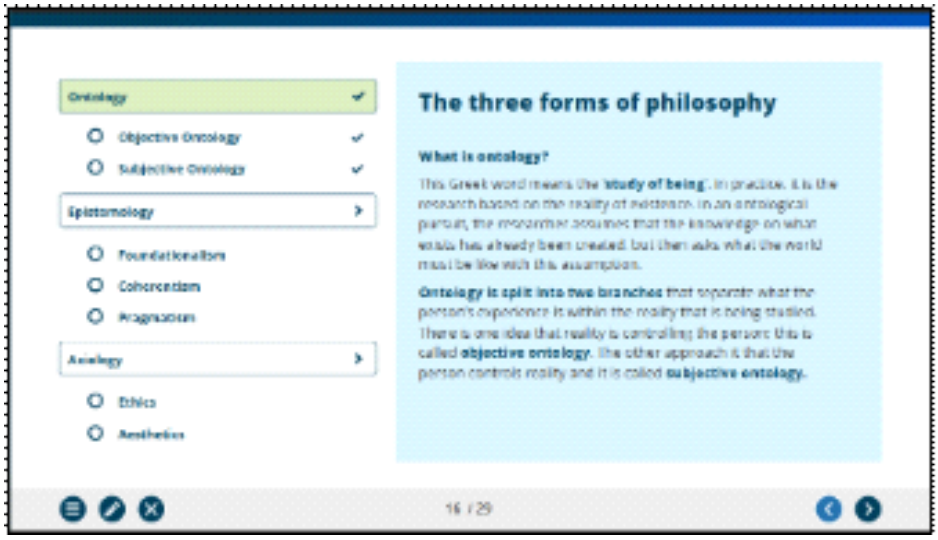
How can we work on building our own creative confidence? The first step is to understand what your current belief systems are around creativity. What your current mindset is surrounding the way you view yourself. This is because we live who we believe we are. Often, we can get wrapped in our limiting stories, our limiting world views, and sneak into confirming our own identity, even if it's one that limits us. Because we often create ceilings for ourselves, but these ceilings are often glass ceilings, that we can smash through at any moment, as long as we're willing to be open-minded, curious, and accepting.

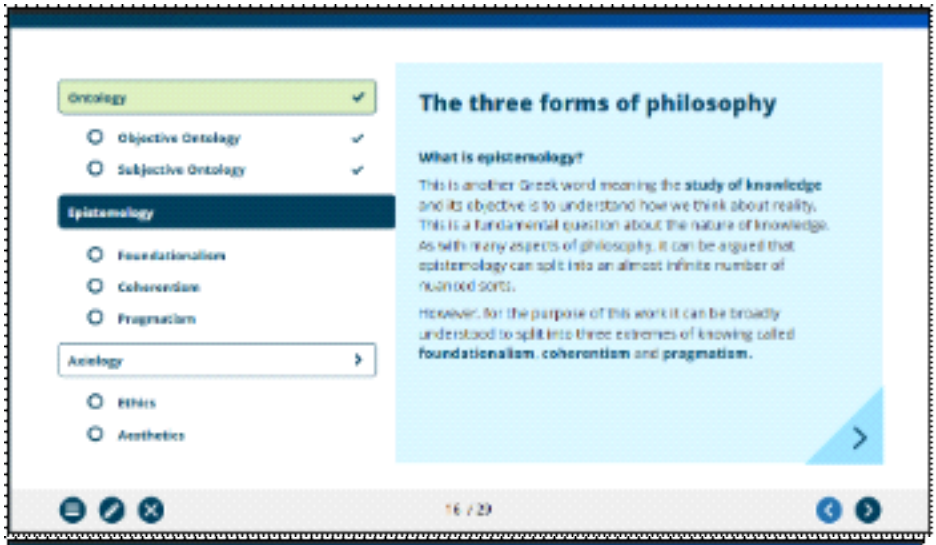


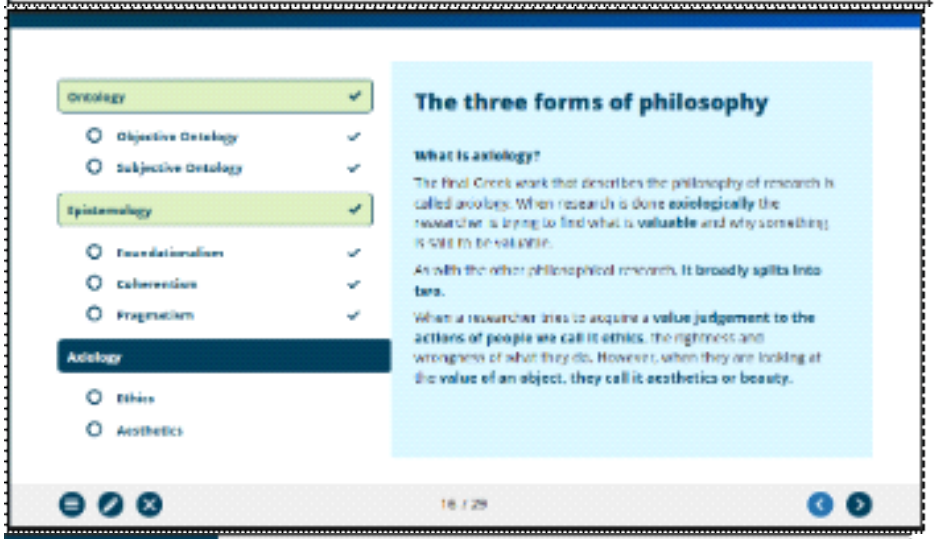


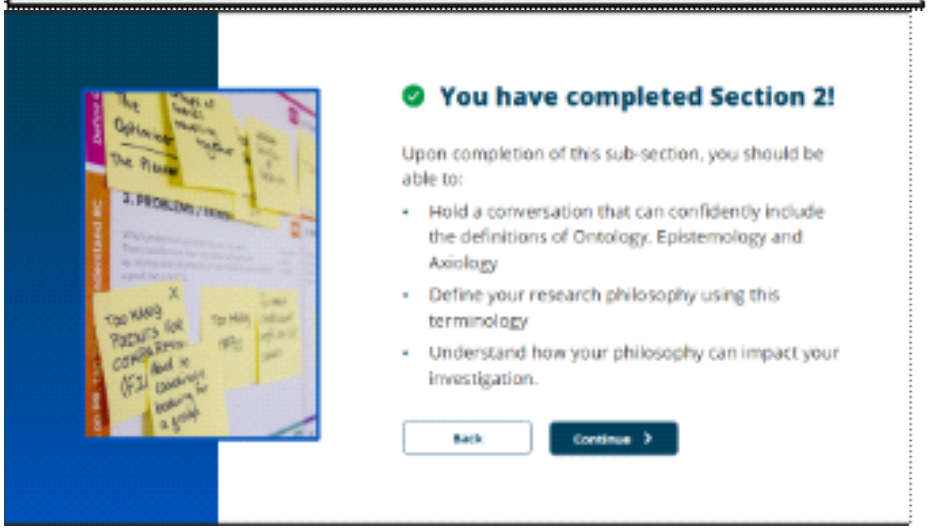
Section 2: How your philosophy impacts your research

Philosophy is the study of knowledge and reality, and research is the action of making knowledge. The philosophy of research is split into three broad forms, called Ontology, Epistemology and Axiology.









Section 3: Identify your research philosophy

In simple terms, research philosophy is an individual's belief about the ways in which they will collect, analyse and use data for a project.

The Positivism Research philosophy

In essence, the positivist approach is one that is led by science. There is an assumption that there is only one truth that has considered as a 'given' or 'posited'. The positivist is looking for factual knowledge that is gained by observing a phenomenon, collecting the data, and interpreting it in strictly objective ways.

The Critical Realism Research philosophy

This philosophy assumes a scientific approach to the development of knowledge but is nuanced from positivism as it does not require the restrictions of science to be proven. Knowledge is real if it can be experienced by the senses as exemplified by the phrase 'what you see is what you get', and is then retrospectively explained using thought. However, critical realists also accept that we can be fooled by things like optical illusions as they understand that there is a bigger picture in play.

The Interpretivist Research philosophy

At the other end of the continuum from positivism are interpretive researchers. They assume that access to reality is only through social constructions. They believe that you cannot use science to understand people. Interpretivists understand that the people they study may not even be aware of the ideas they action. As a consequence, they tend to use qualitative methods to analyse language, consciousness and shared meanings.

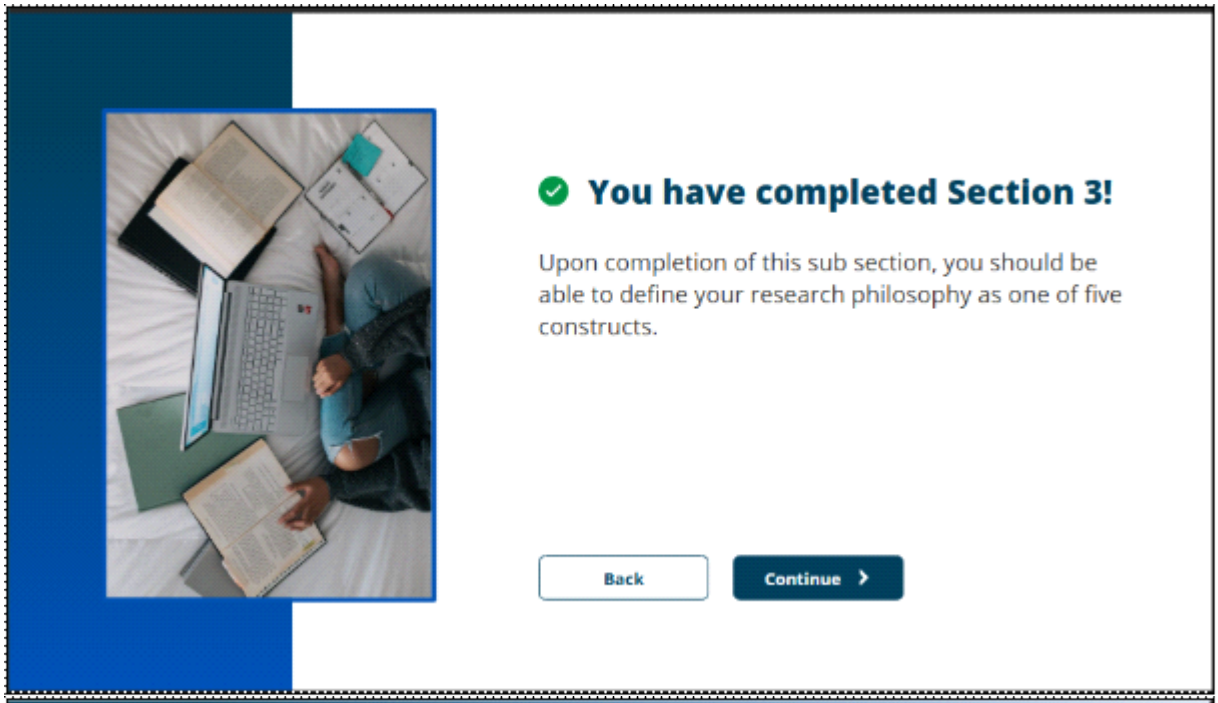
The Postmodernist Research philosophy

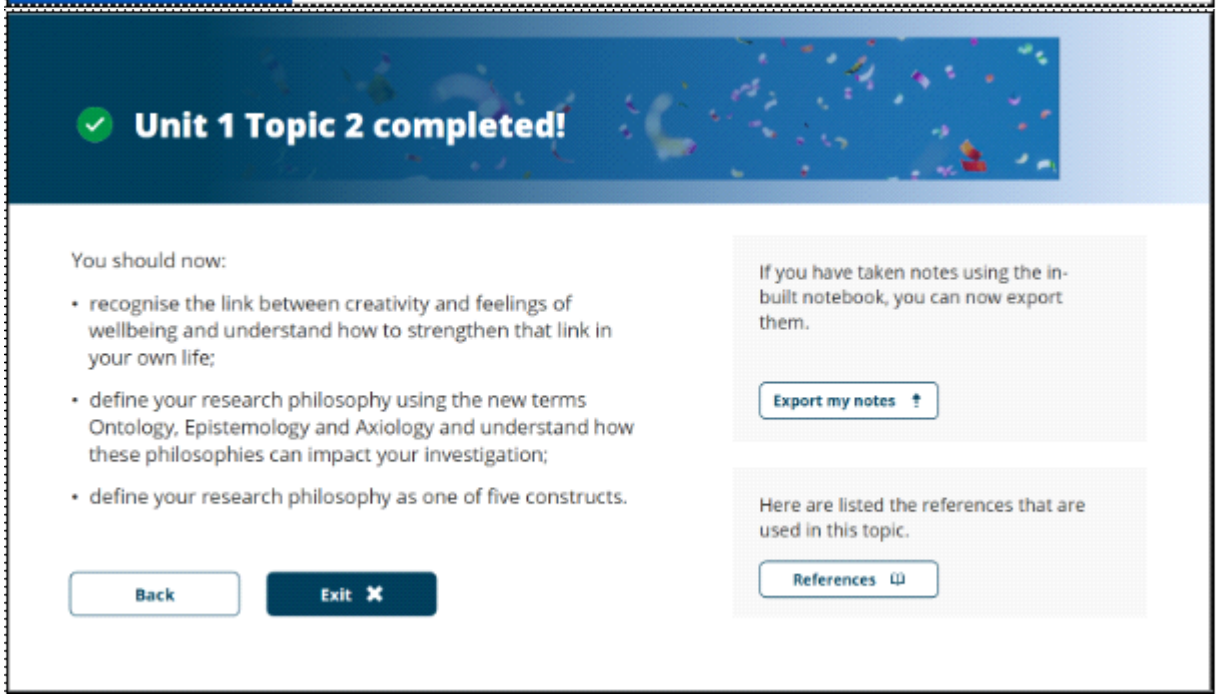
The goal of postmodern research is to challenge established thinking. It does this by exposing the ideas embedded in the way we use language to explain the reality in which we exist. Postmodernist researchers use this approach to explain how the world understands rather than a prescribed meaning made by those in 'power'. It believes that it can expose marginalised and accepted perspectives that may well have been excluded..

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.

I am most drawn to Critical Realism as I prefer an approach that is led by science and factrual knowledge, however I also like the option of the nuance that it does not require the restrictions of science to be proven, as that allows things to be open to interpretation and to the bigger picture.

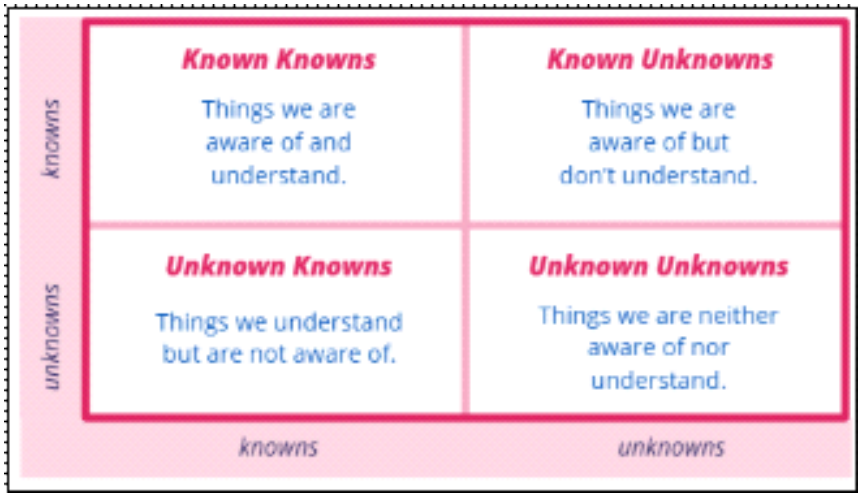




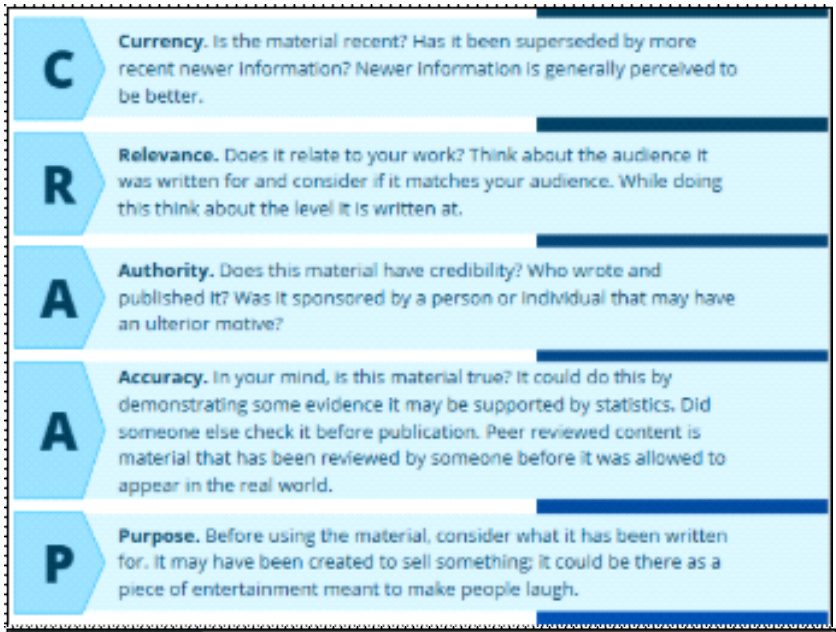
Topic 3: The known knowns

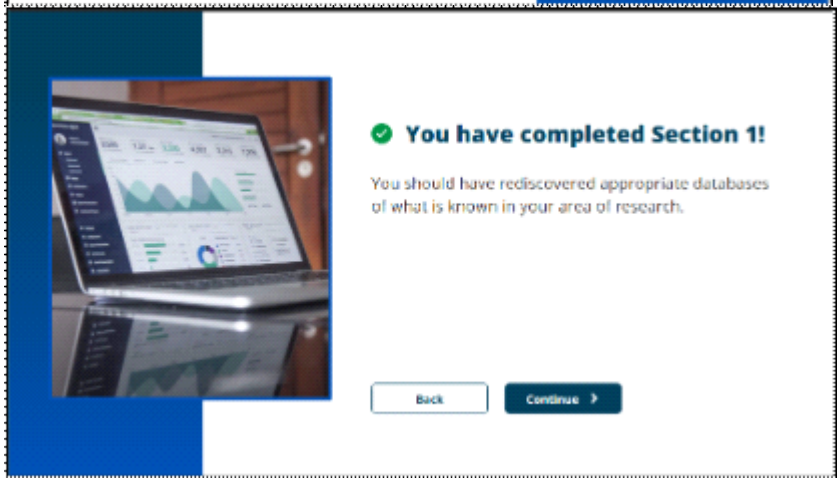
Section 1: Selecting an appropriate database

"There are known knowns. There are things we know we know; we also know there are known unknowns, that is to say, we know there are some things we do not know. But there are also unknown unknowns, the ones we don't know we don't know." – Donald Rumsfeld



What is a database? In research terminology, a database is any digital resource of information.





Section 2: Using Boolean search strategies for identifying research

Keywords – The core words that will make it easier for a computer to search for a question

Keywords should be:

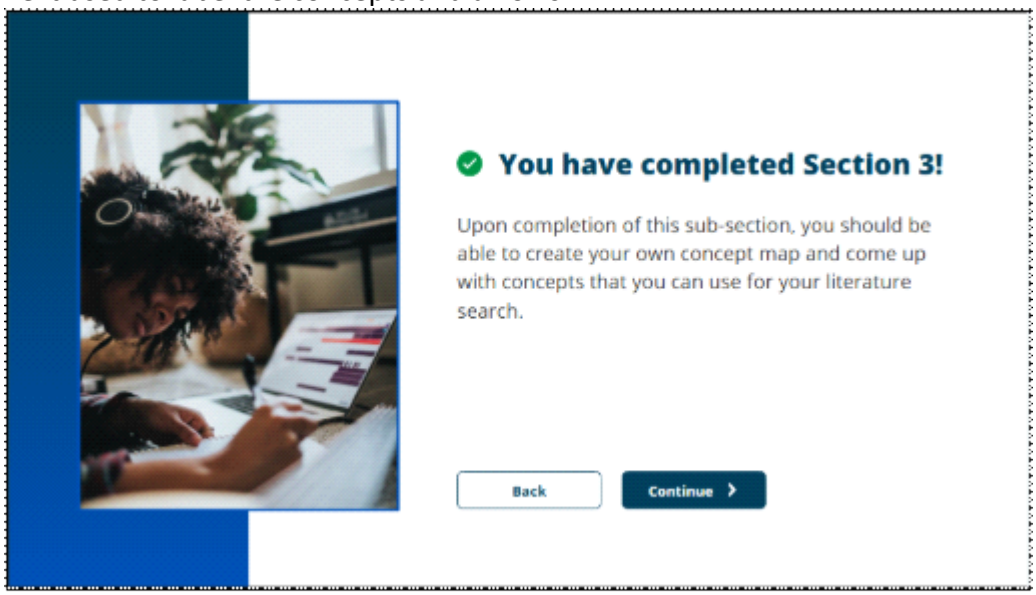
- Contained within speech marks if more than one word
- Ended with a wildcard (*) if there are multiple variations of the word
- Combined using Boolean operators in order to narrow down searches
- Used to find new keywords to improve future searches

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 a way that nothing is ever decided. This can be dispelled using a concept map.

A concept map is similar to a mind map; however, it starts with more discipline from the top of the page and works down, in order to in traduce structure and form.

A concept map should include:

- Shapes for each concept to be written within
- Arrows to be used as directional pointers, showing the relationship, labelled with the directional relationship (the proposition), between the two concepts
- Text used to label the concepts and arrows
- 

Topic 4: The problem is…

Section 1: Finding themes for your literature review

Crafting a research question:

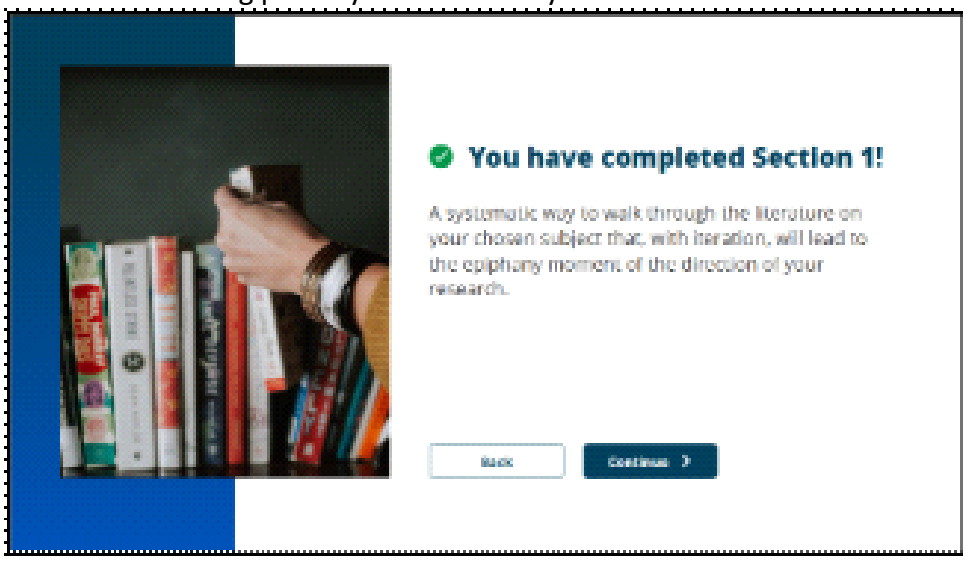
- Bring fresh ideas to the table
  - Needs to be problematic and inspiring
- Find nuance
  - The problem must have enough complexity so that a debate can be applied by the audience to answer
- Contribute to wider society
  - Becomes the roadmap to the ability to contribute to the world

- Craft a thesis statement
    - Describes the scope, purpose and direction of the essay

Areas of focus for the research question:

- Fresh thinking
    - Lack of current research
- Conflicting evidence
    - Differences in evidence
    - Whether an idea succeeds or fails
- Converging evidence
    - When several evidence sources start to agree
- When does it end?
    - When material starts to repeat itself

The research question should be:

- Focused on a single issue
- Specific enough to be answered within the word count, yet complex enough to be answered without a simple trawl of the internet
- Relevant to your chosen field
- Researchable using primary and secondary data collection
- 

Section 2: Developing a hypothesis

Think back to when you made a purchase of something valuable. What did you do before parting with your money? I weighed up the pros and cons of purchasing it. I also determined whether it was a 'want' or a 'need'. I also compared to alternative products to see if there were any cheaper alternatives.

A hypothesis is a question that can be used to predict an outcome, by framing an answer with a question that can be tested. A good hypothesis should have a way of approval or rejection with a test, that answers positively or negatively.

Developing a research question:

- Ask a question
- Base your research on your literature review

- Formulate your hypothesis
- Refine your hypothesis

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.

Examples:

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.
What effect does daily use of social media have on the attention span of under-16s?	There is a negative correlation between time spent on social media and attention span in under-16s.	There is no relationship between social media use and attention span in under-16s.

You have completed Section 2!

How to create a series of testable questions that, once answered, will further the understanding of your research question.

Back | Continue

Section 3: Using feedback to improve

How do you truly feel when you learn something new? I feel good that I have gained new knowledge and hope that it will be useful when applied in the future.

How do you truly feel when you're told that you're wrong? I feel a minor feeling of upset as I was wrong, however feel promise that I have now corrected my knowledge and again hope to use this tailored knowledge to future application.

Receiving feedback:

"Feedback can often challenge our opinions, our beliefs, our values. When those are all challenged our ego wants to step in and protect our worldview and protect our identity. It can have our nervous system feeling like this is a direct threat to our very existence. As human beings, we all have core needs of being seen and validated and heard. However, feedback is often framed in a way that is very unsupportive of this and can have us just feeling like it was more judgment and shame and guilt."

Feedback can be positive or negative, meaning it could agree or disagree with your research. Developing the ability to respond to negative feedback is a core skill we all need to develop.

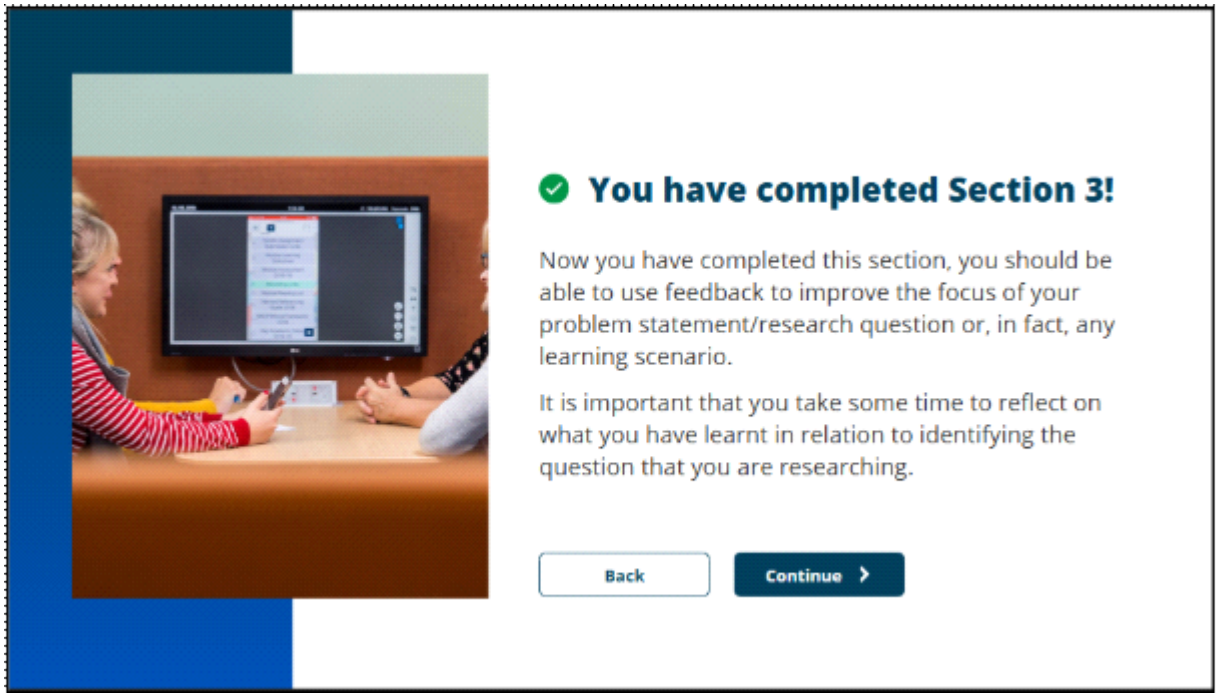
A bad response to feedback is "fight or flight" which would mean to disagree back or ignore it. Instead, we should "rest and digest" which means to see it from their perspective and understand their point of view.

Another bad response to feedback is to remove the "rear view" idea of looking back, refusing to look back and reflect on previous work. Instead, we should use this reflection to analyse past decisions and outcomes to "feed forward" into future work.

Not all feedback is good feedback. Excellence is not the opposite of failure. Excellence is a multidimensional achievement that is idiosyncratic: it is defined by the observer, and their observations may be wrong.

When reviewing feedback, we must be mindful that it is an opinion. It is a reaction to your work and is subject to misinterpretation in both directions.

Thank the person for feedback then (after some contemplation) ignore it if necessary, but extract the essence of what is being given, both the positive and negative – John Cleese


You have completed Section 3!
Now you have completed this section, you should be able to use feedback to improve the focus of your problem statement/research question or, in fact, any learning scenario.
It is important that you take some time to reflect on what you have learnt in relation to identifying the question that you are researching.
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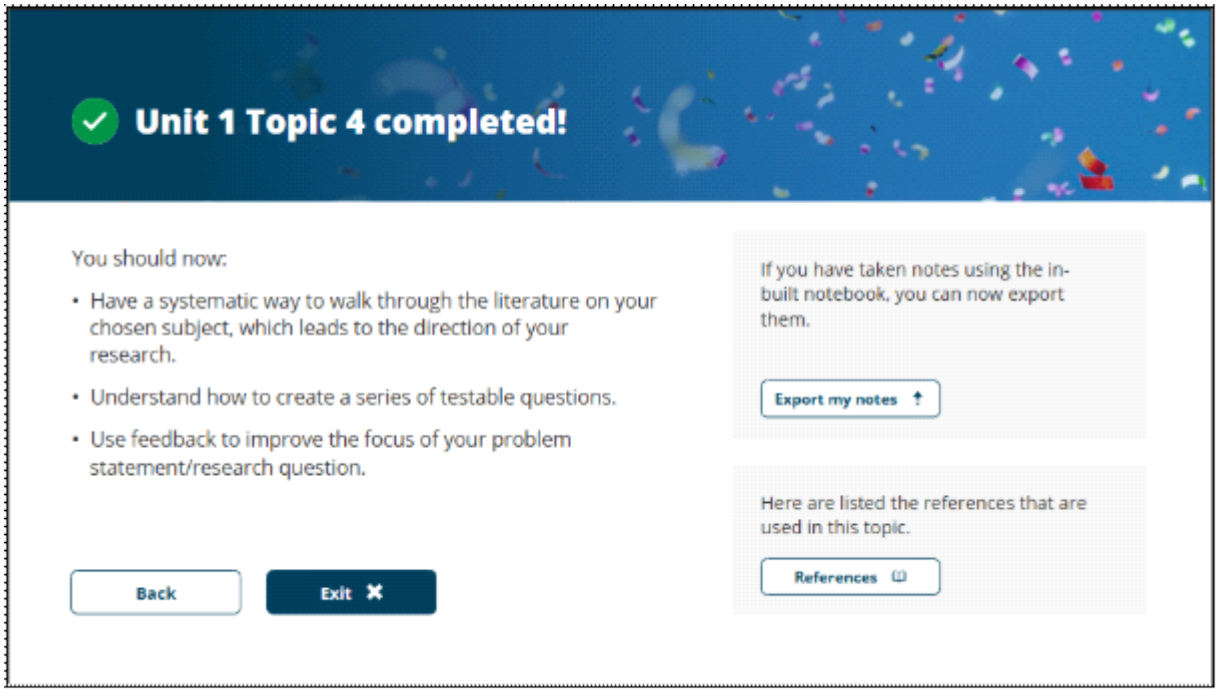
Unit 1 Topic 4 completed!
You should now:
• Have a systematic way to walk through the literature on your chosen subject, which leads to the direction of your research.
• Understand how to create a series of testable questions.
• Use feedback to improve the focus of your problem statement/research question.
Back
Exit
If you have taken notes using the in-built notebook, you can now export them.
Export my notes
Here are listed the references that are used in this topic.
References

Unit 2: The worst possible idea

Friday, August 1, 2025 1:08 PM

Topic 1: Choosing the right approach

Section 1: Awareness of investigative approaches

Investigation approaches:

1. How an existing body of knowledge fits with reality
2. Reverse engineering an explanation of events based on personal observation
3. To judge the reality of the subject based on a probable outcome

Which approach did you take to your best past assignments? My investigation built an answer from existing evidence and then went on to show its use. This is a '**Deductive Reasoning'** approach.

Reasoning approaches:

Deductive reasoning

Deductive reasoning takes a **general principle** and reduces it into the **specific case** we are researching. When we use the word **'deduce'**, we are decreasing a general principle down and applying it to a specific situation to form our conclusion.

This is the approach that is often associated with the scientific method. Deduction fans consider the truth is made by **positive comparisons** between primary data collected in the field to a reputable secondary published source. You may remember this approach in Ackoff's DIKW research method.

Next ›

Deductive reasoning

Deductive reasoning tries to reduce the assumptions made to the ones that match existing theory. Classically, this is demonstrated as follows:

- Socrates is a man (major premise)
- All men are mortal (minor premise)
- Therefore, Socrates is mortal (conclusion).

Next ›

Deductive reasoning

We casually practice this sort of reasoning all the time. For example, we deduce that adults in civilised society observe laws, knowing that a person who breaches the laws will be punished, as civilised adults observe the law.

Inductive reasoning:

- The mutual opposite of deduction
- Observe a pattern of 'special cases' and increase this to become a larger general principle, that can be applied universally to other phenomena we or the reader of our assignment have yet to see.

There are broadly 2 forms of arguments that our research will make, and they fall into wo categories of argument: logic and judgement.

Logic

Induction and deductions are the thinking that you would attribute to Mr. Spock, the character in Star Trek. They use **logical narrative** to prove something is either true or false. This approach is modelled on mathematics and theoretical physics and clearly works in these environments, but can be challenging if your field of study is not so precise.

Subjects that have a more real-world context are much more messy than pure subjects like maths, philosophy and theoretical study. **It is rare to find** field evidence that can categorically be attributed to a particular theory or law. As such, a more nuanced approach to argument needs to be made.

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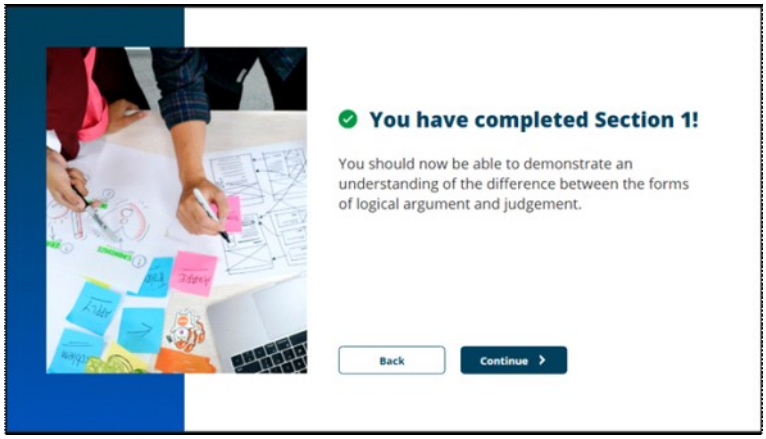
Overview:

- A goal of research is to present a way of informing our future belief going forward.
- Deductive arguments are where we take an existing view and show that it is still current.
- Inductive arguments are where we examine our observations and retro fit to an existing recognised work.
- In cases where there is not a clear link between observation and theory, we can use our judgement to advise on what we think is the best fit to an observation made.



Section 2: Identifying the purpose and approach to your research

What is the purpose of your research? Research is a way of expressing interest in a phenomenon by reducing thoughts into a more manageable way and acts like a guiding star that can be referred to, to keep research on track.

1. Choose a broad topic that also triggers personal interest
2. Do some reading around the subject
3. Narrow down the thinking to a specific niche
4. Further specify research by narrowing down to a problem that can be seen practically or that can occur from a theoretical point of view

Research aims	Research question formulations
Describing and exploring	• What are the characteristics of X? • How has X changed overtime? • What are the main factors in X? • How does X experience Y? • How has x dealt with Y?
Explaining and testing	• What is the relationship between X and Y? • What is the role of X in Y? • What is the impact of X and Y? • How does X influence Y? • What are the causes of X?
Evaluating and acting	• What are the advantages and disadvantages of X? • How effective is X? • How can X be achieved? • What are the most effective strategies to improve X? • How can X be used in Y?

To solve a problem, make sure the problem state:

- Is specific
- Is clear
- Refers to the phenomenon
- Reflects the intervention in experimental research
- Notes the target group of part

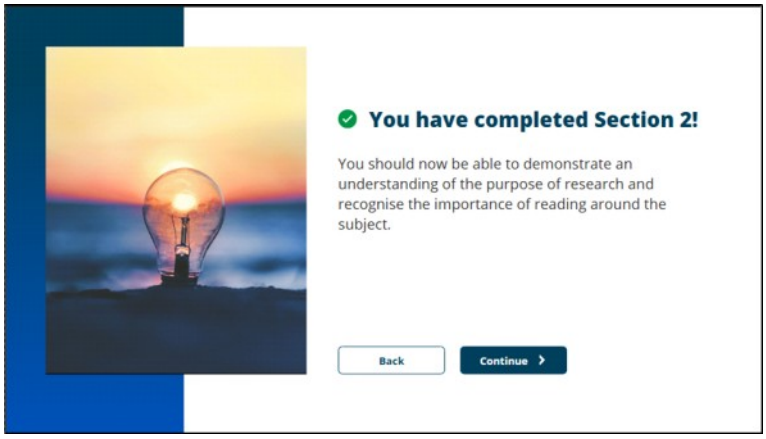
Also, dedicate time to curating the nature of the problem, then work out your research aim by reading around the subject, whilst narrowing down to a niche that you find interesting and has a challenging argument in the public domain.

How to develop a STRONG research question:

1. Choose a broad topic
2. Do some preliminary reading about the topic
3. Narrow down to a specific niche
4. Identify a research question
5. Write your research question

A good research question should be:

- Focussed
- Researchable
- Feasible
- Specific
- Complex enough
- Relevant



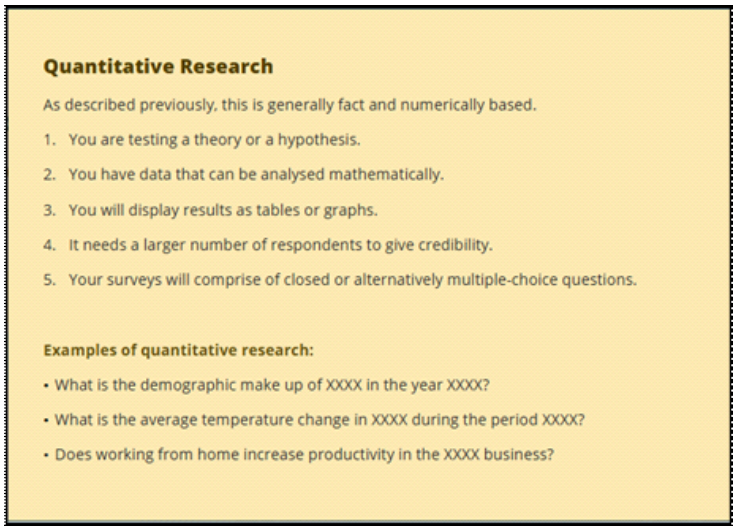
Section 3: Compare and contrast quantitative and qualitative research methods

Quantitative research uses the testing of facts and figures. The conclusions are usually to confirm a closed question and leans towards a more logical argument. It may be framed by the sort of problems posed by 'explanation and testing'

Qualitative research uses open-ended questions that are generally wordy in nature. There is a sense that the problem being addressed is more exploratory in nature. Conclusions tend to form from open-ended questioning. This method of research leans on abductive judgement argument.

What do you think is the predominant method of research in your subjects: quantitative or qualitative? I think the predominant method of research in my subjects of computing and software engineering is quantitative research, as it generally involves the use of measuring data such as code size, run time and performance metrics, as well as statistical analysis to analyse large datasets, identify patterns and draw conclusions about the effectiveness of a software development process. Software engineering is obviously a form of engineering, emphasising the use of measurement, experimentation and analysis.

Now think of the alternative method. What subjects would favour that sort of research? The subjects that would favour qualitative research methods are those that are more exploratory and open to interpretation, such as social sciences and marketing.



Qualitative Research

As described previously, this research favours an approach that focuses on an exploration of ideas and devising theories or hypotheses.

1. You analyse your data by classifying, categorising and then interpretation.
2. Your results are typically verbose and expressed in words.
3. This sort of research requires relatively fewer respondents.
4. Surveys mostly illuminates insight from surveys that have open-ended questions.

Examples of qualitative research:

- What is the nature of XYZ?
- What are the lived experiences of ...?
- What is it like being ...?
- Does working from home increase productivity in the XXXX business?

- It may be applicable to approach research with a combination of both quantitative and qualitative research
  - If the data is predominantly numerical, use quantitative
  - If the data is predominantly wordy, use qualitative
- The method is also directed by the inductive, deductive and abductive reasoning

In 100 words, describe why mixed method research is applicable or inapplicable for your subject:

Mixed method research is applicable for the subjects of computing and software engineering because it caters to quantitative research in terms of the use of measuring data such as code size, run time and performance metrics, as well as statistical analysis to analyse large datasets, identify patterns and draw conclusions about the effectiveness of a software development process, whereas it also caters to qualitative research in terms of the impact of software on human behaviour and the research into what the users might need to work efficiently on a new system.

Quantitative data collection methods

Surveys can be created using Microsoft Forms (or other apps). Through this approach, you could send a URL link to people.

Experiments examine a causal variable and then observes the effect on another variable. Example quantitative experiments are:

- When it is possible to alter causal variables. An example could be to see how increasing the price of attendance to a concert effects the amount of people attending.
- When it is not possible to alter the casual variables. An example could be to see what the relationship between home ownership and how healthy people are.

Qualitative data collection methods

Interviews could be made asking open-ended questions verbally to respondents i.e., **What do you think are the main character features of Meghan Markle?**

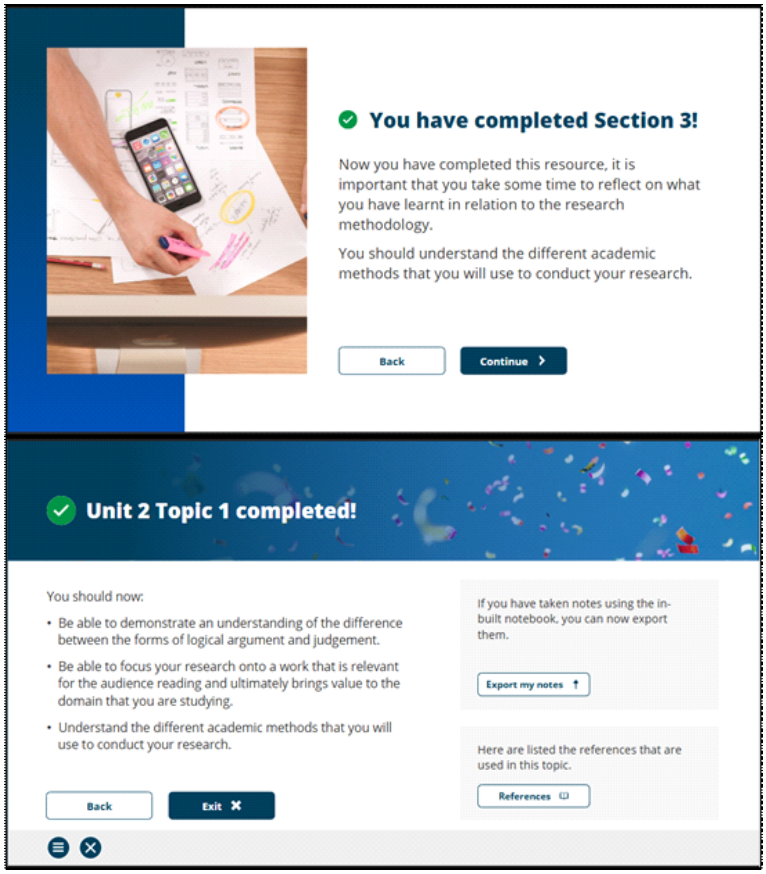
Focus groups are discussions that are observed of a group of people who have opinions on a particular subject i.e., **What would be the approaches to child safety in Swansea and Carmarthen area?**

Ethnography is a practice where the researcher is embedded into a particular community or organisation with a view to intimately observe culture and behaviour i.e., **Living with a low income in an area of deprivation to research the impact on anxiety.**

A literature review is a broad survey of existing published works by other researchers i.e., **survey of the films of George Lucas (1980-1996) and his impact on the science fiction genre.**

Quantitative drop zone	Qualitative drop zone
Focuses on testing theories and hypotheses	Mainly expressed in words
Analysed through math and statistical analysis	Requires few respondents
Mainly expressed in numbers, graphs, and tables	Open-ended questions
Requires many respondents	Analysed by summarizing, categorizing, and interpreting
Closed (multiple choice) questions	Key terms: understanding, context, complexity, subjectivity
Key terms: testing, measurement, objectivity, replicability	Focuses on exploring ideas and formulating a theory or hypothesis

Quantitative drop zone	Qualitative drop zone
Experiments	Observations described in words
Observations recorded as numbers	Interviews with open-ended questions
Surveys with closed-ended questions	Literature reviews that explore concepts and theories



Topic 2: Finding a needle in a haystack

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

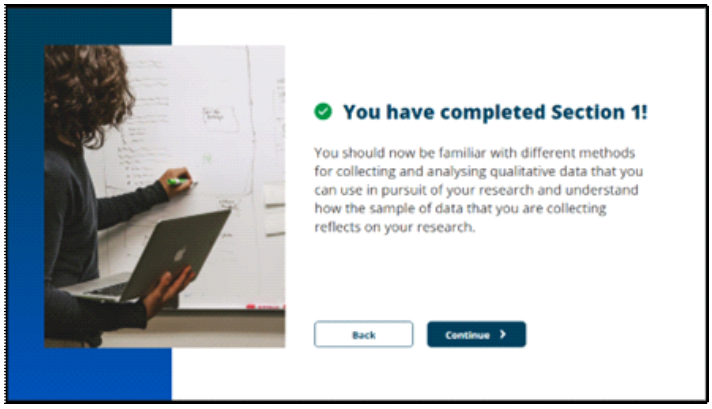
Data is being collected around us everywhere and every day.

The Hawthorne Effect refers to Elton Mayo's experiments which were conducted at the Hawthorne works in late 1920's. Mayo realised that his experimental results were confounded by the participants' awareness that they were being observed, making them act in an unnatural way as they were aware they were being watched. This is known as the Hawthorne effect. This means that if research is based on an overt observation of people, the data can be considered biased.

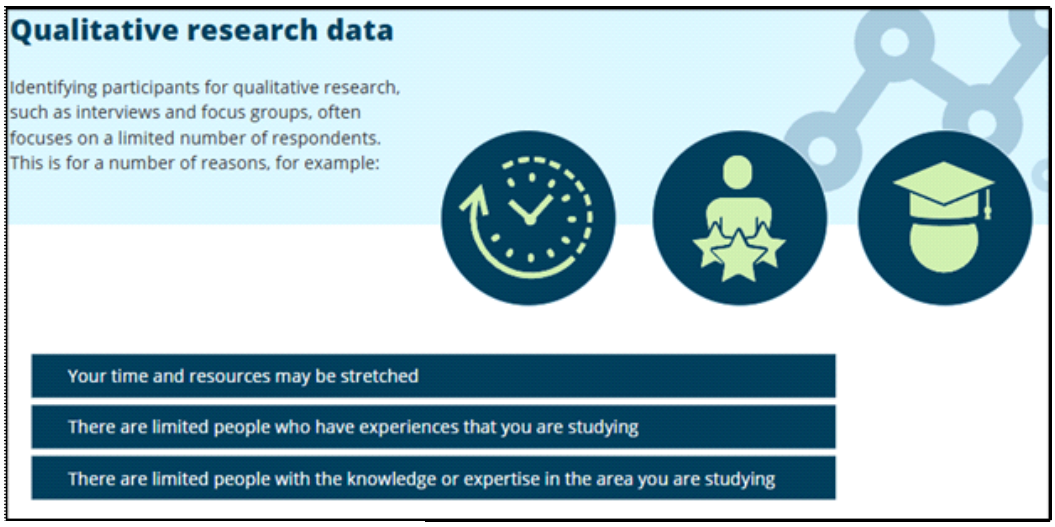
The most common data observation methods are:

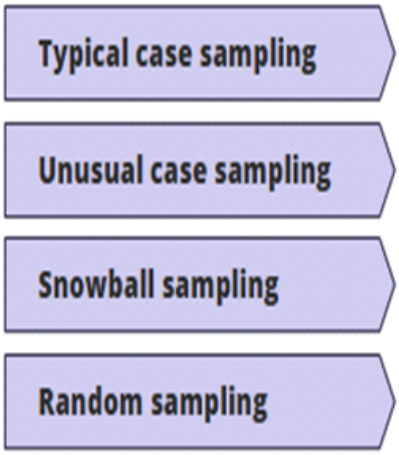
- Surveys
  - Collect data about opinions, behaviours, experiences and demographic characteristics by asking people directly
  - Questionnaires
    - Quantitative
    - Closed questions with multiple choice answers or rating scales
    - Collects data from many people and analyse the response statistically
  - Interviews
    - Qualitative
    - Allow answers to be given in own words
    - Follow up questions can be asked and explored in more depth
    - More time consuming and usually involves a smaller group of participants
- Observations
  - Quantitative
    - Systematically measuring or counting specific events, behaviours or characteristics
    - Clear, objective rules to ensure the same things are counted
  - Qualitative
    - Taking detailed notes and writing rich descriptions of what is observed

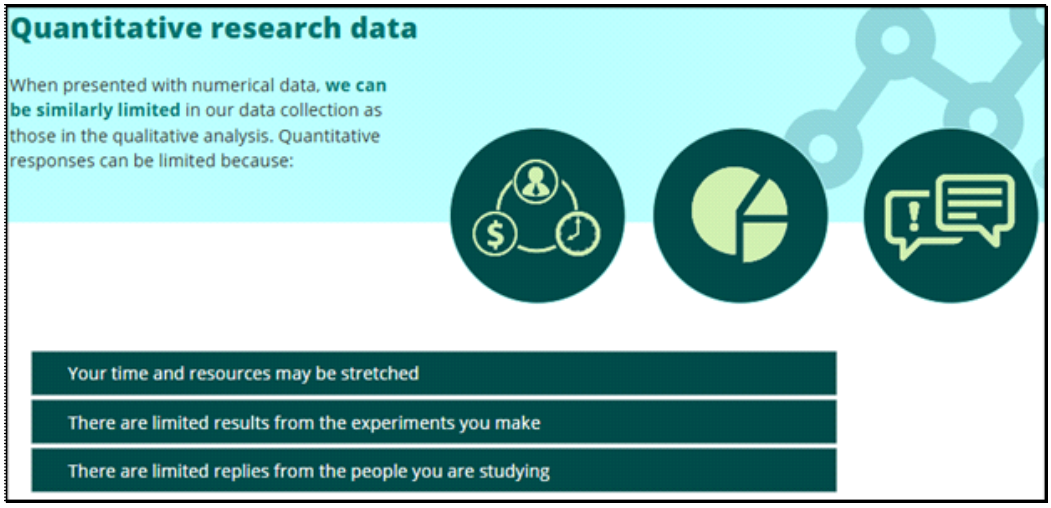
Given an appreciation of the different approaches to data collection, can you think of a way of collecting data that would be appropriate for your next assignment? For my next assignment, I will collect data by performing both questionnaires and interviews as this will allow me to obtain both quantitative and qualitative data. As this assignment could be designing a system to be used in work, my research would be based on what is on the current system, problems with it, improvements that could be made, suggestions etc. This will also avoid the Hawthorne effect as no observations are being made, so participants will not be biased or unnatural in their response.

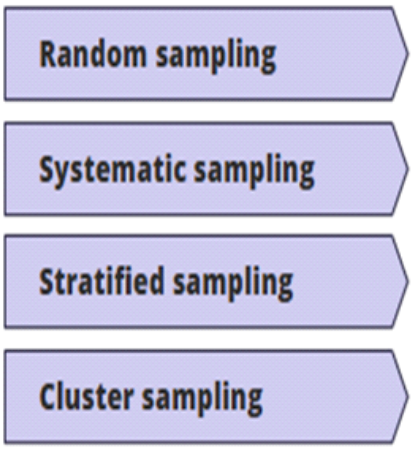


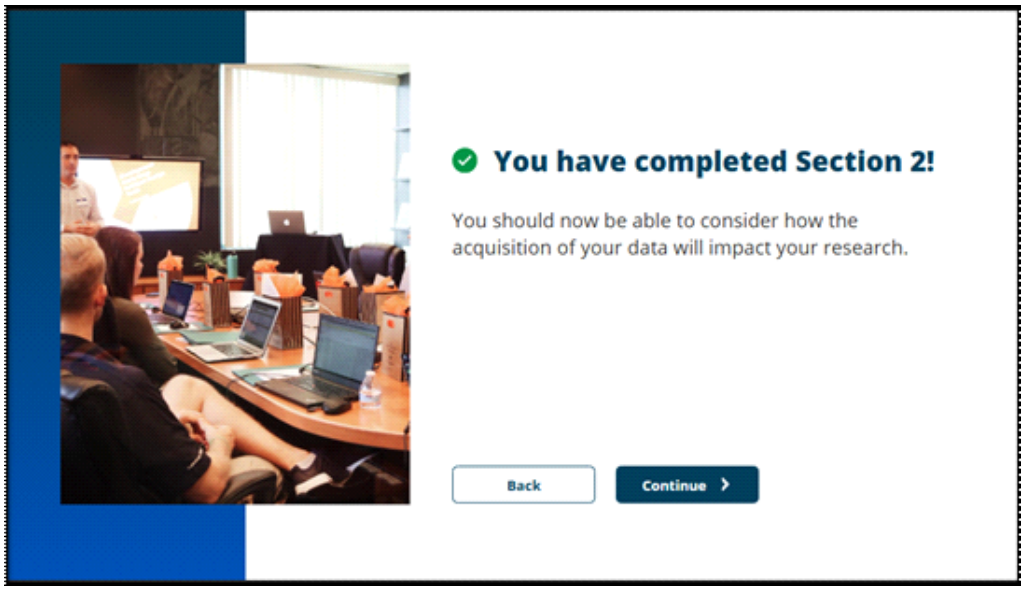
Section 2: Develop appropriate sampling strategies to enhance validity, reliability and generalisability











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

My research is about...	Most like	Somewhat like	Neither	Somewhat unlike	Most unlike
	Score 5	Score 4	Score 3	Score 2	Score 1
Testing a causal relationship	○	○	○	○	●
Understanding the general opinions of a group	●	○	○	○	○
Gaining the perceptions of a group	●	○	○	○	○
Understanding something in its natural setting	○	○	●	○	○
Understanding the culture of a community 1st hand	○	○	●	○	○
Understanding current or historical events or practice	●	○	○	○	○
Analysing populations where you don't have access	○	○	○	○	●

Data collection procedures:

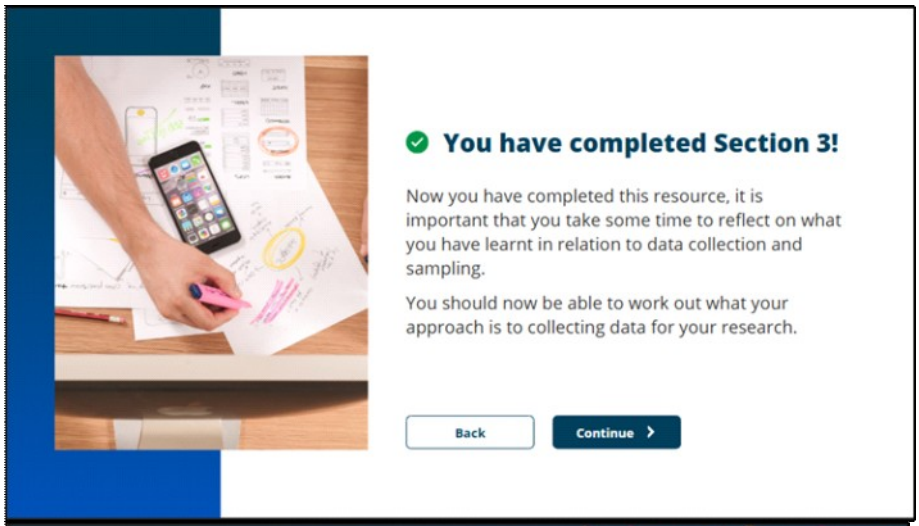
- How will I define and measure variables?
  - Precisely define variables and their measurable indicators
  - Which events or actions will be counted?
  - What questions will be asked? What options will be offered?
  - Are there any abstract concepts being measured that need to be operationalised? Consider the validity and reliability of these measurements.
- How will I ensure my measurements are reliable and valid?
  - Reliability – Consistently reproducible results.
  - Validity – Actually measuring the concept you're interested in.
  - For reliability and validity, the measurement materials should be thoroughly researched and carefully designed, ensuring that all steps are carried out in the same way for each

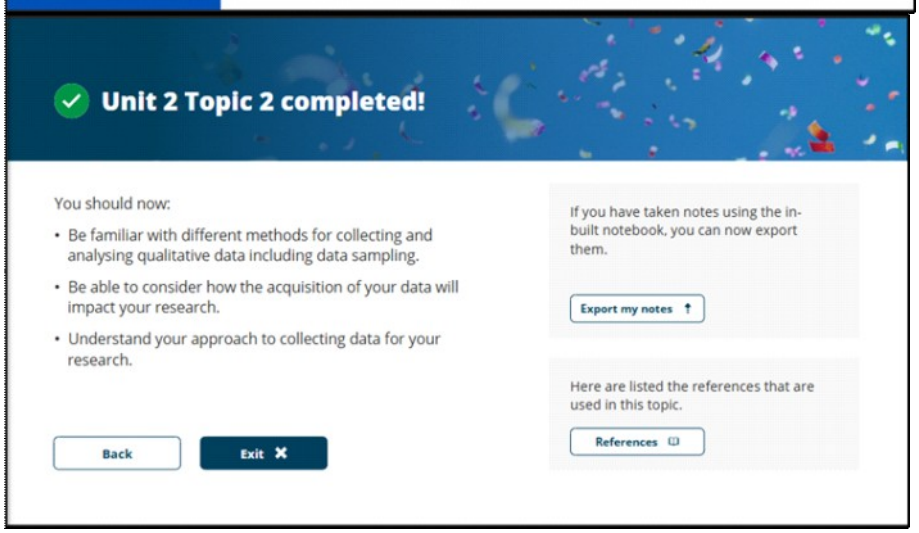
participant.

- How will I select and contact my sample?
  - How many participants do I need for an adequate sample size?
  - What inclusion and exclusion criteria will I use to identify eligible participants?
  - How will I contact the sample?

Take some time to critically analyse and evaluate the data collection plan for your research project. Remember to include the type of collection, size of sample, and how you would go about collecting the data.

I would go about collecting my data through a set of surveys as well as observations. The surveys will be performed in form of a questionnaire, as this will allow me to obtain a large set of quantitative data which can be analysed statistically. It is also quick to fill in, taking less time than an interview, so can obtain a far greater dataset than alternatively through this method. The observations will be qualitative observation, monitoring the current system, analysing how its used, as well as user's behavioural trends, whilst making detailed notes and writing rich descriptions of what is observed. This could help to identify what is needed when designing a new system to be implemented for these users. The size of my sample will depend on how far across the company the new system will span and the number of users. It could only be used by users of the current system; however, it could also involve new users so I will have to identify that before performing my research. I would go about collecting my data by defining what variables I will measure and how I will measure them, whilst ensuring validity and reliability in all measurements by researching and designing my measurement materials as carefully and thoroughly as I can. As the company is a very large business, the research can be performed by sending surveys via email, as well as monitoring the usage of systems remotely, as most of my work is remote.





Topic 3: Now for the solutions

Section 1: Effective techniques for generating ideas

Take a few minutes and try to come up with as many uses for a house brick as possible. Build a house, build a wall, paper weight, doorstop, build a foundation, build a statue.

Cognitive bias

A cognitive bias is effectively a **shortcut** that our brains do to make our lives simple, but can, in effect, block the way of developing creative thinking (Kahneman, 2013). According to Kahneman, when our brains are presented with a problem, our instinct is to deal with it as quickly as we can so we can move on to the next issue that is to be dealt with. The problem with this approach is that our instincts gain their speed by making **assumptions**. It is these assumptions that cause us to assume that everything has a single purpose... so a hammer is only for hitting nails. These assumptions in short are **bad** for creativity.

Cognitive bias

Kahneman (2013) suggests a solution that he calls **slow thinking**. This is where we deliberately slow down our thought processes to allow us to process our thoughts without bias. We can do this in several diverse ways, but one approach is to recognise our brain's shortcomings and then systematically follow a stepped process to avoid our **instinctive** (uncreative) reactions.

Convergent thinking

A converging thought is one that is based on what is **already known** and broadly correlates with deductive thinking, which you may remember from earlier in the course. Convergent thinking takes an existing idea and tries to **reduce the solution** to something that is the 'correct' answer.

Imagine the arrogant assumptions of the Captain of the Titanic as he charges into the iceberg infested waters of the Atlantic. Its roots are based in the individual feeling safe in what **has always been** and uses existing knowledge or standard procedure to draw a solution.

Convergent thinking narrows down onto the solution by **analysis** of existing facts and data.

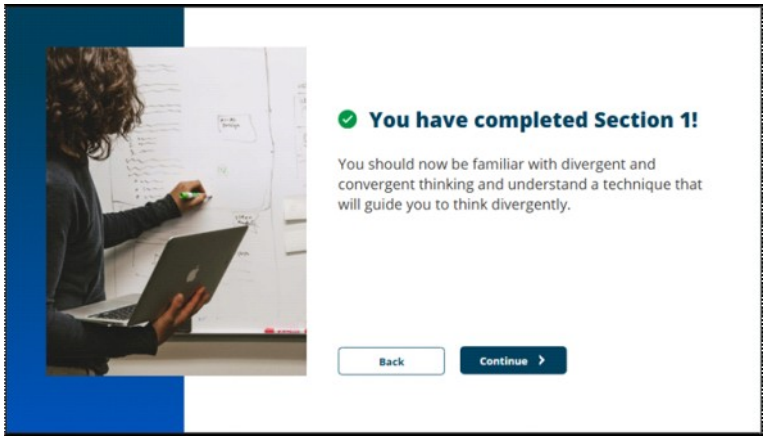
If one were to draw a map of how a convergent thought is directed, it would look something like this on the right.

Divergent thinking

Divergent thinking is the absolute opposite of convergent thinking. This approach is where we try to produce **as many ideas as we can**, irrespective of their plausibility. This strategy allows a solution to emerge.

This approach is analogous to the inductive thinking you may remember in critical thinking lessons. To put it another way, a divergent thought **plays** with the problem, often championing **absurd** ideas, to produce a solution that may never have been thought about before. Imagine the way that artists Banksy or Will-I-Am would approach their work. Divergent thinking is characterised by the individual **embracing edgy ideas** that are uncomfortable and are likely to be far from a standard way of doing things. If one were to draw a map of how a convergent thought is directed it would look something like this.

Convergent thoughts 'converge' on a solution. Divergent thoughts **'diverge'** from the problem to form ideas for a solution. **Ideation** is about using **both** convergent and divergent thinking; neither works without the other. If one were to draw a map of how a convergent thought is directed it would look something like this on the right.



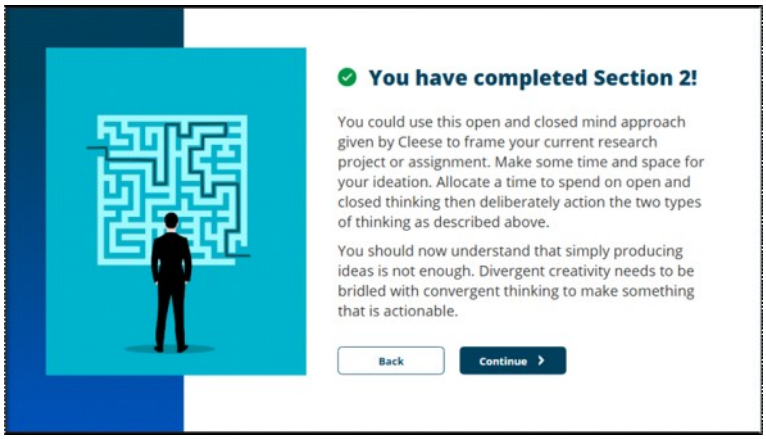
Section 2: Effective techniques for identifying appropriate solutions

Convergent thinking as a way of making a choice

As we mentioned in the previous section, convergent thinking is when we close our minds to select an idea based upon our knowledge and perceptions of the world. A **SWOT analysis** is one tool that we could use to narrow down the options into something that is practical to action.

Divergent thinking is valueless unless you can deliver on the ideas you have made. Use a convergent mindset to manage your ideas.

Take a moment to think of a famous person who you know is a divergent thinker. Albert Einstein, Steve Jobs, Leonardo Da Vinci



Section 3: Creating a problem definition

Gawain was not trying to dress suitably for his role; he was trying to dress in a universally ‘professional’ attire.

Defining the problem

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

What Einstein is saying it that we need to apply deliberate time to address the complexities in the problem definition. Furthermore, he realises it takes a sizeable proportion of the time allocated to unpack them because the problems are obfuscated; they are **hidden in plain sight**.

The Four W's, which is used to get to the core problems of a situation:

What is affected by the problem?

Your problem may be set by your lecturer, a colleague, an employer or customer. Use this lens to **investigate** the motivations behind the problem from the point of view of the persona and demographic of the person affected.

What is the problem?

What is the **struggle** that the problem is pushing against? Is there a task that needs to be accomplished? Try to identify, as you did in the introduction, the pain point that needs to be relieved.

Why does it matter?

Finally, you must ask yourself **why** is this problem worth solving? **What** value does it bring to the person for whom you are presenting your idea?

Where does it happen?

Your problem is set in a context that is unique. This context will inspire **different solutions** and you need to spend some time thinking about it. A solution at work will be different to one done at university or at home.

A lens to give focus to the problem

The 'Four Ws' is a terrific way of **framing** the problems hidden within a narrative. It is another divergent thinking tool that, as described previously, must be balanced with a convergent thinking tool to stop us from being overwhelmed.

An approach cribbed from design thinking, that is used to restate the problem in a way that is narrow enough to bring focus, yet broad enough to allow our minds to start a creative journey, is called the **'problem statement'**.

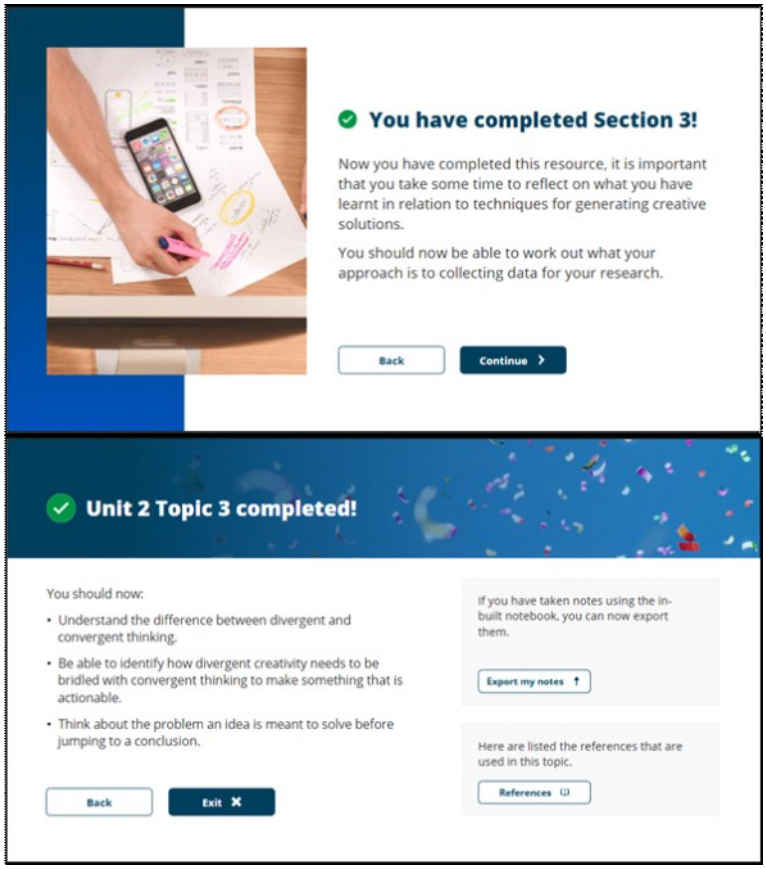
A problem statement

We need to bring a closing mindset to the problem definition. The problem definition is a **structured template** that is effectively a sentence with gaps to fill the insights you have gained from your exploration with the 'Four Ws'. The sentence must be filled within the tight constraints to trigger our convergent thinking.

There are several **problem statement** formats. Select the format that most fits the problem you are starting to be creative on.

Critically evaluate a problem statement you have used, or will use, in an assignment. Remember to use the Four W's. A problem statement that I will use in an assignment is "I have a problem that people who run require the use of countless apps and services on their phone to control, track, tailor and improve their running experience". The solution would be to create and deliver a centralised running hub application, that will combine a user-friendly GUI, maps, health, calendar, nutrition,

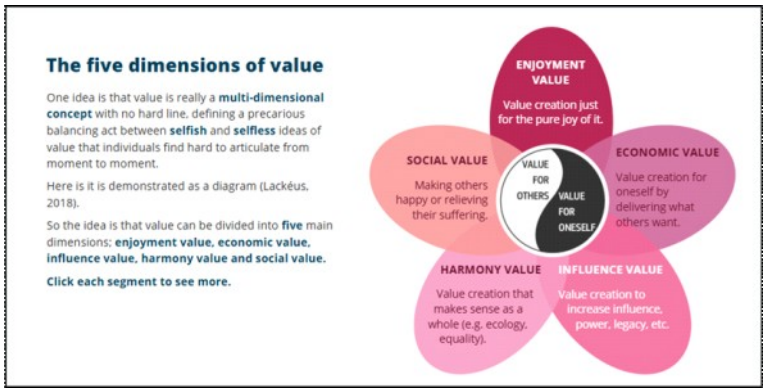
music, planning, social media and other activities, all in one location.

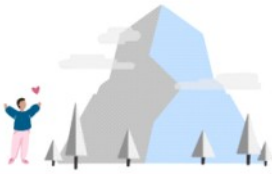


Topic 4: Creating Value

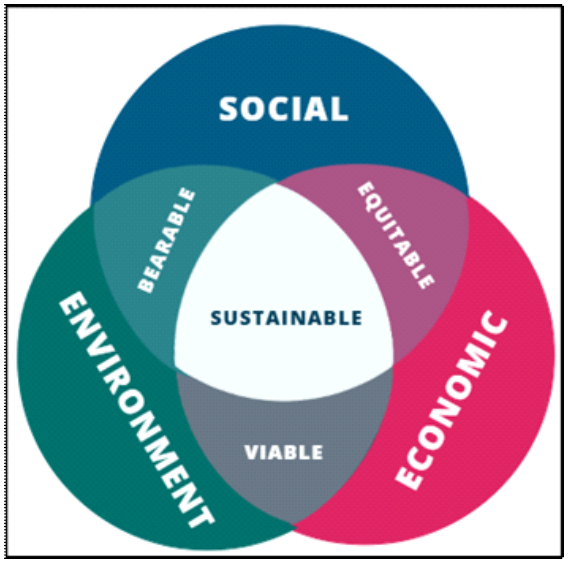
Section 1: How value is created

"The cynic knows the price of everything and the value of nothing" - Oscar Wilde. What do you think this means? This refers to looking at value purely in terms of price/monetary value and has no reference to it's value in terms of other metrics, such as sentimental value.



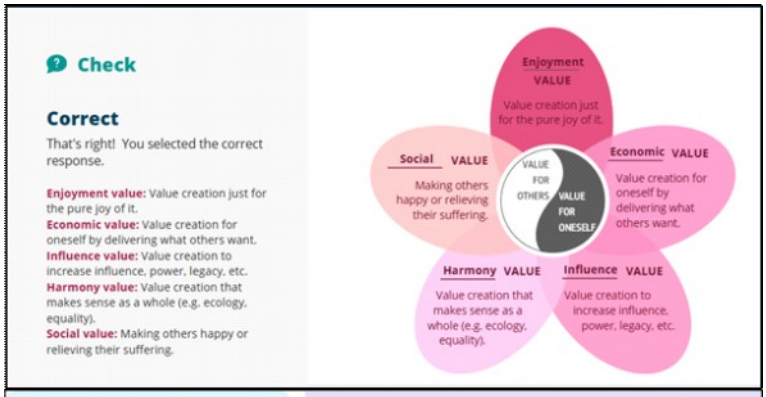
BEAUTY	Requires a **sensory response** from an individual. This can lead to an appreciation of physical space for dwelling, learning and visiting or simply an appreciation of a physical object.	
BENEFIT		Attempts to **extend** and **expand** the experience of the individual so that it is better. Ideally the experience should result in a positive transformation.
GOOD	Attempts to contribute to the positive development of the individual **AND** society.	

The Triple Bottom Line

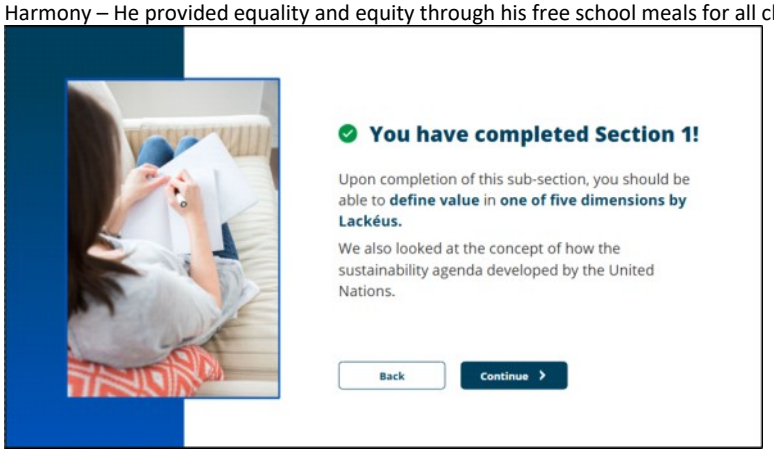


The Sustainable Agenda – 17 interlinked goals that are targets for a sustainable future for all people of the world:

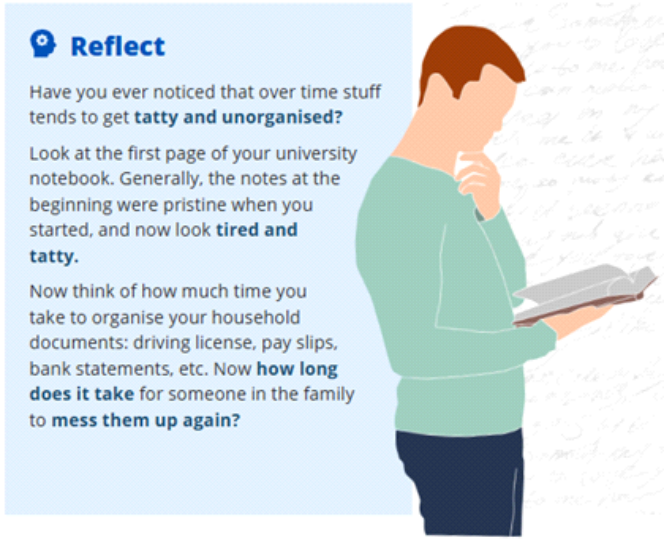
- No poverty
- Zero hunger
- Good health and well-being
- Quality education
- Gender equality
- Clean water and sanitation
- Affordable and clean energy
- Decent work and economic growth
- Industry, innovation and infrastructure
- Reduced inequalities
- Sustainable cities and communities
- Responsible consumption and production
- Climate action
- Life below water
- Life on land
- Peace, justice and strong institutions
- Partnerships for the goals



- Enjoyment – He provides joy for Manchester United and England football fans.
- Economic – He provides economic value by his involvement with Manchester United, a massive worldwide company
- Influence – He increased his influence by becoming a cult hero at Manchester United, and by his work to provide free school meals for children
- Social – He provided happiness and relieved suffering from people in poverty by providing free school meals for children
- Harmony – He provided equality and equity through his free school meals for all children



Section 2: Identify attributes associated with change making and value creation



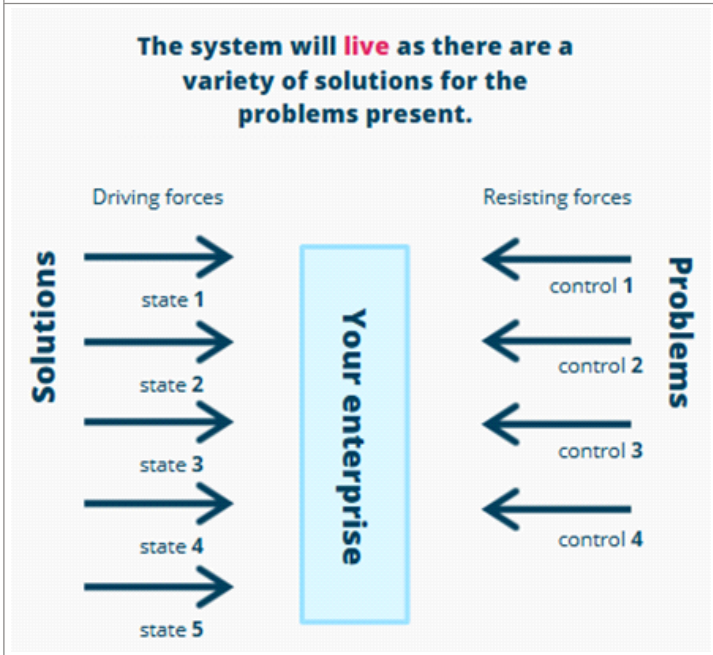
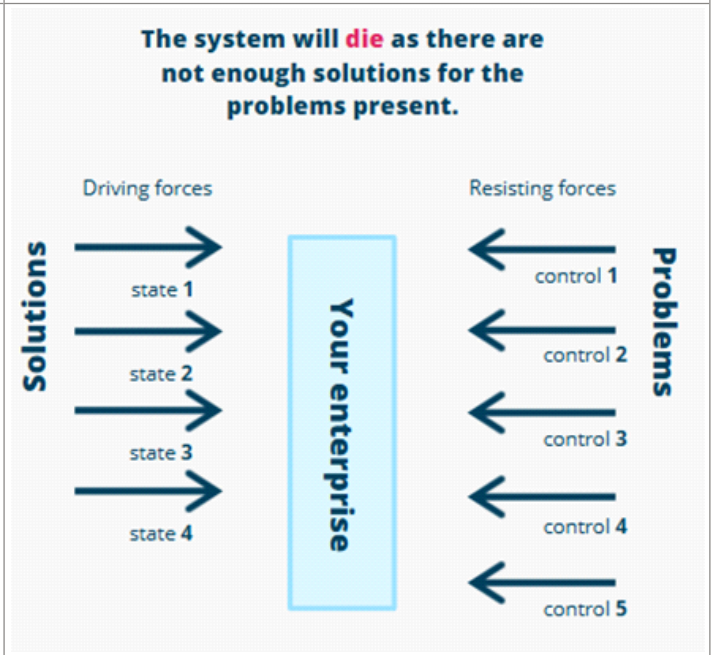
Over time, stuff begins to look tatty and unorganised. It can take a while to organise things and get them in tidy order; however they could become messy again very quickly when you or someone else disorganises them.

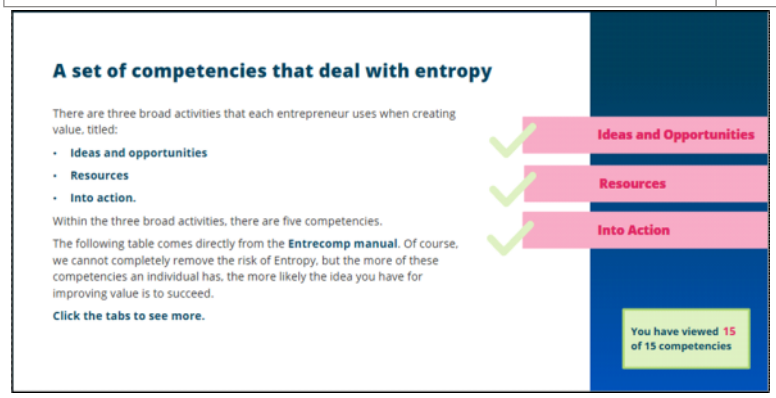
Entropy – The measure of disorder. We clean, organise and fix things only to discover that over time the things become unclean, disorganised and broken again.

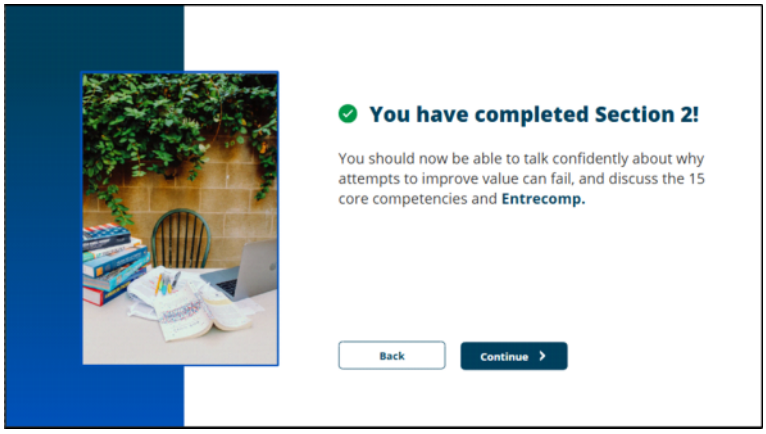
Law – A rule that has been deducted from observation of a natural phenomenon and occurs when conditions are present.

Ashby's Law of Requisite Variety:

In any complex organism, if there were more problems that attack it than potential solutions prepared potentially to fix it, it will ultimately die

SUCCESS	FAILURE
	





Section 3: Articulate how your solution or research will create value

Lackeus suggests that value for any project can be divided into five different dimensions: economic, enjoyment, influence, social and harmony. (Flower diagram)

Makiguchi's approach is more spiritual, he argues that any project brings beauty, benefit and good. (Mountain diagram)

Cognitive dissonance – The uncomfortable state where both thoughts on either side of the argument, while inconsistent, are still considered to be true.

How can two opposing arguments be simultaneously right? In essence, just because you do not agree with an idea does not make it wrong.

Why you should think about value in your domain	**1. Simplicity vs complexity** Some people perceive their education as a world view where things can be broken into smaller parts. This approach considers a knowledge of the minutia can be expected to understand the whole. Others consider the world as a whole system where and learning is based on the complex interconnections.
2. Individual vs social Individual and social educationalists argue where the centre of understanding should be. This could be on how people or society views 'reality'. In this view of learning, there is duality of opinion that is split over a subjective and objective point of view of how the world works.	**3. Content vs process** Some argue that their education is about the content, or the 'what' that the course material covers. On the other hand, others believe that their education should have a focus on 'how' the content is acquired.
4. Detached vs engaged A traditional educational fan emphasises the objective pursuit of truth without regard for values. A progressive educationalist, however, would prefer that the learners engage on an emotional level to have a 'feel' for their subject too.	**5. Theory vs practice** The final age-old argument. Some people who want to be aware of what is actually done in the real world and argues with what is taught in a school is somehow highbrow and separate from this reality. Academics, of course, argue that practice is informed by theory.

Check

What are the two competing ideas about cognitive dissonance when referring to education? Choose the correct options from each list.

Accelerating	an education	Progressing	in an education
Acquiring		Proceeding	
Assuming		**Participating**	
Absorbing		Plagiarising	

Correct

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

This refers to **cognitive dissonance,** where both arguments have merit: an education requires both approaches.

Check

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

Create		Earn
Cost	and	**Effect**
Cause		Educate
Check		Elect

Correct

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

You have completed Section 3!

You should now have an appreciation on why you should consider the principles of adding value with your project.

Back | Continue

Unit 2 Topic 4 completed!

You should now:

- Be able to define value in one of five dimensions.
- Talk confidently about why many attempts to improve value fail.
- Have an appreciation on why you should consider the principles of adding value with your project.

Back | Exit

If you have taken notes using the in-built notebook, you can now export them.

Export my notes

Here are listed the references that are used in this topic.

References

Unit 3: Making it happen

Friday, August 1, 2025 1:08 PM

Topic 1: The power of networks

Section 1: The power of networks

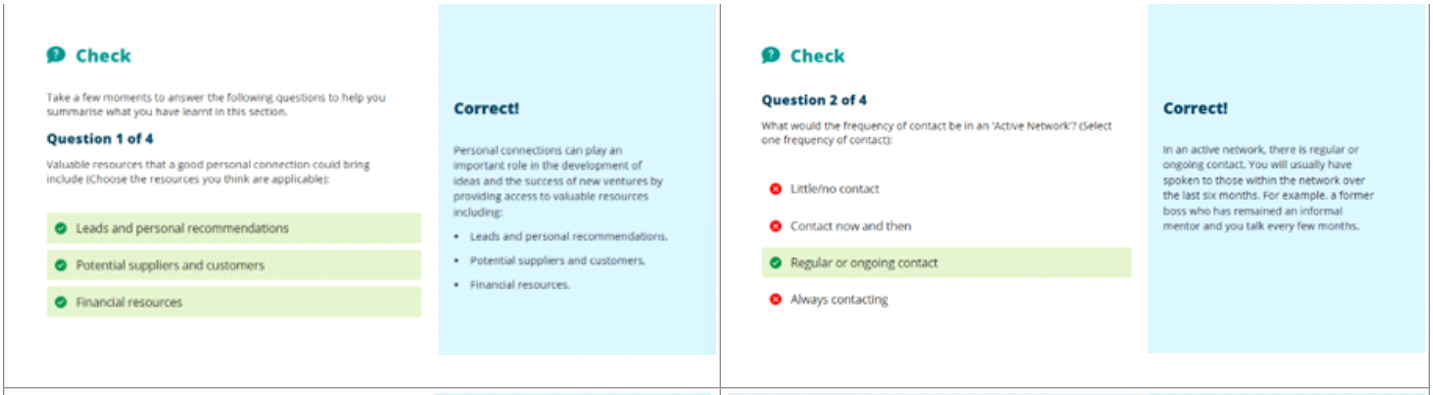
Take some time to reflect on what you already know about the importance of networks. A strong network around you provides opportunities to grow, as well as sources of help, with different relationships providing various strengths and assistance.

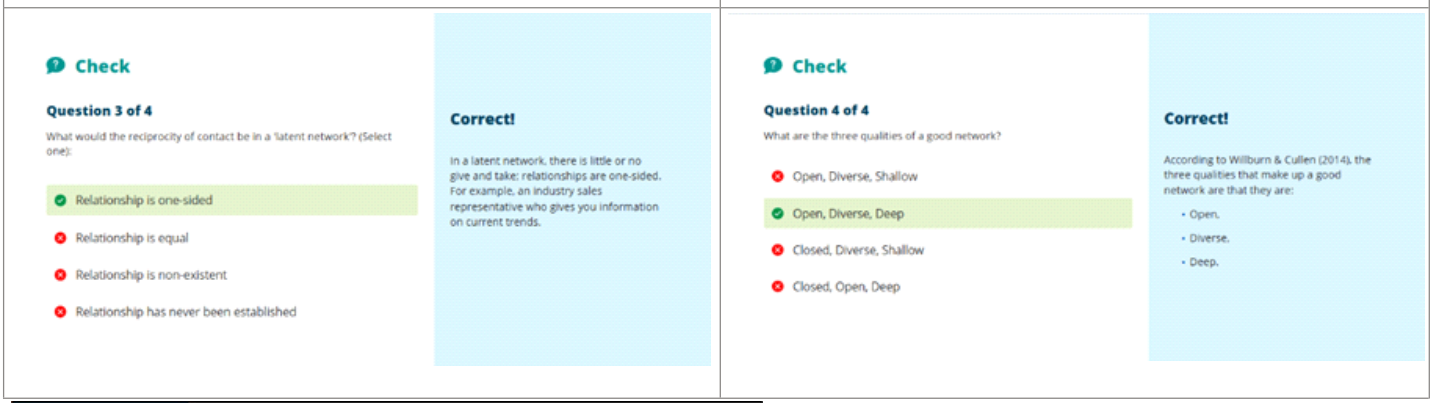
Think about the video you have just watched. What did the video tell you about the power of networks? They allow you to identify your strengths and weaknesses, and to work with people with different strengths and weaknesses. This allows you to share knowledge and skills, to encourage growth in both of you.

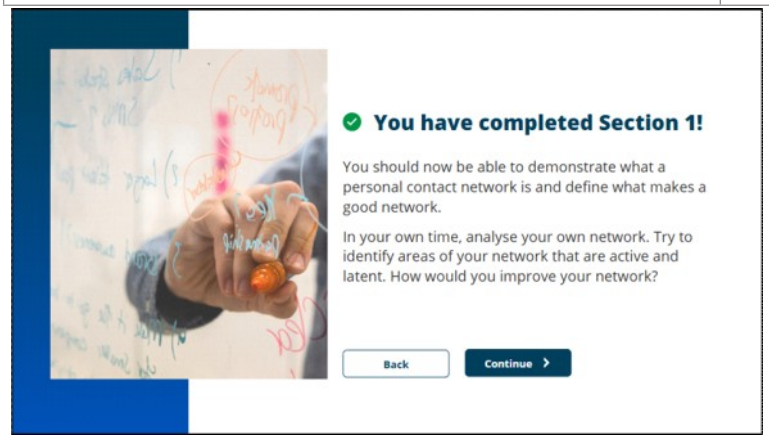
Types of networks:

Active networks		
Reciprocity There is notable **give and take** in an active network. Relationships are **mutually beneficial**. For example, a colleague in another unit on whom you depend – and who depends on you – for information to achieve goals.	**Intimacy/trust** In active networks, there is a high level of **trust and disclosure**. There is also a **strong commitment**. For example, a friend who you confide in regarding work and personal challenges.	**Frequency** In an active network, there is **regular or ongoing contact**. You will usually have spoken to those within the network over the last six months. For example, a former boss who has remained an informal mentor and you talk every few months.
Latent networks		
Reciprocity In a latent network, there is **little or no** give and take; relationships are **one-sided**. For example, an industry sales representative who gives you information on current trends.	**Intimacy/trust** There is a **low level of trust** and disclosure in a latent network, and only a **loose** commitment. For example, an employee of a competitor that you have become friendly with at industry conferences.	**Frequency** In a latent network, there is **sporadic contact**. You may have seen the person/group more than six months ago. For example, a former boss you check in with occasionally.

According to Willburn & Cullen (2014), the three qualities that make up a good network are that they are open, diverse and deep.





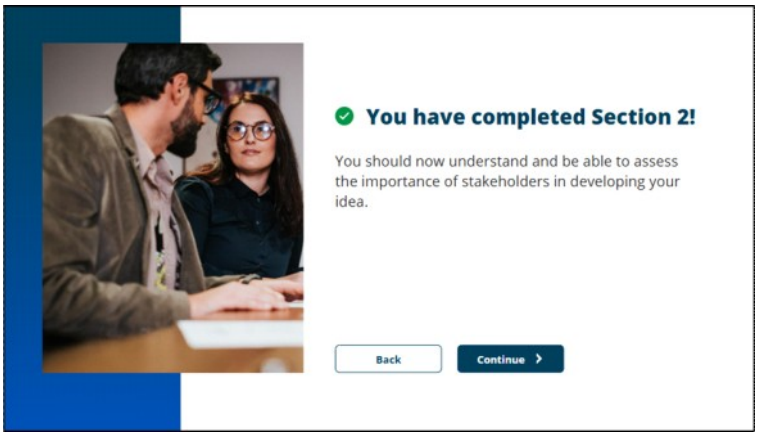


Section 2: Who's at stake?

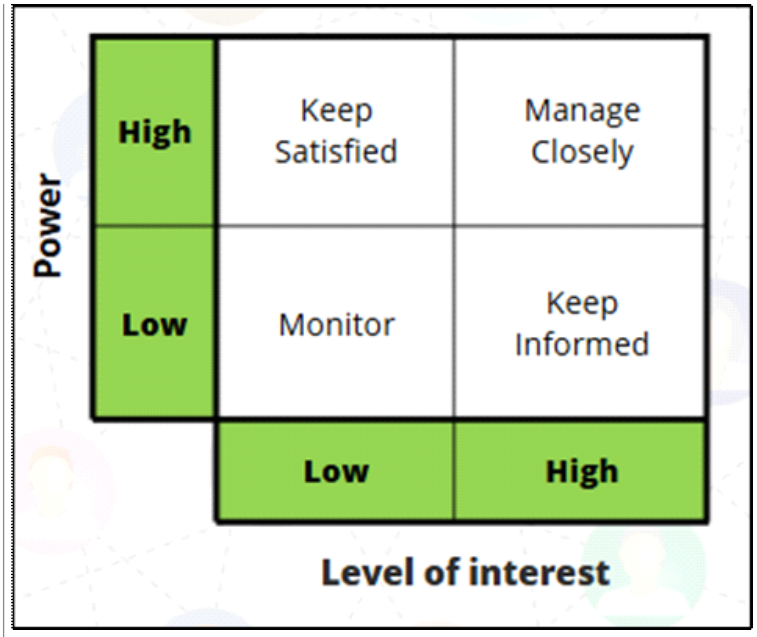
A stakeholder is "any group or individual who can affect or is affected by the achievement of the organisation's objectives" - Freeman (2010)

The three distinct strategies for engaging stakeholders are:

- Value creation for key stakeholders
- Harmonisation of all stakeholders
- Noble cause strategy

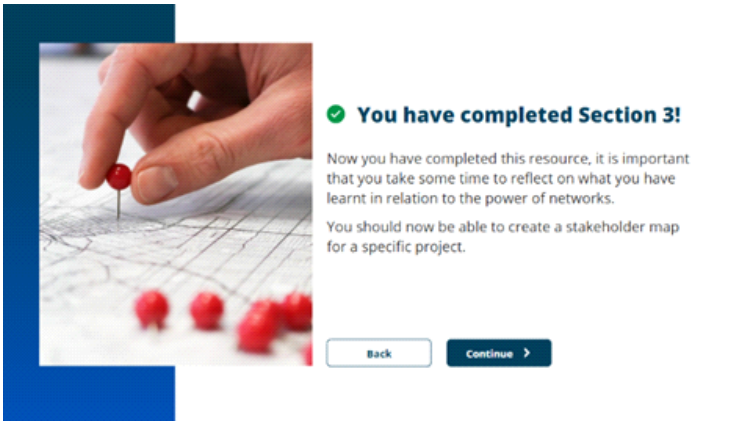


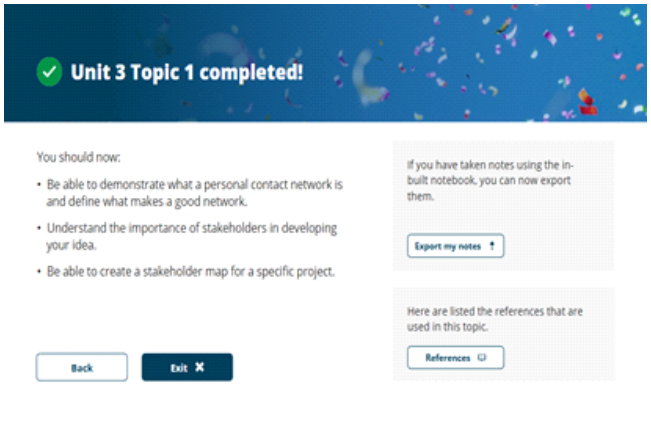
Section 3: Map it out



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: Show me the money!

Section 1: Sources of funding

Think of a time where you needed funding support. Who did you think to approach? Why did you choose them over someone else? I'm thinking of the time I wanted to purchase a car. thought to ask the bank, a finance broker and a family member. Ultimately, I chose to ask a family member as they had the cash available for me and would offer lower costs than the high interest fees of a bank/finance loan. We also have more trust in each other than the other options.

Check

Question 1 of 3

Tess has an idea she would like to develop and needs some mentoring before she reaches out to investors. Which is the best funding option?

- Accelerator
- Venture capital
- Crowdfunding
- Loan

Correct!

An accelerator offers a short but essential period of mentoring along with a small seed investment. Furthermore, being accepted in the top accelerator programmes is not easy due to high competition.

Check

Question 1 of 3

Tess has an idea she would like to develop and needs some mentoring before she reaches out to investors. Which is the best funding option?

- Accelerator
- Venture capital
- Crowdfunding
- Loan

Correct!

An accelerator offers a short but essential period of mentoring along with a small seed investment. Furthermore, being accepted in the top accelerator programmes is not easy due to high competition.

Check

Question 3 of 3

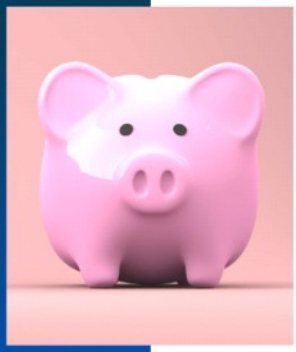
Suki has an idea she is ready to take to market but is not sure how it will be received. Which is the best funding option?

- Accelerator
- Venture capital
- Crowdfunding
- Loan

Correct!

Crowdfunding is one of the best ways to test an idea in the market. In this method, the company can share the idea in the market and add incentives to the purchases. The company would be able to raise a lot of capital to cover the complete production of the product, as well as learn about the demand in the market.

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



You have completed Section 1!

You should now be able to you will be able to demonstrate an understanding the types of funding available for enterprise and research projects, and select appropriate sources of funding in relation to requirements.

Back | Continue

Section 2: Adding value

Benchmarking – “A benchmark is a standard measure or point of reference which things can be compared” - Oxford English Dictionary, 2021

Added Value – The positive results obtained from actions undertaken following benchmarking, or when compared to a ‘business as usual’ approach.

How does benefitting from a network connection fit in with adding value? Adding value and network connections are linked, as any network connections will be able to help with different tasks depending on their expertise, adding value to the outcome of these tasks. You can give or receive help, providing experience and opportunities, encouraging growth and improvement, therefore increasing value and worth.

Check

Take a few moments to answer the following questions to help you summarise what you have learnt in this section.

Question 1 of 3

What is ‘Benchmarking’?

- A point that something can be compared to
- A limit point
- Something that cannot be changed

Correct!

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

Check

Question 2 of 3

True or False. Added value refers to the negative results obtained from actions undertaken following Benchmarking.

- True
- False

Correct!

Added value refers to the positive results obtained from actions undertaken following benchmarking, or when compared to a ‘business as usual’ approach.

Check

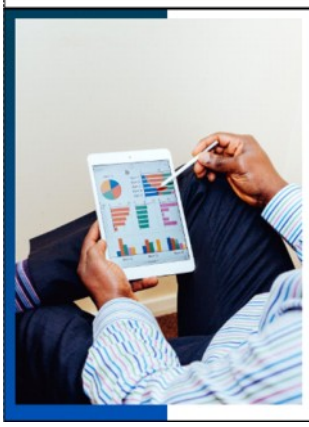
Question 3 of 3

When looking at research, added value refers to what?

- Value for money of university fees
- Time gained through studying
- New knowledge and understanding of the subject being researched

Correct!

When looking at research, added value refers to the new knowledge and understanding of the subject being researched. This can be achieved through benchmarking research and using the current research to address any gaps by adding new perspectives and insights.



You have completed Section 2!

You should now understand and be able to show knowledge and understanding of the concepts of benchmarking and ‘value added’.

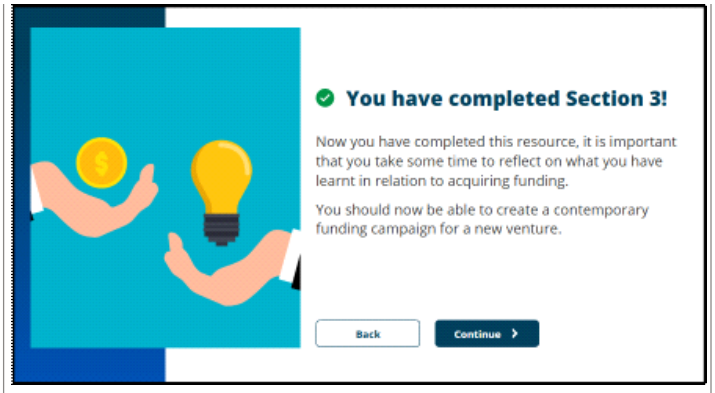
Back | Continue

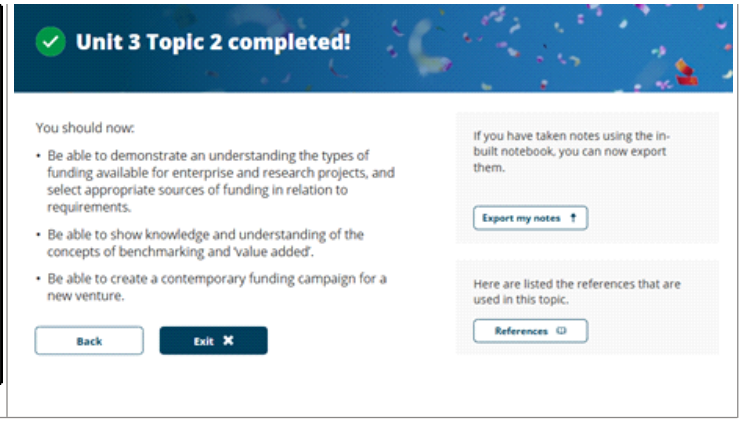
Section 3: Crowdfunding

Crowdfunding – 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.

Marketing material video:

- Give your project a name
- Decide upon the objective of the funding campaign
- Choose a platform you are going to use to share your campaign





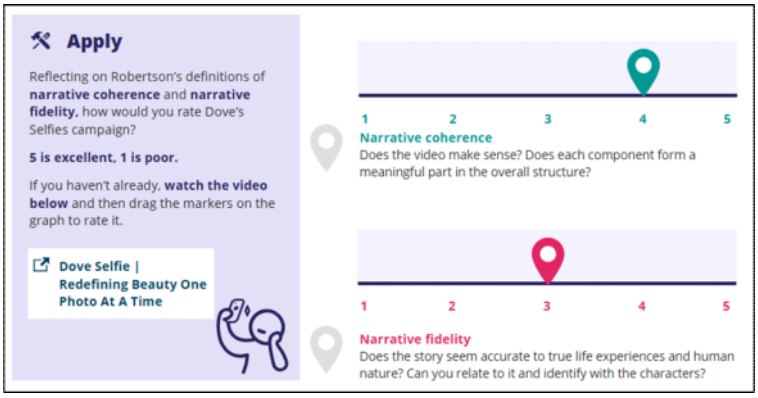
Topic 3: What's the story!

Section 1: Using storytelling for engagement and persuasion

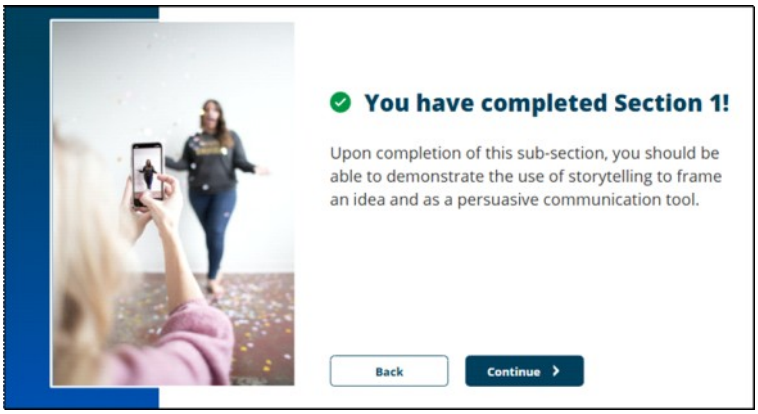
Storytelling can help us learn new skills that are important for developing meaningful connections. These skills include:

- Reflection
- Empathy
- Creativity

"Storytelling is the most powerful way to put ideas into the world" - Robert McKee



Now reflecting on your own life, what experiences have you had lately and how could you use them to create stories? How would you make these stories coherent and true to life? Can these experiences relate to a project idea you have in some way? Could you make a persuasive narrative for that project? When relating to a possible project idea, as an avid runner I have had a fair amount of running experiences. When trying to create a persuasive narrative, I could create a narrative where runners have far too many different apps, all doing similar or different purposes, having to switch between them all too often. Also having poor interfaces to plan, build and tailor running music playlists, which could be portrayed via storytelling by having a runner listening to music that's less suited to running. This could demonstrate a narrative where there is the need for a running 'super app' that can perform all these other apps functions and purposes in one centrally localised application.



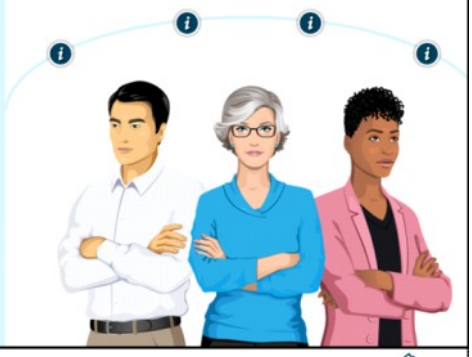
Section 2: Developing self-confidence and authenticity

What is confidence and why is it important?

There are a number of 'types' of confidence however, according to the Oxford English dictionary:

- [Self] confidence is the **belief in your own ability** to do things and be successful
- [In others] confidence is the feeling that you **can trust, believe in, and be sure** about the abilities or good qualities of someone or something.

Click the markers to take a look at some of the other 'types' of confidence that some people might have.



So how can we develop self-confidence?

Click this box to see some of the building blocks that can help encourage confidence in yourself.

Setting the groundwork

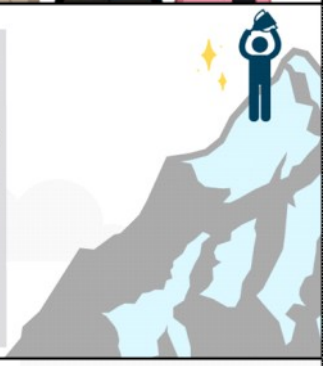
Reflect upon all that you have achieved in your personal and professional life. Think about the things that you are good at and your strengths. Identify what is important to you and what you want to achieve.

Laying the foundations

Focus on the basics and small wins. Small incremental changes are more likely to be successful and easier to manage. Don't be afraid to talk yourself up and pinpoint the good things you have achieved.

Build

Once you have the momentum, you can start to increase your commitment and make bigger goals. However, be aware of yourself and your limitations. **Be your authentic self.**



Check

What is one of the benefits of self-confidence?

- Resilience
- Heightened ego
- Behaviour problems

Correct!

One of the **benefits** of self-confidence is **resilience** - the improved ability to 'bounce back' from challenges and failures.

Check

What do authentic leaders have?

- The ability to recall information
- Purpose
- Behaviour problems

Correct!

According to Northouse (2017) authentic leaders have a sense of **purpose**, knowing what they are about and where they are headed. Purpose manifests itself as **passion**.

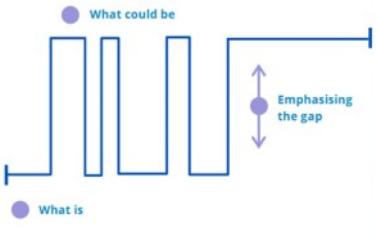
You have completed Section 2!

You should now demonstrate an understanding of the importance of self-confidence and authenticity when presenting your idea, concept or product.

Back | Continue

Section 3: Delivering a kick-ass presentation

Presentations as stories



To remind yourself of the structure, **click the markers** to see some of the ways Martin Luther King diversified his speech into the **'what is'** lows and the **'what could be'** highs.

"America has given the Negro people a bad check which has come back marked 'insufficient funds'."

"But we refuse to believe that the bank of justice is bankrupt. So we have come to cash this check – a check that will give us upon demand the **riches of freedom** and the **security of justice**."

"Go back to the slums and ghettos of our northern cities, knowing that somehow this situation can and will be changed. Let us not wallow in the valley of despair. I say to you today, my friends, that in spite of the **difficulties** and **frustrations of the moment**, I still have a dream."

Public speaking

Plenty of people find speaking in front of others difficult.

The good news is that with **preparation** and **practise**, you can overcome your nervousness and deliver a good presentation.

Planning your main points

Planning is key to a strong presentation.

Before you start writing it up, ask yourself these questions:

- 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?

Choosing your main points

You can now define the main points of your presentation - **three is a good number.**

Then, identify information to support and clarify your points.

Making a **mind map** can help you organise ideas and see patterns.

Opening and closing statements

Opening statements are like a headline: they need to grab the attention of your audience. Closing statements allow you to sum up, conclude and possibly give a provocation.

Make these **interesting** and **innovative**.

To help with an informal presentation, make sure you include quotes, jokes and something about yourself to help the audience establish a connection with you.

Practising your presentation

Be yourself!

Remember, no one is as good as you are at being yourself!

Rehearse it

Rehearse it alone first, then try it out with a small audience.

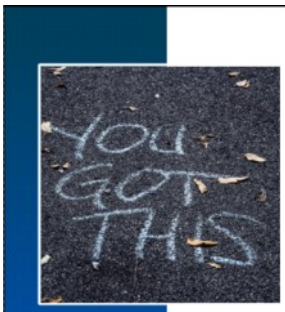
Don't read from a script

Use a small mind map or prompt cards.

Structure your timing

If you have a time limit, be sure to respect it. **Click this box to see more.**

Think of a time where you have had to present. How did it go? Compare this to a TED talk or a Dragon's Den pitch. Are the elements discussed in this session present? Can you incorporate them into your presentations? I had to give a presentation when starting in my current job role in Tata Steel. I had to do my own research based on Tata's production processes and procedures and present my findings to a panel of 3 experts who'd worked in the company for 60+ years in total. The presentation went very well, as I got the job and am still working in that role 2 years later. The elemens discussed are similar to a Dragon's Den pitch, as they relate to what Tata's product is, how it works, how it's designed and made etc.



You have completed Section 3!

Upon completion of this section, you should be able to utilise competent presentation skills to communicate or pitch your concepts, ideas or products.

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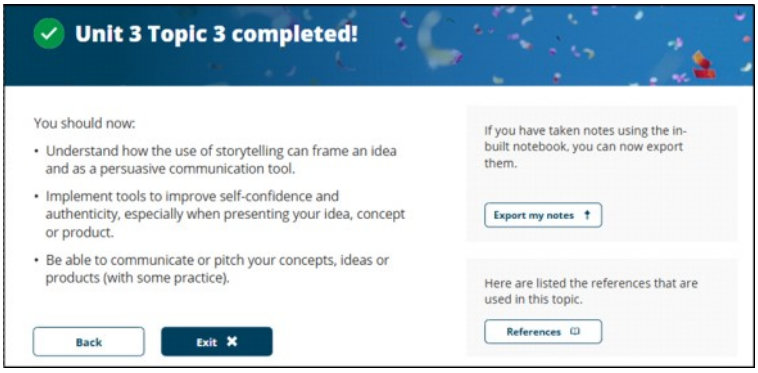
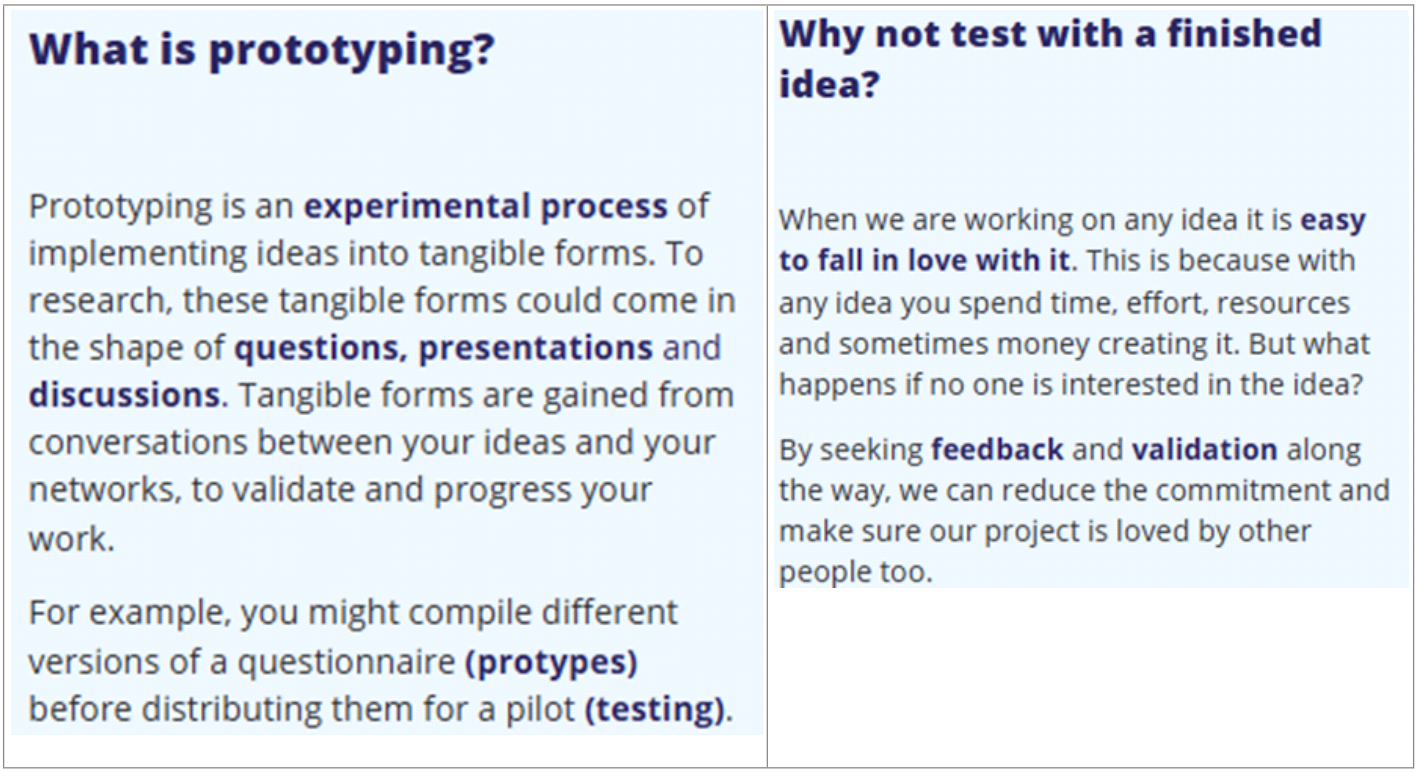


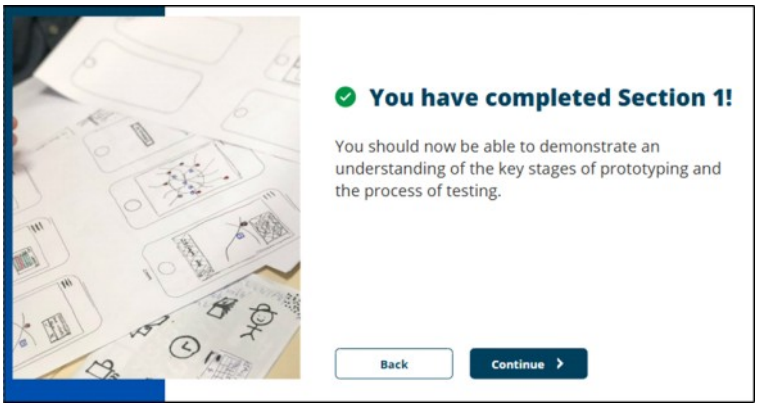
Topic 4: Bringing your idea to life

Section 1: Prototype and test ideas

"Prototyping is the conversation you have with your ideas". What do you think is meant by this statement? I think this means it is a conversation with you and thre ideas that you express within the prototype. You impose your ideas onto the prototype, which then responds by allowing you to see if they work or don't work, and are good or bad ideas.



Prototyping is done to filter ideas, fix problems and focus on the best ideas.



Section 2: Thinking agile

High-fidelity prototyping

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. So, this could be a first draft of a research proposal, for example.

Low-fidelity prototyping

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. Examples can include:

- Storyboarding,
- Sketching,
- Paper/card modelling,
- Conversations and role play.

MVP

Minimum Viable Product (MVP) is defined as a version of a new product which allows a team to collect the maximum amount of validated learning about customers with the least effort, in order to make those incremental and viable amendments.

Applying MVP

By applying the MVP approach to any project, particularly research, we could suggest that it is all about identifying and focusing on the main needs and wants first, then adding value or depth to the subject.

Think back to an assignment/task where you produced an end product. Using what you have learnt about prototyping and agile thinking so far, can you identify where these techniques and processes may have improved your end product? I think back to an assignment where I had to write a series of codes to solve a series of problems. I used High-fidelity programming for some problems as I started writing the code immediately to solve the problem, allowing myself to interact, test and debug the code straight away to come up with the final solution. I also used Low-fidelity prototyping for the tougher problems. I'd start by drawing out a flowchart to show what the problem solution must require, allowing me to visualise the flow of the code, before I began writing it. I also used MVP by testing the code at certain stages as I was writing it, to constantly be fixing and making incremental and viable adjustments.

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.

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.

Question 3 of 4

Which are examples of low-fidelity prototyping?

- ✗ Research proposal
- ✓ Storyboarding
- ✓ Conversations & Role play

Correct!

Examples of low-fidelity prototyping include quick and inexpensive options such as:

- Storyboarding,
- Sketching,
- Paper/card modelling,
- Conversations and role play.

Question 4 of 4

The benefits of low fidelity testing are?

- ✓ It's quick and inexpensive
- ✗ Any changes will take a lengthy period of time to action
- ✓ Disposable

Correct!

The benefits of low-fidelity prototypes are:

- Quick & inexpensive
- Ability to make instantaneous and incremental changes
- Disposable
- Gives overview of concept with minimal time and effort.

Consider how you might create a prototype for your project and how you would test it. I would create a prototype for my running application by:

- Determining what the app will need to do and contain
- Creating a 'first draft' app code
- Work through any errors and debug line-by-line to ensure the code does exactly what is required
- Test the product by having other users use the app and explore all functional possibilities

You have completed Section 2!

Now you have completed this resource, it is important that you take some time to reflect on what you have learnt in relation to testing your ideas and getting feedback.

You should have a deeper understanding of developing ideas and be able to apply this to your own work.

Back | Continue

Unit 3 Topic 4 completed!

You should now:

- Be able to demonstrate an understanding of the key stages of prototyping and the process of testing.
- Be able to demonstrate an understanding of agile methodologies and identify prototyping techniques and their value.
- Have a deeper understanding of developing ideas and apply this to your own work.

If you have taken notes using the in-built notebook, you can now export them.

Export my notes

Here are listed the references that are used in this topic.

References

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Unit 4: What's the verdict

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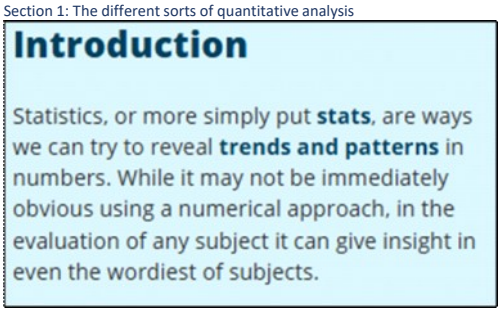
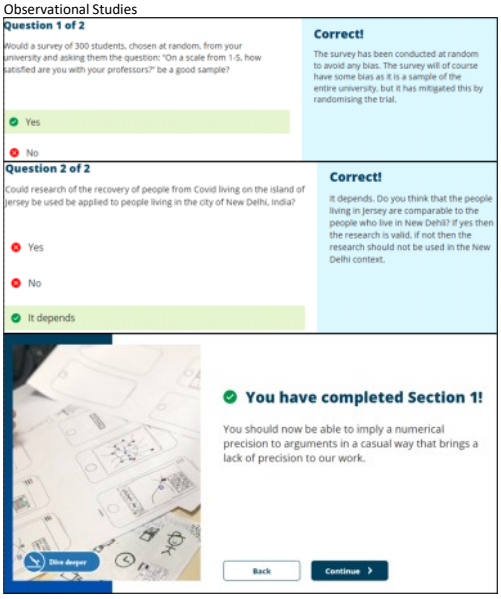
Topic 1: It's all in the numbers

Section 1: The different sorts of quantitative analysis



Google 'Quantitative Research of Software Engineering':

- Measurement
- Statistical Analysis
- Experimental Design
- Survey Research
- Observational Studies

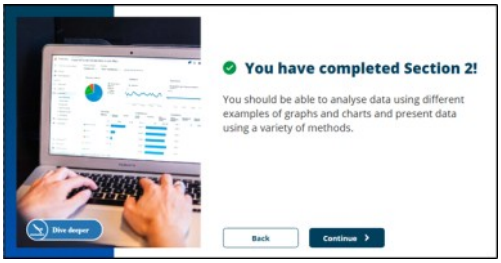


Section 2: Presenting data in charts and graphs

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? In research I've conducted, I have seen data displayed in many different graphs and charts, such as pie, bar, line and scatter charts. Charts make complex data and large volumes of data easier to read by allowing it to be visualised in a simple way, rather than displayed in a large table.

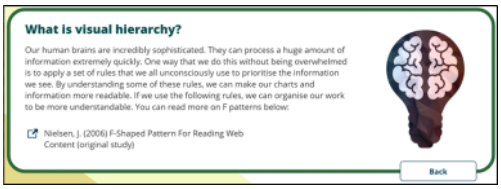
What graph or chart would be best to describe the correlation between academic success to students reading age results. A scatter graph would be best as they are helpful in identifying trends/relationships, and a line of best fit can be added to show this

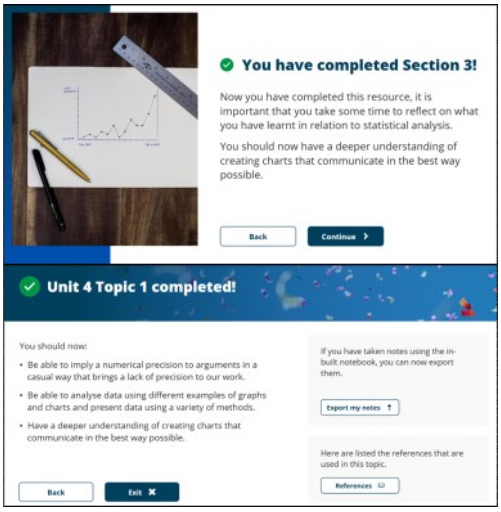
Which graphs would you most likely use in your field of study and why? Again, I'd use a scatter graph as there can be lots of variables at play in software, and sometimes these variables must be plotted against each other.



Section 3: Using your data to tell a story

"The aim of art is to represent not the outward appearance of things, but their inward significance." Is this something you agree with? Yes, as a lot of art has hidden, deeper meaning than meets the eye. It is the job of the artist to convey the inward significance through the art to the viewer.





Topic 2: There's a theme here

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.	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.

Consider why a researcher might use qualitative research methods and list some benefits and disadvantages of this. Do qualitative methods suit all research? What are the limitations of qualitative research methods?

A researcher might use qualitative research methods when they need to explore things that are difficult to quantify with quantitative research, helping to understand how and why behind the research topic.

Advantages of qualitative research include:

- Answers can be expressed in own words
- Answers will be more detailed and complex than quantitative
- Allows more context to be given

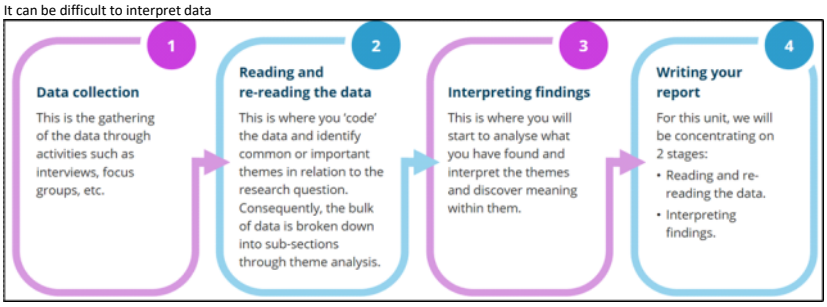
Disadvantages of qualitative research include:

- Research is more time consuming, therefore a smaller sample size
- Answers can be subject to bias

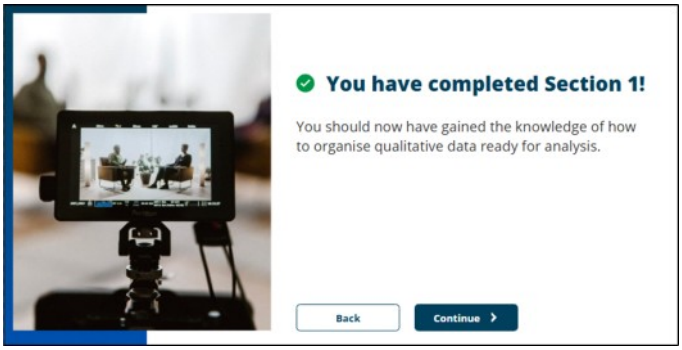
Qualitative research is not always suitable for all research as some research, such as statistical analysis and hypotheses testing require quantitative research methods.

Qualitative research is limited by:

- Lack of statistics
- Influence/Bias
- It can be difficult to interpret data

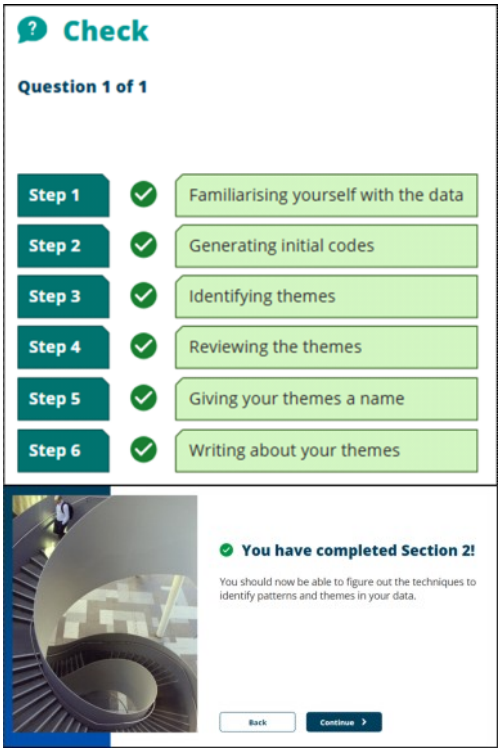


Write out your plan on how you would organise your data. Firstly, I would arrange a series of focus groups and interviews. These meetings would be recorded with an audio recording device, such as a camera or a voice recorder. Then, after these arrangements have taken place, I would have to transcribe all of the conversations that were had, in order to prepare for analysis. I would also organise the audio files into backed-up file storage, to ensure that they are kept secure and safe. Then it would be time to read and interpret the data. This would be done by identifying themes or relationships, and breaking the data down by separating it into sub-sections and groups. The separated data would then be interpreted, so to analyse why the interviewee gave that response and to identify why certain trends take place. A report will then be written based on these interpretations and findings.

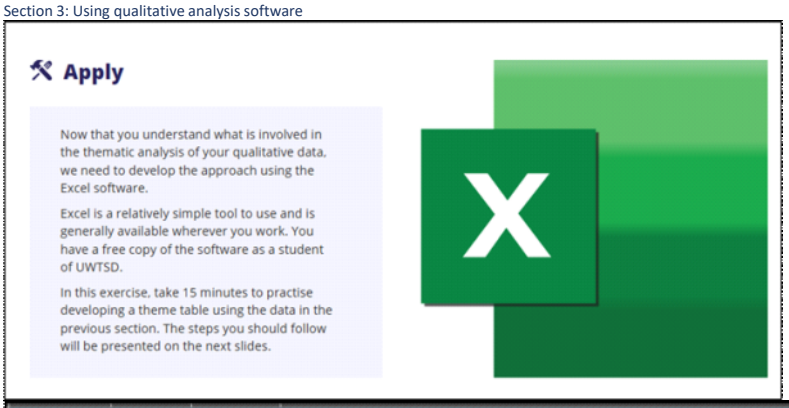


Section 2: Applying techniques to identify patterns and themes

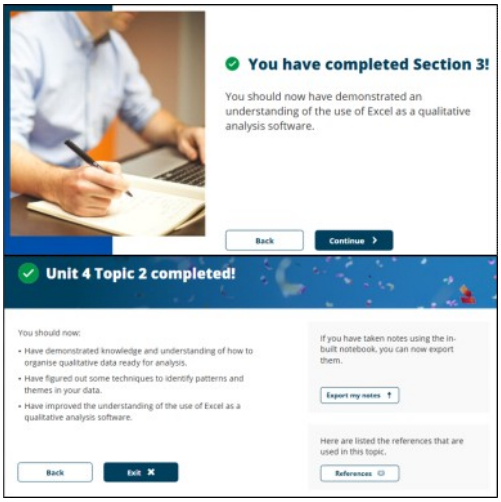
Write a couple of sentences describing what a theme or pattern is. A theme or pattern is a noticeable, recurring arrangement of results or answers that can be used to formulate a decision, outcome or discovery. For example, a pattern or trend in sales revenue could show a company whether their sales have increased, decreased, stayed constant, or had no correlation throughout a year.



Section 3: Using qualitative analysis software



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



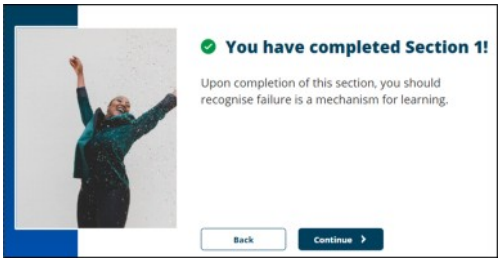
Topic 3: Succeed or fail

Section 1: Failure – Is this the end?

In life, work, or study, we essentially move from project to project - we finish one task, and then we start another, and another, and another.

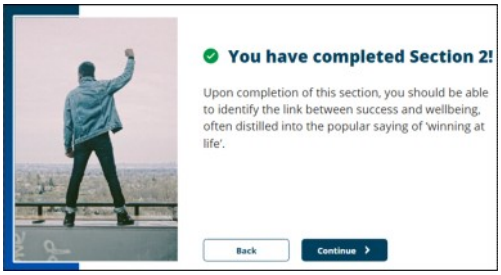
As each new project does not start from a blank slate, we bring to it the **benefit of our previous experiences,** or in other words, what we have learned. These experiences improve our future irrespective of them being positive or negative.

What does failure mean to you? What mistakes or failures have you made in the past that really set you back? Make some notes about what you learned from the experience, applying the growth mindset that Dweck discusses. Failure means to not succeed. However, failure isn't necessarily a bad thing, as failure offers the chance to learn and grow and try again once you've improved. I failed my driving test twice due to silly errors. This really set me back as driving tests were expensive, and sometimes had a 4 or more week wait for another one. Applying the growth mindset that Dweck discusses, I realised that it wasn't a complete failure, as I could try again. The 2 failed tests could've been viewed as "Not yet" implying that I was on a learning curve and would eventually succeed. This could be validated as my first test I had 2 major fault, then my second test I had 1 major fault, then finally on my third test I had 0 major faults. The failed tests provided me with experience and lessons to grow and learn from.



Section 2: Success and wellbeing

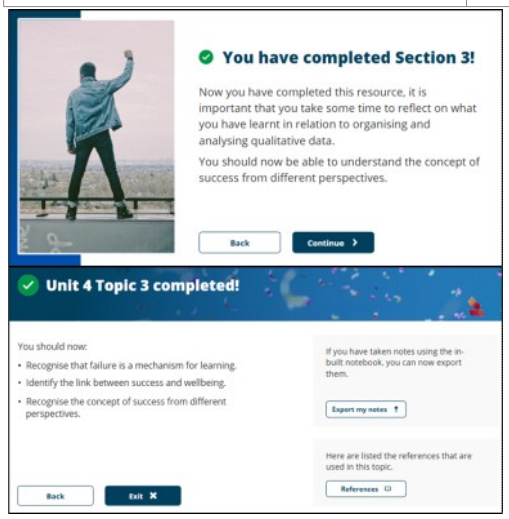
Based on the themes in the resources you have seen so far and what you have learnt in this section, think of a **famous, 'successful' individual** and **write down on the forum** how you now perceive them in terms of both success and wellbeing. For example, what do you now think of Michael Jackson's success? When considering your review of achievement in the introduction activity, did you consider **wellbeing** as part of it? **What do you think now?**	When I think of Cristiano Ronaldo, I think of an incredibly successful individual who has conquered football and is one of the most successful individuals of all time in his trade, football. He is incredibly, rich, famous and successful. In terms of wellbeing, he continues to operate at a high level at the age of 40, when most footballers typically retire in their mid-30's, implying his high level of health, fitness and wellbeing



Section 3: Success from failure

Can you think of someone famous or a personal acquaintance that seems to be successful from having been lucky? I think of Max Verstappen as having been lucky, winning his first Formula 1 title due to the rules being changed on the fly, allowing him to gain an advantage over Lewis Hamilton.

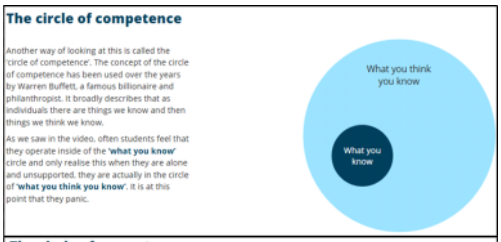
Consider a person that you think is successful but is not famous then consider these questions: 1. What makes them successful? 2. Is their success recognised? By whom? 3. Does lack of fame make them less successful? 4. What motivated your choice? What criteria did you use? 5. Can you explain why your 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.	They are successful in their job. Their success is recognised by managers, co-workers, apprentices, contractors, third parties etc. No, they are still successful in their own trade despite their lack of fame. I thought of someone I work with that I deem to be a highly successful expert in their trade. Success was achieved despite the lack of fame as the scale of the job they do is not on a globally renowned platform, such as football or movies or social media.

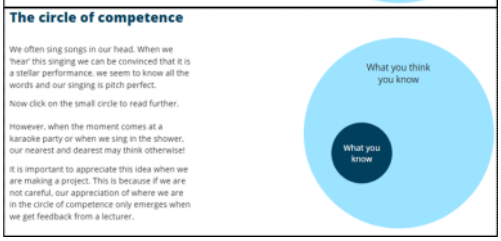


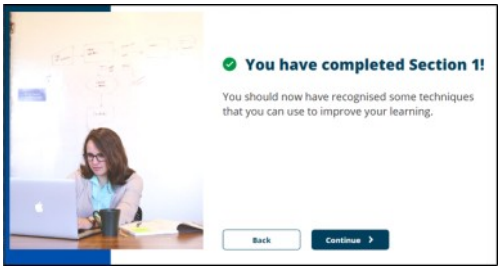
Topic 4: Sharing success

Section 1: Applying learning from your project

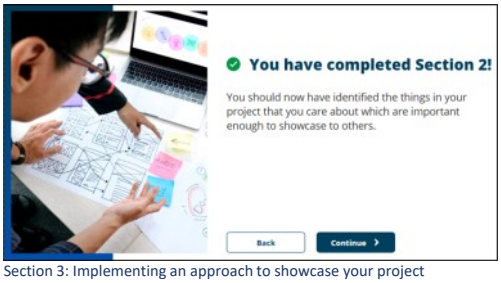
Take a moment to work out why you are studying. Why is it that you are setting yourself the hard work of creating your project or assignment? Can you think of one word that encapsulates all of this? I am studying to gain a degree, and to learn and improve my skills in the trade of software engineering. I am setting myself hard work and goals to push myself and to learn new skills, such as creating a project/assignment. One word that could encapsulate this is “growth” or “improvement”.

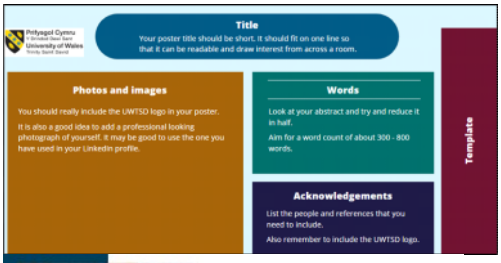
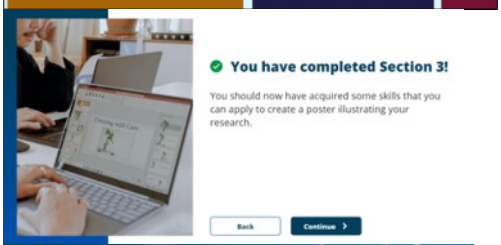
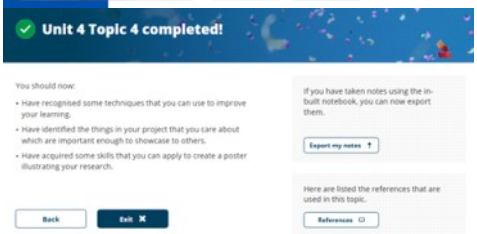






Section 2: Developing an approach to showcase the outputs of your project



Section 3: Implementing an approach to showcase your project

What to consider when designing a poster: