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How Innovation Shapes The World

- Progress**
 - What is it?**
 - Innovation is the process of making changes to something established by introducing something new.
 - existing machine and business
 - Example:
 - Snapchat - This was first founded by Ollie in 2016
 - Vaccines - The first was created in 1789
 - The first penicillin was discovered in 1928
 - Has it changed things for the better?**
 - Natural disaster deaths have decreased to half over the last 100 years
 - Women aged 30 have spent 7 years in education
 - The percentage of people living in extreme poverty has almost halved
 - What are the innovations?**
 - 1st Revolution** - Steam, Water and Mechanical Means of Production → Saw an overall increase in the quality of life
 - Second Revolution** - Division of Labour, Electricity and Mass Production → Increase of suburbs compared to inner city
 - Third Revolution** - Electronics, IT and Polymerised → Had a profound impact on the ICT, defence, health, transport and administrative sectors
 - Fourth Revolution** - Cyber Physical Systems → New Technologies → AI producing medical diagnosis → Automated methods will change traffic flows
 - What are the six technologies that will change the world?**
 - Computing Capabilities** - Introduction of Smartest Cars → Introduction of Self-driving Vehicles
 - Big Data** - Qualitative & Quantitative → Primary, Secondary & Tertiary → Technology, Economy, Politically & Environmentally
 - Digital Health** - Health-Paper → Fitbit & Apple Watch → Electronic Health Records
 - The Digitization of Matter** - 3D Printing → Bioprinting
 - The Internet of Things** - Network of Physical Devices → Smart Homes → Smart Cities
 - Blockchain** - Cryptocurrencies → Bitcoin → Public, Private & Consortium
 - Big Data** - It will be a source of new economic value and innovation → Google processes more than 24 billion searches per day → Facebook gets more than 10 million new photos uploaded per hour
 - Why is creativity so important?**
 - It drives innovation by looking at things from a different point of view allowing for new ideas to be introduced
 - Creativity requires a combination of no distinctive measures according to the standard theory
 - Helps with problem solving
 - Reflective thinking and evaluation of thoughts is an important part of the creativity process
 - Interrelated Abilities: Knowledge, Style of Thinking, Personality, Motivation, Environment

The project idea is 'Digital Behaviour & Mood Tracking to Monitor Correlation Between Social Media Addiction and Mental Health'

Task 2 - Aims, Objectives & Research Area

23 July 2025 13:33

Aim

To investigate the relationship between social media usage patterns and mental health outcomes by using digital behaviour and mood tracking tools.

Objectives

To identify patterns or correlations between heavy usage of social media platforms and specific mental health indicators.

To research into the design and implementation of a digital tool that can help users monitor their mood before and after using social media.

To explore demographic differences such as age and gender in social media usage and the impact on mental health.

To evaluate the effectiveness of digital mood tracking as an early intervention tool for detecting mental health concerns related to digital behaviour.

To provide recommendations for responsible digital consumption.

Research Philosophy

According to Otieno & Odoyo [1] research philosophy refers to a set of beliefs that concern the nature of reality that is being investigated.

These are split into three broad forms called Epistemology, Ontology and Axiology. As Blaikie [2] suggests, Epistemology is the theory of knowledge and how humans have come to know what they know and how they know it.

As part of the Epistemology philosophy, Interpretivism is the theory that knowledge is subjective and lived through experience. According to Chowdhury [3] Interpretivists adopt that human's knowledge of reality is a social construction which therefore rules out methods of natural science. They look for meanings behind behaviour and interaction with others by using qualitative methods [3] goes onto mention.

Interpretivism is the research philosophy that will be adopted.

How does Interpretivism Align with the Research Area?

Interpretivism is based on the theory that reality is socially constructed and is shaped by personal experiences. The project will explore how individuals perceive their own mental health and social media habits by tracking their time and reflecting on how they feel before and after their usage.

In addition, Interpretivists use qualitative methods to research their information and data. The project could benefit from human narrative and journal entries after using social media to align with the lived in experience philosophy.

Furthermore, Interpretivists refer to knowledge being subjective and to understand why and how things happen instead of controlling or predicting the outcome. The project does not intend to diagnose or generalise but to investigate how humans interpret their own digital habits in relation to their mental well-being.

Search Tools

As Rumsfield [4] states 'known knowns' are facts and rules that is known with certainty whereas 'known unknowns' have gaps in the knowledge but humans know the gap exists. In addition, 'unknown unknowns' are the hardest to understand as it refers to gaps in knowledge but humans don't know the gaps exist.

In regards to research and the concept of what is known and not known, library databases can be used to find information, data and literature to find out what is already 'known' on the topic.

The search tools that will be used for project research will be Google Scholar, Google Books, Research Gate and Semantic Scholar.

Using Boolean operators to retrieve information is an efficient way of research. Aliya [5] suggests that by adopting this approach, more relevant information will be returned in comparison to using a free text approach.

The figure below shows the Boolean operators and examples of how they will be used to search on library databases.

Operator	Example
AND	Social Media AND Mental Health
OR	Health OR Wellbeing
NOT	NOT (Physical)

Figure 1 - Table of Boolean Operators & Examples

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Task 3 - Research Strategies, Data Collection Methods

25 July 2025 13:45

Research Strategies

According to Leung [1] qualitative research is the understanding of patterns and behaviours through words whereas quantitative research is the understanding of patterns and behaviours through numerical data and statistics.

Qualitative research is a strong strategy for the project as it will focus on lived experiences, personal perceptions, behaviours and the complexity of digital presence on human emotions.

There are several different types of sampling that enhance validity, reliability, generalisability and ethical considerations. As Morse [2] suggests, the selection of the sample has a major impact on the quality of the research.

The first strategy that will be considered is typical case sampling. This is where the research illustrates or highlights what is normal or typical as Benoot, Hannes & Bilsen [3] states.

In reference to the project, this is a good strategy to use as it will explore social media behaviours and mood fluctuations in average users.

A second strategy that will be considered is snowballing sampling. According to Parker & Scott [4] snowballing is one of the most popular strategies used in qualitative research. It works by inviting participants to take part and complete the study who then recommend and invite others to do the same until the sample has reached the target size.

Parker & Scott [4] go onto mention that a lack of willing participants is a main criticism of the snowball strategy. However, in context to the project, having unsuitable participants is not relevant as the majority of people use social media than those who don't which may benefit the project instead of hindering it.

Furthermore, by using the snowball strategy and participants referring others, this could help gather people that do have a digital addiction or mental health illnesses that initially could be hard to reach if another strategy was used.

Data Collection Methods

Questionnaires are a useful way of collecting data. As suggested by Marshall [5] questionnaires can provide high quality data along with good response rates and a suitable level of anonymity. Warm up questions could be added to the questionnaires to make participants feel comfortable with the theme of social media and their mental wellbeing. The last question will invite the participants to an informal interview where the open-ended and deeper questions will be asked.

Semi - Structured Interviews are another beneficial way of collecting data. As Petrescu, Sorin Hadrian, Et Al [6] state, this is where researchers ask participants a set of pre-determined questions that are open-ended, allowing for the answers to be more in depth and open.

An advantage of semi-structured interviews is that they can take place face-face or online which opens up the amount of participants available to be interviewed as Balushi [7] states. Another advantage is that the interviews combine structure with flexibility due to the topics covered and the choice the participant has in answering them in order or however they wish [7] goes onto mention.

In addition to questionnaires and semi-structured interviews, a digital well-being tracker will be used to collect 'live' behavioural and mood data related to social media use. The tracker logs social media platforms,

session durations, journal entries and emotional responses.

As shown in the appendices, a questionnaire has been designed and created as part of the pilot data collection method. The feedback received was mostly positive but had some areas for improvement as stated below.

Strengths

- Relevant and well-targeted questions.
- Balanced question types.
- Clear language.
- Follow-up Interview option.

Improvements

- Question 9 could be split up into negative and positive feelings to prevent cognitive overload.
- A time frame could be added for more accurate and focused responses.
- Additional questions could be added in regards to people using social media as an escape and the pressure around replying quickly to notifications.

Quantitative and Qualitative Analysis

Descriptive statistics are used to gather, organize, analyse and display quantitative data states Kranzler [8]. There are 3 main types of descriptive statistics which are frequency distribution, central tendency and variability [8] goes onto mention.

In reference to the project, this could be used to find out the average mood rating of participants after using Instagram over a 7-day period. This gives a central tendency (mean) for the variable (mood) and can be visualised through a bar or line graph.

Inferential statistics are another type of quantitative analysis. This measures the significance or difference between two samples and if the result is due to chance or a real factor as suggested by Marshall & Jonker [9]. The type of test that is used to determine the significance is based on the data that is being measured, this includes nominal, ordinal, interval or ratio [9] goes onto mention.

This could be used to find out if there is a significant relationship between time spent on Tik Tok and reported levels of anxiety. This allows a test to be carried out to show correlation between the two variables, duration of time (independent variable) and mood / anxiety score (dependant variable).

Thematic analysis is a type of qualitative method. This differs to quantitative analysis as it focuses on research that produces descriptive data instead of numerical data as Glenwick & Jason [10] suggest. It involves the identification of reoccurring themes or ideas in a textual data set.

This could be used in reference to the project to find common emotional experiences after social media use by finding themes in words such as 'comparison' or 'pressure'.

Narrative analysis is another type of qualitative method. According to Earthy & Cronin [11] it is an approach to understand why and how people talk about themselves as a single or a series of stories. The researcher will consider what purpose the stories serve and why the participants have chosen to tell it in their preferred way [11] goes onto mention.

This could be used as part of the semi-structured interviews, it could provide understanding if participants open up and tell their story about social media addiction or their mental health struggles.

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Appendices & Supplementary Information

30 July 2025 14:38

Activity Notes: Online Section: Unit 1 Topic 1 - How Innovation Shapes The World. The role that creativity and innovation plays in the development of society and self.

“Innovation is a new idea or method, or the use of new ideas and methods”

The below items are 5 things that society were not engaging in or would not have been around 10 years ago.

- 1) Air Fryer
- 2) Wireless Headphones
- 3) Bluetooth Speakers
- 4) Lumie Alarm Clock
- 5) Apple Watch

The Air Fryer has completely changed the way people prepare and cook meals, a meal that could take 30 minutes in the oven takes half the time in an air fryer. The option to cook, bake and roast in one device has massively decreased the time people spend in the kitchen.

 **Apply**

Now that you have watched the video, **which invention** do you think has had the biggest impact on the development of society as we know it today?

The Light Bulb

Why do you think this innovation has had such a big impact? Think about how you would **justify your choice**.

The invention of the light bulb had such an impact on society due to the dramatic change of technology from the distribution of electricity to lighting advancements.

The creation of the light bulb also led to the invention of other electrical appliances such as irons, toasters and washing machines.

The lightbulb also extended the workday beyond daylight hours which led to increased productivity and economic growth.

Is innovation changing things for the better?

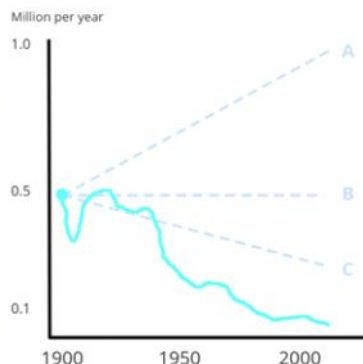
Deaths from natural disasters actually fell to **less than half** over the last 100 years.

In 1900, roughly half a million people died a year from natural disasters such as floods, fires, earthquakes and droughts.

When polled, **only 12%** of the Swedish public chose option C, that deaths from natural disasters had fallen to less than half.

50% agreed with option A, believing that the rate had more than doubled.

C. Decreased to less than half



Is innovation changing things for the better?

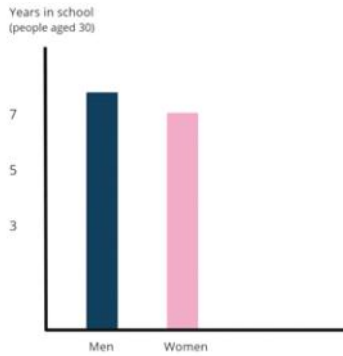
Across the world, **women aged 30 have spent 7 years in education.**

While we haven't achieved gender equity, the overall average is much closer than many people realise. In fact, when polled, only 24% of the USA public chose option A. **52% chose option B**, that women had spent 5 years in school.

Hans Rosling argues that "when you answer, you answer according to the worst places, and there you are right, but you miss the majority."

Do you agree with that?

A. 7 years



Is innovation changing things for the better?

In fact, the percentage of people living in extreme poverty almost halved.

This data was collected in 2014, and more recent data shows that this percentage has fallen even further.

In 1990, 35.9% of the global population lived in extreme poverty. **In 2017, it was only 9.3%.** Although this still means nearly 1 in 10 people live in extreme poverty, this has fallen from over 1 in 3 people in 30 years.

C. Almost halved

As you can see here, many aspects of life have been improved by **modern innovation**.

In general, we are doing much better than in the 'good old days', with higher quality of life and improved access to resources.

These three questions were posed by **Hans Rosling** in a **2014 TED Talk**. In the next activity, we will look at more of his work to see if innovation is really changing things for the better.



Apply

Do you still agree that this invention has had the **biggest impact** on the development of society?

The Light Bulb

What **beneficial** effects has it had on humankind?

Justify your response in a **forum post**.

The beneficial effect of the light bulb on humankind was that it had a lasting effect on modern technology, this was only the beginning. Thomas Eddison's work paved the way for the electrical power industry, influencing everything from home lighting to industrial machinery.

According to Klaus Schwab, there are 4 distinct periods of industrial revolution throughout history, one of which we are beginning now.

The first revolution meant that machines can now do the work of many people in the fields. The work changed from food production in the fields to the manufacture of goods in factories.

The second revolution occurred with the advent of electricity dominating the changes in society. Electrically powered heating made houses warm through a distribution of wires and cables from centrally located power stations.

The third revolution occurred when digital systems became usable. Production starts to be increasingly automated and the work force changes its direction again.

The fourth and latest revolution sees society changing again but to accommodate sophisticated computerized and human relations. It also has been described as the advent of cyber-physical systems involving entirely new capabilities for people and machines. Examples of this would be new forms of machine intelligence, breakthrough materials and

cryptographic methods such as the blockchain.

Activity Notes: Online section: Unit 1 Topic 2 - How Do YOU Solve a Problem?

Correct

That's right! You selected the correct response.

Axiology is the study of what is valuable.

Epistemology is the study of knowledge.

Ontology is the study of being.

Reflect

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

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

So you feel most drawn to:

critical realism interpretivism

positivism

What aspects do you **agree** with? Why do you **support your choice(s)** more than others?

Critical Realism - Knowledge is real if it can be experienced by the senses.

Interpretivism - Use qualitative methods instead of science

Postmodernism - challenges established thinking

Activity Notes: Online section: Unit 1 Topic 3 - Known Knowns.

Check

1. A keyword is like a...

- ☒ A word that unlocks others.
- ☒ A word like a hashtag that summarises the meaning of a sentence.
- ☒ A way of distilling meaning that can be used to search databases.
- ☒ All of the above.

Correct!

A keyword is all of these descriptions.

Check

2. We can locate the keywords in our research by...

- ☐ Asking the library staff
- ☐ Using a piece of software
- ☒ Remove all superfluous words

Correct!

Activity Notes: Online section: Unit 2 Topic 2: Finding a Needle in a Haystack

Network

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?

If any aspect of your research involves people's responses, **how will you account for the Hawthorne Effect?**

Note down your approach on the **forum**.

Questionnaires and Interviews will be appropriate for collecting data as the information presented to the respondents will be about their own experiences with social media and their wellbeing.

The Hawthorne Effect may be taken into account as some respondents might diminish their social media usage instead of being entirely truthful.

Check

Question 2 of 3

Which of the following are relevant reasons for why we have to reduce the data we research into a smaller unit? (Choose which ones you think apply)

- ☒ Your time and resources may be stretched
- ☒ There are limited people who have experiences you are studying
- ☐ There are limited people/results with the relevance to the area you are studying

Not quite...

If your sample size is large, it may limit your ability to produce findings that represent your population as a whole. It is therefore good practice for triangulation purposes to recruit a variety of respondents (e.g., children, adults, service users and providers).

Question 3 of 3

When you select a sample from the population by picking the names out of a hat, what type of sampling are you conducting?

- ☒ Unusual sampling

Correct!

In this approach, every piece of data is considered to be equally relevant. This means if you include it in your research it is based on a random chance whether it's included or excluded from the sample you study.

Question 3 of 3

When you select a sample from the population by picking the names out of a hat, what type of sampling are you conducting?

- ☐ Unusual sampling
- ☒ Random sampling
- ☐ Stratified sampling

Correct!

In this approach, every piece of data is considered to be equally relevant. This means if you include it in your research it is based on a random chance whether it's included or excluded from the sample you study.

Reviewing your answers

Take a moment to see what impact your instinctive answer is using the ranking scale below. **Reflect on the commitment that your research will take.** Have you access to the time or materials to do your research?

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	☐	☐	☐	☐	☒

A gantt chart would help with the project management of the research.

Check

Question 1 of 2

If you wanted to understand the general characteristics or opinions of a group of people you would use a...

- ☒ Survey
- ☐ Interview
- ☐ Experiment

Correct!

This method will be based on you conducting a survey that can be distributed online, or in person over a phone or in a live meeting. It can produce mixed data (quantitative and qualitative) based upon how the questions are framed.

Activity Notes: Online section: Unit 4 Topic 1: It's All In The Numbers

Google Scholar

quantitative research of social media and mental health

About 3,100,000 results (0.25 sec)

Articles

Any time
Since 2025
Since 2024
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The relationship between online **social networking** and depression: A systematic review of **quantitative studies**
DA Baker, GT Agorita - *Cyberpsychology, Behavior, and Social* ... 2016 - [sagepub.com](#)
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... little consideration of patients' **social networks**, and how these may ... **social networks** and how they may influence **mental health** ... *PsychNFO: Social Sciences Abstracts, Social Science* ...
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Articles

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... little consideration of patients' **social networks**, and how these may ... **social networks** and how they may influence **mental health** ...
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Social media use and its connection to **mental health**: a systematic review
F Karim, MA Oyelewa, LF Abolita, RC Ehsanullah - ... - [Cureus](#), 2020 - [cureus.com](#)

Network

Think about your research. **What sort of quantitative analysis could you make to help it?**

Frame an **example question** that would use descriptive statistics and inferential statistics that would be relevant in the domain you are studying, then submit this along with your research idea to the **forum**.

If you're finding it difficult to frame an example question and identify the quantitative analysis, review the answers of others and analyse how they would apply to your own research.

Descriptive Statistics Example

What is the average mood rating of participants after using Instagram over a 7-day period?

Inferential Statistics Example

What is the most commonly used app in the sample?

Check

Question 1 of 2

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

☒ Yes

☐ No

Correct!

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

Check

Question 2 of 2

Could research of the recovery of people from Covid living on the island of Jersey be used be applied to people living in the city of New Delhi, India?

☐ Yes

☐ No

☒ It depends

Correct!

It depends. Do you think that the people living in Jersey are comparable to the people who live in New Delhi? If yes then the research is valid, if not then the research should not be used in the New Delhi context.

Network

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

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



Bar chart to compare mood outcomes across different social media platforms.

Line graphs to show mood patterns over 7 days.

Scatter plots to show the relationship between screen time and mood.

Pilot Data Collection Method

Digital Behaviour & Mood Tracking to Monitor Correlation Between Social Media Addiction and Mental Health

* Indicates required question

1. How many hours per day do you typically spend on social media?

Mark only one oval.

- ☐ Less than 1 hour
☐ 1-2 hours
☐ 3-4 hours
☐ 5-6 hours
☐ More than 6 hours

2. Which social media platform(s) do you use the most? (Select all that apply)

Check all that apply:

- ☐ Instagram
☐ TikTok
☐ X (Twitter)
☐ Facebook
☐ Snapchat
☐ Pinterest
☐ Bluesky
☐ Reddit
☐ YouTube
☐ Threads

3. What time of day do you use social media the most?

Mark only one oval.

- ☐ Morning
☐ Afternoon
☐ Evening
☐ Late at night
☐ No set time

4. Do you believe that your mood is affected by your social media usage?

Mark only one oval.

- ☐ Yes
☐ No
☐ Not sure

5. If yes, in what ways has it affected your mood? (You can give examples, e.g., anxiety, fear of missing out, motivation, comparison, connection, etc.)

6. Do you ever track your mood or mental wellbeing? (e.g. journaling, apps or personal notes)

Mark only one oval.

- ☐ Yes
☐ No
☐ Sometimes

7. Have you ever tried taking a break (digital detox) from social media?

Mark only one oval.

- ☐ Yes - and it helped
☐ Yes - but didn't notice a difference to my mood
☐ No - but I have thought about it
☐ No - and I'm not interested in doing so

8. Do you ever feel addicted to social media?

Mark only one oval.

- ☐ Yes
☐ No
☐ Sometimes

9. Have you ever experienced any of the following as a result of social media use? (Tick all that apply)

Check all that apply:

- ☐ Trouble sleeping
☐ Feeling low or anxious
☐ Low self-esteem
☐ Procrastination or being distracted
☐ Improved sense of connection
☐ Boost in creativity or inspiration

8. Do you ever feel addicted to social media?

Mark only one oval.

- ☐ Yes
☐ No
☐ Sometimes

9. Have you ever experienced any of the following as a result of social media use? (Tick all that apply)

Check all that apply.

- ☐ Trouble sleeping
☐ Feeling low or anxious
☐ Low self esteem
☐ Procrastination or being distracted
☐ Improved sense of connection
☐ Boost in creativity or inspiration
☐ None of the above

10. What motivates you to keep returning to social media?

11. Would you be willing to take part in a short, follow-up interview (15–30 minutes) to talk more about your experiences with social media and mood? *

Mark only one oval.

- ☐ Yes
☐ No

12. If yes, please provide an email or preferred contact method. Your identity will remain confidential, and participation is voluntary.
