



Cardiff University

School of Computer Science and Informatics

CM3203 – Individual Project Initial Plan

**Developing an Interactive Platform to Enable the Management of
Learning Resources for Schools to Experiment with Building
Monitoring Data**

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1.1 Project Description

Developing an interactive platform to enable the management of learning resources for schools to experiment with building monitoring data is important for several reasons. The main problem addressed is the lack of an efficient and effective system for managing learning resources and experimenting with building monitoring data in schools. The goal is to develop an interactive platform that streamlines this process. First and foremost, it allows schools to better understand and optimize their energy usage. By reducing energy waste, schools can lower their energy bills and operate more sustainably, thus reducing their carbon footprint [1]. Additionally, this data can inform and support curriculum development by providing hands-on learning opportunities for students to engage with data, understand energy use. This can lead to significant cost savings, as well as a reduction in the school's carbon footprint.

Interactive platforms offer engaging, personalized, and flexible learning experiences with access to a wide range of resources. They also facilitate collaboration, communication, and provide data for informed decision-making [2].

An interactive platform can also be used to educate students about the importance of energy conservation and the impact of their actions on the environment. The importance of conservation reduces operational costs, reduces carbon footprint, and promotes sustainability [3]. Engaging the wider community in conservation efforts increases awareness and creates a sense of ownership and responsibility, leading to a more committed and engaged community, and serves as an educational opportunity for students. By providing students with real-time data on their school's energy usage, they can see the direct impact of their actions and learn about the importance of conservation.

Furthermore, interactive platform like this can also be used to engage parents, teachers, and the wider community in the effort to reduce the school's energy consumption. By providing real-time data on the school's energy usage, community members can see the progress being made and become more invested in the effort to reduce the school's carbon footprint.

Another important aspect is the ability to monitor and manage learning resources. With the help of interactive platforms, schools can easily track the usage of resources such as textbooks, computers, and other materials [4]. This can help to identify areas where resources are being overused or underutilized, and make adjustments accordingly. This way schools can save money on replacing materials that are still in good condition and make sure that all students have access to the resources they need to succeed.

2.1 Project Aims

- To provide a centralized platform for schools to manage learning resources and experiment with building monitoring data.
- To promote environmental awareness and the importance of indoor air quality in the education sector.
- To provide a user-friendly platform that is accessible and easy to navigate.

2.2 Project Objectives

- Design and develop a user-friendly interface for easy navigation and access to learning resources.
- Ensure the platform is accessible and compatible with different devices and operating systems.
- Allow teachers and administrators to monitor the usage and effectiveness of the learning resources.
- Provide a platform for collaboration and communication between teachers and school pupils
- Research digital platforms that support sustainability education and STEM (Science, Technology, Engineering or Maths) education, with a specific emphasis on those created for young children.

3.1 Project Work Plan

WEEK 1 (30th January-5th February)

- Complete the initial plan until 5th February
- Research how to implement a registration system that is suitable for such application
- Milestones:
 - Initial plan complete and submitted

WEEK 2 (6th February-12th February)

- Work on User Studies
 - User research: To gain insights into user behavior, preferences, and motivations
- Create initial sketches of the website of the front-end using Figma.
- Project scope
- Milestones:
 - Figma mock-up sketches done

WEEK 3 (13th February-19th February)

- Define functional requirements
 - will include tasks that the prototype will allow the user to do
- Define non-functional requirements
 - will define system requirements and attributes like usability and security
- Create UML Diagram
- Risk assessment
 - used in developing a website to identify and evaluate potential risks that could impact the success of the project
- Begin implementing the database using SQL
- Milestones:
 - Functional and Non-functional requirements complete
 - UML diagram complete
 - Risk assessment finished

WEEK 4 (20th February-26th February)

- Continue with the database implementation
- Implement the registration and login + logout back-end
- Begin implementing the front-end, starting with the main page
 - Sets the tone for the rest of the site and is often the first impression users will have of the website
- Milestones:
 - Database complete
 - Registration and login + logout pages complete

WEEK 5 (27th February-5th March)

- Continue working on the front-end
- Begin working on the final report
 - Introduction
 - Motivation
 - Project aims and objectives
- Milestones:
 - Main page implementation complete

WEEK 6 (6th March-12th March)

- Continue working on front-end:
 - Profile Page
 - Help and Support Page
 - Resource Library Page
 - Survey Pages
- Milestones:
 - Other pages implementation complete

WEEK 7 (13th March-19th March)

- Implement a task bar
 - provides a consistent and convenient access point for users to navigate the website and access its features and functionalities
- Work on implementing admin page view
- Milestones:
 - Logout functionality complete
 - Taskbar complete
 - MVP (Minimum Viable Project) completed

WEEK 8 (20th March-26th March)

- Finish implementing the admin page view
- Start testing the website to find errors and bugs
- Create a document consisting of the product's bugs and errors
 - helps to identify and prioritize issues with the website during the development process.
By documenting each bug and error, it is easier to track the status of each issue, allocate resources to resolve it, and ensure that it is fixed in a timely manner
- Milestones:
 - Admin page view complete
 - Error and bug document completed

WEEK 9 (17th April-23rd April)

- Fix any bugs in the product
- Write the implementation in the final report
- Milestones:
 - Bugs fixed
 - Implementation part finished

WEEK 10 (24th April-30th April)

- Evaluation
- Test cases
- Fix any failed test cases
- Milestones:
 - Evaluation part complete

WEEK 11 (1st May-7th May)

- Conclusion
- Future features
- Reflection on learning
- Project summary
- Limitations

WEEK 12 (8th May-12th May) 12th May is the submission day, everything must be finished by the 11th May

- Review work
- Make changes if necessary
- References
- Milestones:
 - Project complete
 - Final report complete
 - Submit work

4.1 References

- [1] *Indoor Air Quality Toolkit for Primary Schools* (no date) Cardiff University. Available at: <https://www.cardiff.ac.uk/research/explore/find-a-project/view/2594539-indoor-air-quality-toolkit-for-primary-schools> (Accessed: February 4, 2023).
- [2] Stoyanov, S. *et al.* (2022) *Integration of STEM Centers in a virtual education space*, MDPI. Multidisciplinary Digital Publishing Institute. Available at: <https://www.mdpi.com/2227-7390/10/5/744> (Accessed: February 4, 2023).
- [3] *Indoor Environment in Schools- Pupils Health and Performance in Regard to CO₂ Concentrations*. Available at: [https://www.aretas.ca/sites/default/files/imce_images/Indoor%20Environment%20in%20Schools%20%E2%80%93%20Pupils%20Health%20%26%20Performance%20in%20Regard%20to%20CO₂%20Concentrations.pdf](https://www.aretas.ca/sites/default/files/imce_images/Indoor%20Environment%20in%20Schools%20%E2%80%93%20Pupils%20Health%20%26%20Performance%20in%20Regard%20to%20CO2%20Concentrations.pdf) (Accessed: February 4, 2023).
- [4] Author links open overlay panel Chih-Ming Chen *et al.* (2012) *Interactive augmented reality system for enhancing library instruction in elementary schools*, *Computers & Education*. Pergamon. Available at: <https://www.sciencedirect.com/science/article/abs/pii/S0360131512000589> (Accessed: February 4, 2023).