

Cover page

06 November 2025 14:13



HN/BSc Computing portfolio

Assignment 1 Innovation & Research

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Changemakers: Creativity and Value Creation

Contents

27 November 2025

14:30

Contents

[Task 1: Ideation & Mind Map](#)

[Q1: How We Got from Fire to Smartphones - The Story of Human Innovation \[2\]](#)

[Q2: When Four Revolutions Meet](#)

[TASK 2 Research Proposal: Development of an Integrated Web Platform for Religious Organizations](#)

[Q1. Purpose and Objectives](#)

[Q2. Research Philosophy](#)

[Q3. Search Tools and Research Identification Strategies](#)

[TASK 3: Research Strategies](#)

[Q1. Validity, Reliability, Generalization, and Ethical Considerations](#)

[Q2. Research Strategies and Data Collection Methods](#)

[Q3. Types of Quantitative and Qualitative Analysis](#)

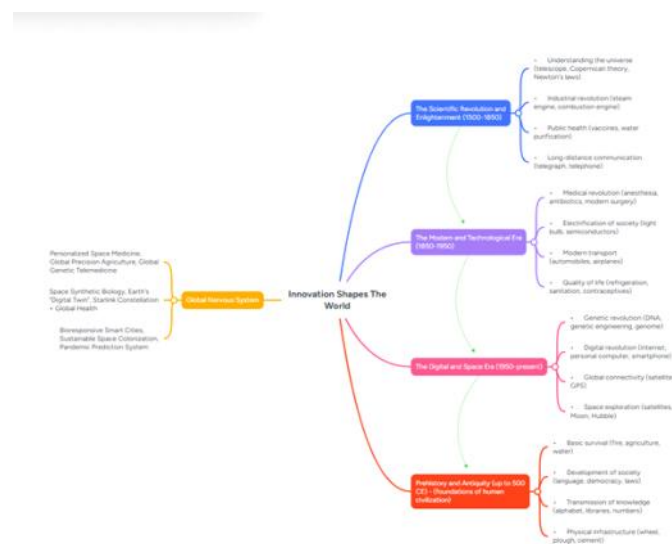
[Reference](#)

Task 1: Ideation & Mind Map

27 November 2025 14:31

Mind mapping is a technique for visual thinking and organization that reflects how the brain naturally processes information – through making associations and connections. While similar visual brainstorming approaches have been employed throughout history, the method gained widespread recognition in the 1970s through Tony Buzan's work.

In his book "Mind Mapping for Business," Buzan describes the process as creating a diagram beginning with a core concept at its center, which then extends outward into connected ideas. The technique incorporates colors, images, and key terms to strengthen both comprehension and memory retention [1].



<https://www.mindmeister.com/app/map/3871247301>

GROUP 1: The Beginnings - When the Foundations of Civilization Were Laid (until 500 AD)

The first thousands of years of humanity were about survival and building society. Fire was discovered, we learned to cultivate the land, we invented the wheel and the plow. These may seem simple now, but think about it - without them we wouldn't have anything we have today.

During this period we also invented things that made us truly human: language to communicate, the alphabet to write, numbers to count, libraries to preserve knowledge. The Greeks came up with democracy and the scientific method [3]. That's how, from nomads who wandered hunting, we became builders of cities and civilizations.

Other super useful things from this era: the sailboat, glass, cement, soap (yes, someone had to invent it!), the abacus for calculations, the compass for navigation. Each discovery made our lives a little easier.

GROUP 2: The Scientific Revolution - When We Understood How the World Works (1500-1850)

Here things start to accelerate. We built telescopes and microscopes, we discovered that the Earth revolves around the Sun (not the other way around, as we thought), Newton explained gravity and motion to us. Suddenly, the universe made sense.

Then came the industrial revolution - the steam engine changed everything. We went from manual labor to factories, from carts to trains. The internal combustion engine gave us even more power.

Health progressed enormously: vaccines that save lives, clean water, food preservation so we wouldn't starve in winter. And distance communication - the telegraph, the telephone - made the world smaller. You could talk to someone hundreds of kilometers away. Magic!

GROUP 3: Modernity - When Everything Changed Completely (1850-1950)

The 20th century was pure craziness in a good way. The electric light bulb gave us light at night. Radio and television brought information and entertainment into the home. Automobiles and airplanes gave us the freedom to travel anywhere.

Medicine made huge leaps: anesthesia (operations without pain!), antibiotics (no more dying from a simple infection), antiseptics, contraceptives. Life expectancy increased dramatically - if before you lived 40 years if you were lucky, now you reached 70-80.

Refrigeration allowed us to keep food fresh. Sewage systems made cities cleaner and healthier. Semiconductors and transistors laid the foundation for everything that was to come in the digital era.

GROUP 4: Our Era - Digital and Cosmic (1950-present)

The last 70 years? Wow! We discovered the structure of DNA and learned to genetically modify plants and animals. We sequenced the entire human genome - basically we have a map of our entire genetic structure.

Then came the digital revolution [4]: the personal computer in every home, the internet connecting us all, the smartphone which is basically a super-powerful computer in your pocket. GPS knows exactly where you are. Satellites communicate information in real-time all over the globe.

And we didn't stop at Earth - we reached the Moon, we sent the Hubble telescope into space to see distant galaxies, we launch satellites into orbit as if it were a routine job.

Conclusion - We're Accelerating Faster and Faster

If you look at the chronology, it's fascinating: we needed millions of years for the first basic discoveries. Then, in the last 500 years we invented more things than in all previous history combined. And the last 100 years alone have completely transformed the way we live.

The message is clear: innovation defines us as a species. The more we invest in research and science, the faster we evolve. And who knows what the next 100

years have in store for us?

Q2: When Four Revolutions Meet

The four revolutions - genetic, digital, connectivity, and spatial - don't work separately. Together they form a "global nervous system" that completely changes our lives. [5]

Think about a farmer in Romania: in the morning he receives satellite images on his phone showing exactly where his plants need water. In the afternoon he orders genetically modified seeds, resistant to drought. In the evening, his data helps farmers in Africa plan their harvests. Everything that happens is connected and works together.

Or take medicine - doctors from all over the world analyze your DNA through the internet, astronauts on the Space Station study how radiation affects our genes. AI-controlled robots will cultivate genetically modified plants on Mars.

Basically, genetics helps us understand life, digital processes information, the internet transmits everything instantly, and satellites give us the overall perspective. Together they create a civilization capable of monitoring and optimizing life on a planetary scale.

TASK 2 Research Proposal: Development of an Integrated Web Platform for Religious Organizations

27 November 2025

14:33

Q1. Purpose and Objectives

What I want to do and why

The basic idea is quite simple - I want to create a web platform where members of a religious organization can find everything they need in one place. Instead of wandering through dozens of different sites to find out what's happening, everything should be one click away. Plus, I want to see how people interact with the content - what they read, what they like, what really interests them.

My concrete objectives

The first thing I want to do is automatically gather content from at least five different platforms - the official website, blog, Facebook pages, Instagram, maybe YouTube. Everything should appear nicely organized in one place and update itself. That's the plan for the first three months.

The second objective is to create an events section that shows you first what's newest and most important. Nothing complicated - just a system that sorts events by date and tells you "look, this is urgent" or "this is coming soon."

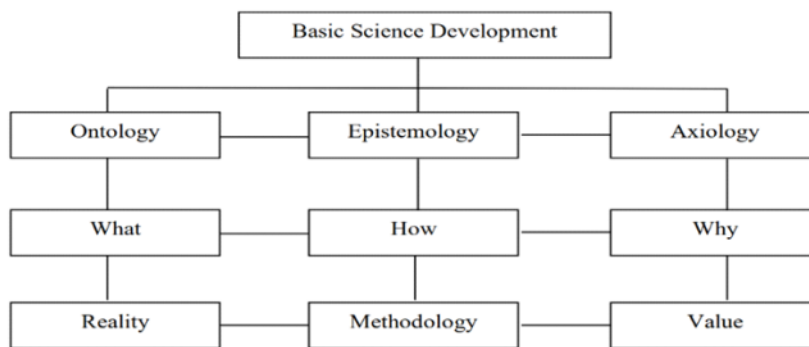
The third thing I want is a dashboard where you can see statistics about everything happening online - how many people visited, how many likes were given, how many comments, shares, and so on. I want it to be visual, with colorful charts and easy to understand, not boring tables with numbers.

The fourth point is to check if what I made actually works. I want to test the platform with about 20 people from the community and see if they like it, if it's easy to use, if they find what they're looking for. The target is for at least 80% to say they're satisfied. And of course, to listen to what suggestions they have and implement what makes sense.

Finally, I want to make sure everything runs fast - when you enter the site, it should load in maximum 3 seconds. And very importantly, it should be properly secured, respecting all GDPR rules so there are no problems with users' personal data.

Q2. Research Philosophy

Picture 1. Philosophy of Science



[6]

How I approach research

I've thought a lot about this and I believe the best approach is to combine several working methods. You can't rely only on numbers or only on opinions - you need both to understand the complete picture.

That's why I chose pragmatism as a research philosophy [7]. It sounds fancy, but in reality, it means I use what works best for each situation. When I need to measure site speed or count visitors, I use concrete data, numbers. When I want to understand if people like the design or if they easily find what they're looking for, I talk to them, ask them, watch how they navigate.

Many books and researchers in the IT field say this mixed method is the best for practical projects. You're not doing research for the sake of research - you want to solve a real problem. So you use whatever tools you need to reach a solution.

Q3. Search Tools and Research Identification Strategies

Where I search for information

So, I don't reinvent the wheel and can see what's been done in the field, I started searching through academic databases. I have four main sources where I look:

IEEE Xplore is the first - it's full of articles about technology and programming, perfect for the technical part of the project. There you find how to aggregate web content, how to make digital platforms, and other technical stuff.

ACM Digital Library is the second - similar to the first, but has a lot about interface design and how to analyze web data. Very useful for the dashboard and statistics part.

Google Scholar, I use because it has everything - not just technology, but also studies about online religious communities, how people interact in digital space, and so on.

Scopus is the last database, it's broader and combines multiple domains. Perfect when you're looking for studies at the intersection of technology, communication, and religion.

Search Strategies:

When I search for articles, I use combinations of keywords - for example "web aggregation" plus "religious organization," or "social media analytics" plus "community platform." That's about how I manage to find relevant research for what I want to do [8].

TASK 3: Research Strategies

27 November 2025 14:33

Q1. Validity, Reliability, Generalization, and Ethical Considerations

How I'll make sure I do the job right

Verification of results and research credibility

To be sure that what I'm doing is serious and trustworthy, I've thought of several strategies. Basically, I want to check from multiple angles if the platform works properly. I'll combine automated performance tests with user questionnaires and personal interviews. The idea is that if all these say the same thing, it means I'm on the right track.

I'll test the platform with different categories of people - young, older, some who are good with computers, others not so much. This way I can see if it works for everyone, not just for those who are technology experts.

To be consistent, I'll use the same measurement methods each time. For example, I chose the System Usability Scale (SUS), which is a questionnaire proven and tested by many people until now. For the technical part, I'll measure speed and performance under the same conditions, multiple times, to see if I get similar results.

Although I'm making the platform for a specific religious organization, the principles I use can be applied in other contexts too - other churches, NGOs, any organization that has content scattered across the internet. I'll clearly mention the limitations too - that each community is different and has its own needs.

The ethical part

All participants will receive clear explanations about the research purpose and their rights. Participation is voluntary, with the possibility of withdrawal at any time, without consequences. Data will be completely anonymized and stored securely. The platform respects GDPR, offering users total control: access, modification, or deletion of personal data. Before collecting information, I will obtain ethics committee approval, ensuring complete compliance with ethical and legal standards.

Q2. Research Strategies and Data Collection Methods

The methods I will use

I plan to combine several types of research - both concrete data with numbers, and conversations and observations. It's called mixed methodology [9] and it's perfect for projects like this.

Research methods:

Online questionnaires: Distributed via email and social media to 30-50 people, before and after launch, to evaluate user expectations and satisfaction.

Usability tests: 10-15 participants will use the platform with the "think-aloud" method, recording the screen to identify difficulties. Sessions of 45-60 minutes.

Interviews: 30-45 minute discussions with 8-10 community leaders and frequent users about expectations, problems, and improvements.

Automated analysis: Google Analytics continuously monitors for 3 months traffic, navigation, and user behaviour.

A/B tests: Comparing different versions of pages to optimize engagement.

Pilot study: 3-week mini-test with 5 diverse participants (age, technology experience) to validate research instruments, adjust questions, tasks, and resolve bugs before large-scale launch.

Q3. Types of Quantitative and Qualitative Analysis

I will use a mixed approach for analysis.

Quantitative: I calculate averages, percentages, make graphs, and compare user satisfaction before/after implementation through statistical tests, checking differences between groups and reporting against industry standards.

Qualitative: I transcribe interviews looking for common themes (e.g., confusing navigation), use NVivo for organization, and analyze free comments plus usability tests (errors, clicks, difficulties).

Combining quantitative data with qualitative data provides the complete picture - numbers show "what" happened, and stories explain "why." This way I deeply understand what works, identifying exactly where and how I can improve the platform.

Reference

27 November 2025

14:34

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