



**FACULTY OF INFORMATION TECHNOLOGY AND
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UNDERGRADUATE WORK

PROPOSAL

**DESIGN AND IMPLEMENTATION OF A CENTRALIZED STUDENT
PERFORMANCE MANAGEMENT SYSTEM FOR SOLID ROCK
FOUNDATION SCHOOL**

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Abstract

This study investigates the flaws of manual recording of student scores at Solid Rock Foundation School and outlines the development of a Centralized Student Performance Management System. The aim of this project is to optimize the score recording process for teachers, facilitating secure storage and effective analysis of student performances. Through our research, we identified that inadequate analysis and record-keeping of a student performance can lead to subpar grades. We believe that a Centralized Student Performance Management System could mitigate this challenge. The implication of this project extends beyond reducing the workload of teachers but also enabling teachers to identify performance trends and make informed decisions.

Keywords: *Records Management, Grading, Students Performance Analysis, Centralized System, Records, Records System*

Design And Implementation of a Centralized Student Performance Management System for Solid Rock Foundation School

1. Introduction

The grading process plays a crucial role in assessing student performance and providing valuable feedback for academic improvement. As established by Walvoord and Anderson (1998), grading provides feedback to instructors on their students' learning, information that can inform future teaching decisions. However, the current method of recording student scores employed at Solid Rock Foundation School is time-consuming and prone to errors, often leading to inefficiencies in academic management. To address these challenges, this project proposes the development of a centralized student performance management system tailored to the needs of Solid Rock Foundation School highlighting the scope, limitations, objectives, and significance of this project.

2. Background of Study

Records management is the effective storage and retrieval mechanism of information that aids an organisation in making decisions (Touray, 2021). By facilitating easy access to information, records management empowers decision-makers to make informed and timely decisions that drive organizational success and effectiveness.

In educational institutions worldwide, effective management of student performance data plays a crucial role in fostering academic excellence, supporting data-driven decision-making

and promoting transparency in the grading process. The success of any organisation depends on effective records management practice that ensures the right records are available at the right time for effective business operations (Touray, 2021). Traditionally, the recording of student scores has relied on manual methods, such as handwritten gradebooks or Microsoft Excel spreadsheets, which are prone to errors, time-consuming and lack real-time accessibility for stakeholders. There is a growing need for centralized automated systems that streamline the grading process and provide actionable insights into student performance.

Schools can transition from paper-based systems to centralized platforms that offer efficiency, accuracy and enhanced functionality. These systems not only simplify the task of recording grades for teachers but also provide them with valuable insights into academic progress and areas for improvement.

Despite the potential benefits of these centralized platforms, many educational institutions still rely on outdated and inefficient methods for recording student scores. Challenges such as limited resources, technological barriers and resistance to change often impede the adoption of new technologies in academic settings. However, the Corona Virus Disease 2019 (COVID-19) pandemic has underscored the importance of digital solutions in education, accelerating the need for innovative approaches to student assessment and grading. The COVID-19 pandemic brought about a notable transformation in education, moving from traditional methods to an online format, which presented a new and unfamiliar situation for both teachers and students (Akram et al., 2021).

In response to these challenges and opportunities, the proposed project aims to develop a web-based system for recording student scores and analysing performance. Free from the constraints of paper, digital records offer a range of opportunities for new kinds of use and re-

use, and more powerful implementations of records controls across and between the systems that manage records (International Organization for Standardization, 2012). By centralising grade recording and analysis in a user-friendly platform, the project seeks to address the inefficiencies of manual recording of grades and provide stakeholders with actionable insights to support student learning and success.

3. Problem Statement

Solid Rock Foundation School is a reputable institution committed to providing quality education to its students. However, the current method of managing and recording student scores and grades at Solid Rock Foundation School is inefficient, leading to delays in report submission and limited opportunities for detailed performance analysis.

Grades are crucial in providing valuable feedback on student performance. Teachers at Solid Rock Foundation School have complained that the method of recording student scores in books is time-consuming. Some disadvantages of the current method (recording in books) are:

- It is time-consuming. Teachers must write names and scores every time. In the end reports must be typed.
- Manual recording is susceptible to human error.
- Physical books used for recording may not be easily accessible to stakeholders.
- Analysing student performance trends from handwritten records can be challenging.

This hinders teachers' ability to effectively track student progress, identify areas needing improvement and adapt their teaching strategies accordingly.

4. Project Objectives

Let us look at the project objectives where we detail the main goals and anticipated outcomes of the proposed centralized student performance management system for Solid Rock Foundation School.

4.1 General Objective

- The objective of this project is to develop and implement a centralized student performance management system for Solid Rock Foundation School to enhance teachers' efficiency in recording and analysing student performance. This will enhance decision-making by providing teachers and school administration access to comprehensive performance data through a centralized system. In addition, the system reduces the risk errors and improving overall data integrity.

4.2 Specific Objectives

- Researching the current method teachers employ in recording student marks.
- Analyse the challenges involved with the manual method which involves using books to record marks.
- Development and implementation a centralized student performance management system for Solid Rock Foundation School.

4.3 Benefits

- **Efficiency:** The system saves time and effort for teachers by automating the recording of scores and providing easy access to performance data.
- **Accuracy:** By reducing manual recording methods, the proposed system improves the accuracy of student scores records, minimizing errors and ensuring the integrity of

academic data.

- **Insightful analysis:** The system provides a dashboard to enable teachers and school administration to gain insight into student performance trends, identify areas for improvement targeted interventions to support student learning process.

5. Scope of Project.

This section provides a comprehensive overview of the project's scope, aiming to facilitate a clear understanding by breaking it down into distinct components: project scope definition, project deliverables, acceptance criteria, exclusions, and constraints of the project, as well as a detailed timeline for its execution. Together, these components provide a structured framework for understanding and managing the project's scope.

5.1 Product Scope Description

We will develop and implement a Centralized Student Performance Management System tailored to the specific needs of Solid Rock Foundation School. The objective of the system is to automate the process of recording student scores and to analyse student performance.

5.2 Project Deliverables

- A functional online platform which includes:
 - A User Interface that will allow the teachers to login and perform tasks such as viewing and updating of student scores in a tabular form.
 - A User Interface for students to view their performance in various subjects.
 - A database to store student scores, information about subjects and classes as well

as login details.

- A web page for users to send feedback to us.
- User documentation.

5.3 Project Acceptance Criteria

- A user-friendly interface that requires minimal training for teachers and administration.
- Accurate data representation with less than 0.1% error margin in score entry and calculations.

5.4 Project Exclusions

- The system does not include features unrelated to academic management, such as financial management or student enrolment.
- The system is tailored to suit the needs of Solid Rock Foundation School specifically.

5.5 Project Constraints

- **Budget:** The cost of setting up and maintaining servers, databases, and other infrastructure components necessary for hosting the system can be significant. Cloud hosting services provide flexibility but also incur costs based on usage. According to a report by Leonard (2024) published in Forbes Advisor, the cost of designing a website with up to 16 pages typically ranges from \$2,000 to \$9,000. Additionally, annual maintenance for such a website could cost up to \$1,200.
- **Time:** Some key time constraints are technological complexity and client requirements. By technological complexity we are referring to the challenges we face due to unfamiliar technologies. This requires additional time for learning and implementation. Client requirements require iterative adjustments throughout the development process, which

can potentially extend the timeline.

5.6 Project Timeline

- Gathering requirements – 1 week
- System development – 2 weeks
- Testing – 1 week
- User documentation – 1 week

6. Methodology

6.1 Research Method

This study proposes a qualitative methodology to gain in-depth insights into the effectiveness of the centralized grading system and its impact on student performance and academic management. Qualitative research is a scientific inquiry method that systematically gathers evidence to explore and understand phenomena, producing findings not predetermined and applicable beyond the study's immediate boundaries (Mack et al., 2005).

Through interviews with teachers at Solid Rock Foundation School, we identified that the process of recording student scores manually takes up a lot of the teacher's time (Anonymous, personal communication, March 15, 2024). Our interview questions include:

- How do you currently manage and record student performance data at Solid Rock Foundation School?
- What challenges do you face with the current manual recording system in terms of managing student performance data and analysing student performances?

6.2 Software Development Method

For a team of three developing the system, we propose to employ an Agile methodology, particularly Scrum. Scrum is an agile project management framework that emphasizes teamwork, iterative development, and continuous improvement to deliver value incrementally. (Schwaber & Sutherland, 2020).

Our reasons for choosing to use Scrum are as follows:

- **Suitable for teamwork:** Scrum's focus on teamwork and collaboration also contributes to its popularity (Iqbal, 2023).
- **Flexibility:** Scrum offers flexibility in adapting to changing requirements and priorities.

As we work closely with the school, their needs and preferences may evolve over time.

6.3 Technologies and Tools

To successfully implement the proposed centralized grading system and analysis dashboard, a variety of technologies and tools will be employed. We will use HyperText Markup Language (HTML), Cascading Style Sheets (CSS), and JavaScript (JS) to develop the User Interface for the system. To develop our backend and database we will use XAMPP which supports Hypertext Processor (PHP), My Structured Query Language (MySQL) and supports Apache HyperText Transfer Protocol (HTTP) Server. XAMPP, which stands for Cross-Platform, Apache, MySQL, PHP, and Perl, is a free platform that allows developers to test their code locally on their own computers (edX, n.d.).

7. Limitations of Study

In the exploration of developing a centralized student performance management system

for Solid Rock Foundation School, it is important to acknowledge the potential limitations that may impact the project's implementation and long-term sustainability.

- Ensuring the protection of student information may require sophisticated security measures that could be challenging to implement and maintain.
- As the volume of data increases the system must be able to scale effectively.
- Maintenance, updates and technical support is limited due to resource constraints.

8. Significance of the Study

The significance of study highlights the potential impact and benefits that the study can bring to the field or stakeholders involved. In the context of this project, the significance lies in its ability to streamline data management and enhance decision-making processes in educational institutions.

- **Streamlined data management:** This study addresses the need for efficient data management in educational institutions by centralizing the recording of student scores, reducing the risk errors and improving overall data integrity.
- **Enhanced decision-making:** By providing teachers and school administration access to comprehensive performance data through a centralized system, this project facilitates data-driven decision-making processes, leading to more informed instructional strategies and curriculum planning.

9. Organization of The Study

To enhance the logical flow of information and ensure a comprehensive understanding of the project's scope, methodology, and significance, we have structured our study as follows:

Introduction

The Introduction opens the study by outlining the importance of the system in assessing student performance and providing feedback for academic improvement. The inefficiencies of the current method of recording student scores at Solid Rock Foundation School are stated. To address these challenges, the project proposes developing a centralized student performance management system specifically designed for the school's needs.

Background of Study

In our Background of Study, we discuss how effective records management, particularly in educational institutions, is essential for fostering academic excellence and supporting data-driven decision-making. This section highlights the shift towards centralized automated systems to streamline grading processes and provide actionable insights into student performance, emphasizing the significance of digital solutions, especially considering challenges and opportunities presented by the COVID-19 pandemic.

Problem Statement

The Problem Statement looks at the issue plaguing Solid Rock Foundation School's current method of recording student scores, including time-consuming manual processes, susceptibility to errors, and limited accessibility to stakeholders. This section is crucial as it identifies the specific issues faced by the institution and sets the stage for the proposed solution. In short, it is about the problem the research is attempting to address.

Project Objectives

The objectives of developing a centralized student performance management system for Solid Rock Foundation School are to enhance teachers' efficiency, improve accuracy in recording student scores, and provide insightful analysis of performance data.

Scope of Project

The Scope of Project offers a comprehensive overview of the project's scope by dissecting it into distinct components: project scope definition, project deliverables, acceptance criteria, exclusions, constraints, and a detailed timeline for execution. Collectively, these elements form a structure for understanding and managing the project's scope.

Proposed Methodology and Technologies

This section outlines the research approach and software development method employed in the project. It provides a structured framework for gathering insights into the system's effectiveness and facilitating the development process through Agile methodologies, specifically Scrum. The technologies and tools to be used in development are also discussed.

Limitations of Study

The study acknowledges several limitations, including the challenge of implementing and maintaining sophisticated security measures to protect student information, the necessity for effective scalability as data volume increases, and limited maintenance, updates, and technical support due to resource constraints. This section is important as it highlights potential challenges and constraints that may impact the implementation and sustainability of the project.

Significance

We delve into the role of the study in streamlining data management in educational

institutions through centralized recording of student scores and improving decision-making processes by providing access to comprehensive performance data.

10. Conclusion

This paper has articulated the need for a more efficient approach to managing student performance data at Solid Rock Foundation School. By proposing the development of a centralized student performance management system, this project will streamline the grading process, reduce errors, and improve overall academic management. The key argument presented throughout the essay is the importance of adopting innovative solutions to enhance data management and decision-making processes in educational institutions. The proposed system holds the potential to revolutionize the way student performance is recorded and analysed, ultimately contributing to improved instructional strategies and curriculum planning. Thus, by addressing the identified challenges and offering a solution tailored to the school's specific needs, this project intends to optimize academic management practices and fostering academic excellence.

References

- Akram, H., Yingxiu, Y., Al-Adwan, A. S., & Alkhalifah, A. (2021). Technology Integration in Higher Education During COVID-19: An Assessment of Online Teaching Competencies Through Technological Pedagogical Content Knowledge Model. *Frontiers in Psychology*, 12(August), 1-11. <https://doi.org/10.3389/fpsyg.2021.736522>
- edX. (n.d.). *Learn XAMPP*. Retrieved 2024, from edX.org: <https://www.edx.org/learn/xampp>
- International Organization for Standardization. (2012). ISO/DIS 15489-1(en). *Information and documentation — Records management — Part 1: Concepts and principles*. Retrieved from <https://www.iso.org/obp/ui/#iso:std:iso:15489:-1:dis:ed-2:v1:en>
- Iqbal, M. (2023, April 19). *Why is Scrum the Most Popular Agile framework?* Retrieved from Scrum.org: <https://www.scrum.org/resources/blog/why-scrum-most-popular-agile-framework>
- Leonard, K. (2024, February 18). *How Much Does A Website Cost? (2024 Guide)*. (Forbes Media LLC) Retrieved March 24, 2024, from Forbes: <https://www.forbes.com/advisor/business/software/how-much-does-a-website-cost/>
- Mack, N., Woodsong, C., MacQueen, K. M., Guest, G., & Namey, E. (2005). *Qualitative Research Methods: A Data Collector's Field Guide*. North Carolina, USA: USAID. Retrieved from www.fhi.org
- Schwaber, K., & Sutherland, J. (2020). *The Definitive Guide to Scrum: The Rules of the Game*. Creative Commons.
- Scrum. (n.d.). *What is Scrum*. Retrieved from Scrum.org: <https://www.scrum.org/resources/what-scrum-module>
- Touray, R. (2021). A Review of Records Management in Organisations. *Open Access Library*

Journal, 8. <https://doi.org/10.4236/oalib.1108107>

Walvoord, B., & Anderson, V. (1998). *Effective Grading: A Tool for Learning and Assessment in College* (2nd ed.). San Fransisco: Jossey-Bass. <https://doi.org/2010>