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A Web-Based Scheduling System for Resource Management in Secondary Education Leveraging Greedy Algorithm

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Abstract: *This study addresses the inefficiencies of manual resource scheduling at Agusan National High School, such as frequent conflicts and communication gaps, particularly concerning Computer Laboratory (ComLab) access. A web-based scheduling system utilizing Greedy Algorithm was designed to maximize Computer Laboratory allocation. The system allows for processing high-priority Grade 11 ICT timetables and a reservation feature for Non-ICT teachers, with automated request processing and conflict detection. Designed using PHP Laravel and JavaScript, its usability was tested by 15 administrators and teachers using the System Usability Scale (SUS). The system recorded an average SUS score of 73.5, demonstrating "Good" usability. It successfully minimized scheduling conflict and maximized resource management, clearly demonstrating an effective solution to increasing operational efficiency and supplementing the learning environment.*

Keywords: Web-Based Scheduling System; Resource Management; Greedy Algorithm; Secondary Education.

1. Introduction

Resource management in secondary education is required but hard. Schools' ought to be scheduling classrooms responsibly, arranging teacher workloads, and utilizing facilities such as laboratories and learning resources optimally. In Agusan National High School, the scheduling is handled through manual approaches, such as planning through face-to-face interaction or message forms, which always result in inefficiencies, scheduling duplication, and poor resource utilization. This manual method tends to leave teachers in the dark regarding the fate of their lab requests, leading to follow-up and potential frustration.

Web-based scheduling software is increasingly being identified for their capacity to facilitate such processes. Such programs are commonly advantageous, such as the capacity for automatic resolution of conflicts, offering data updates in Realtime, and automatization of the process. This translates to better time management of staff and better coordination between departments [1]. Algorithmic studies, for instance, evolutionary algorithms for scheduling [2], emphasizes the capability of computational techniques to address issues such as scheduling conflicts along with inefficient room utilization based on criteria such as room size and availability of instructors. This work enhances such an understanding by incorporating computational methods for optimal scheduling. Furthermore, such systems can offer open monitoring of service demands, i.e., scheduling labs.

School complexity in secondary school is brought about by the management of more than one grade level, subject permutations, laboratory and classroom space limitations, and teacher specialization [3]. Teachers in Philippine public schools are usually burdened with administrative workloads

and resource allocation problems worsened by curriculum reform and institutional abandonment. These problems underscore the primary importance of effective scheduling systems that can reduce inconsistencies and facilitate more equitable allocation of existing resources [4].

School scheduling is dynamic and refreshed at periodic intervals by changes in the enrollment, teacher allocation, and policy [5]. Manual systems are not able to keep these updates efficiently, leading to mistakes and general inefficiencies [5]. By contrast, automated scheduling systems vow to reduce administrative workload by a great degree, promote a more equitable allocation of resources among staff and departments, and assist with enhancing the efficiency of operations in the school [6].

To guarantee usability, the developed system will be tested with the System Usability Scale (SUS), an established method of determining ease of use in many systems [7]. This test process will yield useful feedback regarding how administrators and school members at Agusan National High School will use the new web-based schedule system. The aim is to assess user satisfaction and usability of its implementation in the school setting in a systematic way.

With the school's large amount of scheduling information, with multiple grade levels, more than a hundred teachers, and several rooms and periods, a streamlined and scalable system must be implemented [8]. Implementing a web-based scheduling system specifically designed for Agusan National High School would bring about more streamlined administration, less scheduling mistakes, and an organized and supportive learning environment for teachers and students.

1.1.1 Related Works

The study aligns with a broader body of research that explores the application of greedy and heuristic-based algorithms to optimize complex scheduling and resource allocation

problems. Brahma chary et al. demonstrated the efficacy of greedy and hybrid heuristic methods, such as the shuffled frog-leaping and genetic algorithms, in solving aerodynamic shape optimization problems—showcasing their adaptability and strength in delivering near-optimal solutions in high-dimensional spaces [9]. While their domain differs from educational scheduling, the underlying optimization principle remains consistent. Similarly, Zhao, Ren, and Sakurai proposed the DRR algorithm for heterogeneous computing environments, aiming to minimize resource usage while ensuring deadlines and reliability, an approach that emphasizes efficient, constraint-based allocation, closely resembling the greedy strategy employed in this study [10]. In related work, they also addressed reliable workflow scheduling with minimal redundancy, a goal shared with our system's conflict-free, optimized lab scheduling for educators [11]. Moreover, Mostafa and Amano's enhancements to Round Robin CPU scheduling using clustering techniques further affirm the relevance of hybrid heuristic-greedy approaches in improving allocation efficiency and reducing latency—principles that directly influence our system's design to prioritize and resolve scheduling conflicts [12], [13]. These studies substantiate the viability of greedy algorithms in dynamic, resource-constrained environments, supporting their application in educational settings like Agusan National High School.

1.2 Statement of the Problem

The present manual scheduling process in resource management in Agusan National High School is formal in character. The most critical three concerns that are being addressed in this study are:

- The unreliable process of teachers securing Laboratory time via time consuming physical checks provides no guarantee of future access, detracts from academic preparation, and leads to inefficient use of time and resources.
- With no dependable reservations, the manual process creates constant resource conflicts and activity interruptions through its dependence on physical presence before actual schedules, causing overall inefficiency.
- The widespread doubt concerning actual availability of assets freezes effective planning, creating an underemployed assets culture and conflict that works against effective asset utilization and disrupts the learning environment.

1.4 Objectives of the Study

The aim of this study is to build a web-based scheduling system that seeks to maximize resource usage and management across the secondary school level, specifically geared to counter the respective operating complexities encountered at Agusan National High School.

1. To develop a web-based system to support managing fixed Laboratory appointment schedules of Grade 11 ICT teachers and a non-ICT reservation module instructor to request access to ComLab, and certain status tracking for their submitted requests.
2. To implement and apply a greedy algorithm that automatically schedules non-ICT teacher ComLab requests

to free slots without interrupting pre-plotted ICT schedules and handling conflicts by suggesting alternatives for unavailable preferred time.

3. To evaluate the developed system at Agusan National High School, assessing its effectiveness in successfully managing prioritized ICT ComLab access, efficiently plotting non-ICT requests while respecting priorities and resolving conflicts, and minimizing ComLab misuse, alongside its usability and satisfaction for relevant school personnel (including ICT/Non-ICT teachers and administrators).

1.6 Significance of the Study

This study supports the effective utilization of educational technology resources and administrative efficiency at Agusan National High School by addressing critical challenges in scheduling resource management, particularly the conflicts arising from prioritized ICT teacher access and the needs of other faculty members. By developing a web-based scheduling system that employs a greedy algorithm, this study aims to reduce manual scheduling efforts, minimize booking errors, and provide clear, real-time visibility of ComLab availability. School administrators will be able to manage laboratory schedules with greater effectiveness. ICT teachers will benefit from systematically plotted and prioritized ComLab access, while non-ICT teachers will gain a transparent, more equitable process for requesting and securing laboratory time, with clear visibility into the status of their booking requests, through mechanisms such as email confirmations containing unique reference numbers, thereby reducing scheduling conflicts and uncertainty.

This study contributes to existing research on applied computational methods in educational resource management by demonstrating a practical application of a greedy algorithm to solve the specific, rule-based complexities of shared Computer Laboratory scheduling with tiered user priorities within the context of Agusan National High School.

1.5 Scope and Limitation of the Study

Scope

The scope of the study for a web-based scheduling system for resource management in secondary education at Agusan National High School includes:

- Focuses on developing a web-based scheduling system and resource management utilizing a Greedy Algorithm for optimized ComLab resource allocation.
- Focuses on assisting Grade 11 ICT teachers with managing their prioritized, plotted ComLab schedules, and non-ICT teachers (from various subjects and grade levels) with requesting and securing ComLab reservations.
- Focuses on the automated, rule-based placement of non-ICT teacher ComLab requests, ensuring ICT teacher schedule priority is maintained and scheduling conflicts are effectively resolved.
- Focuses on providing non-ICT teachers with clear status tracking for their Laboratory reservation requests, including confirmation notifications sent to their Gmail

accounts containing a unique reference number for their booking.

Limitations

- The system's design and evaluation findings will be tailored specifically to the operational rules and user base of Agusan National High School, potentially limiting direct transferability to other educational institutions without significant customization.
- The implemented greedy algorithm is designed to provide efficient and practical, locally optimal schedules for Computer Laboratory assignments based on Agusan National High School's specific rules (including Grade 11 ICT priority); global optimality across all conceivable scheduling scenarios is not a guaranteed outcome.
- The accuracy and successful initial setup of the system will depend heavily on the completeness and correctness of the existing Computer Laboratory usage data and the pre-plotted Grade 11 ICT teacher schedules provided by Agusan National High School.
- The initial perceived effectiveness and success of the system may be influenced by the varying levels of technical proficiency among school personnel (including Grade 11 ICT teachers, non-ICT teachers, and administrators) and their overall rate of adoption of the new technology.

Review of Related Literature

This chapter reviews the application of greedy algorithms on resource scheduling in learning institutions such as Agusan National High School, detailing their role in addressing Computer Laboratory scheduling problems via optimization of resource access, allocation, and resolution of conflicts by rules.

1.1 Theoretical Framework

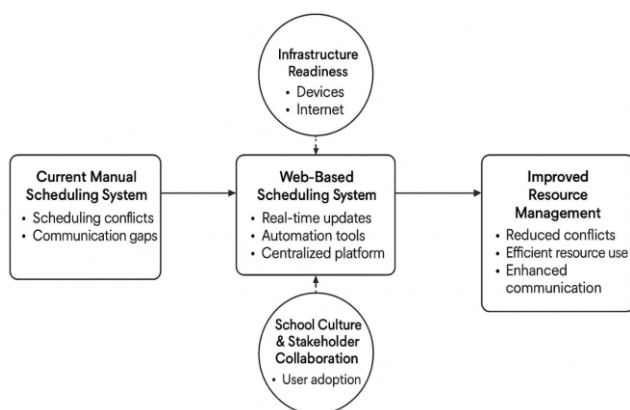


Figure 2.1 THEORETICAL FRAMEWORK

Figure 2.1 illustrates this study's theoretical framework, which shows an adaptation of Abu Samah et al.'s [14] model for the application of technology to educational administration. This model justifies the envisioned transition from manual scheduling to the web-based system implemented in Agusan National High School.

Manual traditional scheduling is commonly diagnosed in education literature with process inefficiencies such as

excessive frequency of scheduling conflicts, poor communication, and poor stakeholders' visibility of resources [15].

To mitigate these shortcomings, the web-based scheduling system proposed is made with key features. They encompass real-time updating, automated ComLab scheduling, and centralized administrative control. Among the core components is the application of a greedy algorithm that will be utilized to deal with Grade 11 ICT priorities, plot non-ICT requests for teachers, and resolve conflicts. These combined elements are popular in addressing scheduling problems as well as improving resource allocation in learning institutions [16]. Greedy algorithms are widely used in scheduling systems because of their ability to provide near-optimal solutions for difficult problems. Wang [17], for instance, discusses their application in task scheduling, citing that they perform well in instances involving timely decision-making.

The shift to web-based scheduling is commonly determined by strong situational factors. Infrastructure Readiness, or internet connectivity and availability of devices, is one of them. A lack of technology infrastructure can have the potential to sharply resist the setup and adoption of digital systems in schools [18].

School Culture & Cooperation with Stakeholders is another essential moderator. This includes willingness to embrace new technology, good communication with users, and a friendly platform in a bid to encourage cooperation [19,20]. Cooperative culture with stakeholders that encourages is imperative in integrating new educational technologies [21].

With effective implementation, and support from school culture and infrastructure, the system would enhance Resource Management. This enhancement is usually seen in reduced planning conflicts and optimal use of facilities [16], and better networks of communication between teachers and administrators [20], [19]. Additionally, implementing such web-based solutions tailored to address needs can provide practical insights for secondary education needs [22].

2. Methodology

This chapter presents the methodology adopted for the development and implementation of the web-based scheduling system for resource management at Agusan National High School (ANHS). It outlines the overall research design, describes the study setting and participants, and details the use of the Agile system development approach, including the integration of a greedy algorithm for scheduling.

1.2 Conceptual Framework

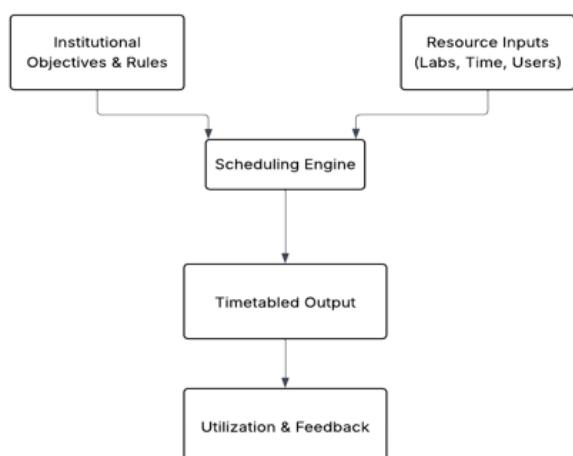


Figure 3.1 CONCEPTUAL FRAMEWORK

Figure 3.1 shows the operational architecture of the web-based scheduling system and resource management for Agusan National High School, detailing its input-process-output flow and feedback loop, an approach aligning with contemporary models for educational decision support and automated scheduling systems [17]. Key Inputs include institutional objectives, scheduling rules (like Grade 11 ICT class priorities), and resource data (ComLab specifics, time slots, user information), which are processed by a central Scheduling Engine employing a Greedy Algorithm with Rule-Based Logic to manage reservation requests, prioritize ICT schedules, and allocate slots to non-ICT teachers by making locally optimal choices while handling conflicts.

The primary Output is a prioritized, conflict-minimized ComLab schedule, with a Utilization & Feedback stage allowing for data gathering to inform continuous system refinement. To develop and evaluate this system, the study utilizes a mixed-methods approach, integrating quantitative data (like SUS scores and efficiency metrics) and qualitative data (from interviews and open-ended feedback) through developmental and evaluative research designs assessing its effectiveness, usability, and user satisfaction.

1.3 Data Collection

This study was conducted at Agusan National High School (ANHS), a large public secondary school in A.D. Curato Street, Butuan City, Philippines, where its two Computer Laboratories (ComLabs) serve various departments and grade levels, presenting specific scheduling challenges. Participants, purposefully selected for their direct involvement with ComLab scheduling, included ICT Teachers (specifically for Grade 11), Non-ICT Teachers from diverse subjects requiring ComLab access, and School Administrators responsible for resource management. To inform the system's scheduling logic, formal interviews were conducted with the Agusan National High School ICT teacher, an admin, and the head admin in charge of resource management. Although confidential scheduling data was not shared, the head admin provided a detailed verbal account of the current

manual scheduling process and its governing rules including inter-departmental coordination, standard section numbers, and the "one teacher per subject" principle which critically guided the functional design of the web-based ComLab scheduling system and the specific rules embedded in its greedy algorithm, especially concerning Grade 11 ICT priority and Non-ICT request handling.

1.4 Technology Stack

Table 3.3 Technology Stack

Technology	Purpose
PHP Laravel	The PHP Laravel backend framework powers the scheduling system and resource management by managing server-side logic, and database integration, and crucially, it serves as the environment for implementing and executing the Greedy Algorithm.
JavaScript	Utilized for building the interactive and responsive frontend interface.
Laragon DB	Serves as the database for storing user information, schedules, and records.

1.5 Functional Requirements

1. The system shall enforce role-based access control, granting different functionalities and views based on user roles.
2. Administrators shall be able to manage laboratory details
3. The system shall allow administrators to input, view, modify, and manage the fixed, recurring, and prioritized laboratory schedules specifically for Grade 11 ICT classes.
4. The system shall provide an intuitive interface for authenticated non-ICT teachers to view real-time availability of all laboratories, clearly showing existing prioritized ICT schedules and other confirmed bookings.
5. Upon submission of a non-ICT teacher's laboratory request, the system shall automatically invoke the Greedy Algorithm to process it.
6. The system shall automatically send confirmation notifications, including a unique reference number, to a non-ICT teacher's registered Gmail account upon successful booking or status update of their Laboratory reservation request.

1.6 Non-Functional Requirements

1. The algorithm shall maintain performance even as the number of teachers and subjects increase
2. Execution time for the greedy algorithm to process requests and identify conflicts should be minimal to ensure

a responsive user experience

3. The system should handle common user errors and unexpected inputs gracefully, without crashing or losing data.

4. Role-based access controls must be enforced to ensure users can only access data and functionalities appropriate to their designated roles

5. The system should be developed with a clear, modular code structure and adequate documentation to facilitate future updates, bug fixes, or minor modifications by authorized personnel

6. The notification system for reservation statuses and reference numbers (e.g., via Gmail) shall be reliable, ensuring timely and accurate delivery to users.

3.6 Constraints

Hard Constraints:

The web-based Computer Laboratory (ComLab) scheduling system for Agusan National High School operates under a set of precisely defined hard constraints (HC), which are mandatory conditions that any valid schedule or booking must satisfy. Let R_{req} be the requested room, D_{req} the requested date, Dur_{req} the requested duration, $[S_{prop}, E_{prop}]$ a proposed new booking slot where $E_{prop} = S_{prop} + Dur_{req}$, T_{open} and T_{close} be the lab's opening and closing times respectively, $BS(R_{req}, D_{req})$ be the set of all existing busy time intervals $[bs_start, bs_end]$ for room R_{req} on date D_{req} (this set includes prioritized ICT schedules), $Cap(R_{req})$ be the capacity of room R_{req} , and $N_students$ be the number of students for the requested booking.

1. **Non-Overlap:** For any proposed slot $[S_{prop}, E_{prop}]$, it must not overlap with any existing busy slot $bs \in BS(R_{req}, D_{req})$. This is satisfied if for all bs , $(E_{prop} \leq bs_start) \text{ OR } (S_{prop} \geq bs_end)$.

2. **Operational Hours Adherence:** The proposed slot must be within lab operational hours: $S_{prop} \geq T_{open}$ AND $E_{prop} \leq T_{close}$.

3. **Sufficient Duration:** The requested duration must be at least the minimum allowed (e.g., 1 hour) and the identified available gap $[Gap_start, Gap_end]$ must accommodate it: $Dur_{req} \geq 1$ AND $(Gap_end - Gap_start) \geq Dur_{req}$.

4. **Room Capacity:** The number of students for the booking must not exceed the room's capacity: $N_students \leq Cap(R_{req})$.

5. **Request Validity:** The request inputs themselves must be valid: $R_{req} \in \{\text{Defined Lab IDs}\}$, $D_{req} \geq \text{Current Date}$.

Soft Constraints:

1. **Provision of Alternatives for Conflicts** When a Non-ICT teacher's preferred time slot is unavailable (due to hard constraint violations), the system should endeavor to propose alternative feasible slots. This is a procedural goal aimed at enhancing user satisfaction and utility, rather than a constraint that directly

shapes an individual slot's mathematical feasibility.

2. **Maximizing User-Friendliness and Ease of Use** The system interface and interaction flow should be intuitive and easy to learn for all user roles at Agusan National High School. While not an input to the slot-finding algorithm itself, this is a critical system-level objective. Its achievement is typically measured post-development (via the System Usability Scale - SUS score), and if one were to formalize it as an objective, it would be Maximize SUS_score (System Interface).

3. **Ensuring Real-Time Visibility**, the system should provide users with immediate and accurate information regarding ComLab availability. This is a functional goal that enhances planning and reduces uncertainty, contributing to a better user experience.

4. **Implicit Goal of Efficient Resource Utilization** By systematically identifying and allowing the booking of all valid available time slots that meet hard constraints, the Greedy Algorithm implicitly aims to improve resource utilization compared to a manual system prone to oversight or unrecorded bookings. An objective function to explicitly maximize this could be Maximize $\sum Dur_booked_slots$ over a given period, subject to all hard constraints. The current greedy approach of filling the earliest available suitable gaps contributes to this implicitly.

3.6 Entity Relationship Diagram

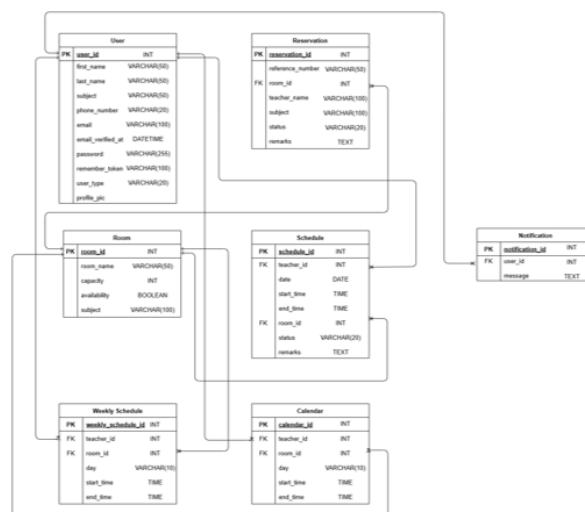


Figure 3.7 Entity Relationship Diagram (ERD)

Figure 3.7 Entity Relationship Diagram shows how scheduling system and resource management organizes its data.

- User:
- Room:
- Schedule:
- Weekly Schedule:
- Reservation:
- Calendar:
- Notification:

3.9 System Flowchart



Figure 3.9 System Flowchart

Figure 3.9 outlines a scheduling and management system that begins with a general login, after which the system directs users based on their role: ICT Teacher, Non-ICT Teacher, or Admin. ICT Teachers can access their dashboard to view and manage their schedules, including rescheduling classes and adding new ones. Non-ICT Teachers primarily use the system to view calendars, select available rooms, and book them after checking for conflicts. Admins have comprehensive oversight, allowing them to view all schedules and reservations, manage rooms, manage ICT teacher accounts, and edit settings. All user paths eventually lead to a logout, ending the session.

3.11 Testing

To evaluate the system's usability, functionality, and performance in a real-world classroom setting, a structured assessment process was conducted. This involved applying a standardized usability framework and performing hands-on testing with target end-users--teachers and admins from Agusan National High School.

The Evaluation aimed to determine how effectively the system meets user needs while identifying opportunities for improvement prior to full implementation.

3.11.1 Case Testing

Table 3.11.1 Case Testing for Teacher Side

Module Name	Test object	Expected Output	Status (Passed/Fail)
Teacher Login	Verify the login functionality for the	Teacher successfully logs in and is	Passed

	Teacher account (Teacher credentials are available in the database)	redirected to their dashboard	
View Schedule	Validate the ability to view scheduled events or classes	Teacher can see an accurate list of schedules	Passed
Create Schedule	Test if a teacher can create a new schedule	New schedule is saved and displayed on the Teacher's "Schedule Dashboard" page.	Passed

Table 3.11.2 Case Testing for Admin Side

Module Name	Test Object	Expected Output	Status (Passed/Fail)
Admin Login	Ensure Admin Login functionality works as expected	Admin successfully logs in and is redirected to their dashboard	Passed
Manage Teacher	Test Admin's ability to Create, Update, Delete	Changes are correctly reflected in the Teacher list	Passed
Manage Rooms	Verify Admin Functionality for managing room settings	Updated room data is saved and shown correctly	Passed
Logout (Admin/Teacher side)	Test the logout functionality for both Admin and Teacher	User is logged out successfully, and session data is cleared.	Passed

3.8.3 Participant and Testing Environment Setup

System testing was carried out at Agusan National High School using a structured, in-person evaluation approach. Two internet-connected laptops were provided and shared among the participating teachers, who took turns completing their assigned tasks on the system. Each teacher independently logged into the platform and explored its features based on the provided task instructions.

Researchers were present to oversee the process and offer procedural guidance when necessary; however, no assistance was given that could influence the participants' interactions or feedback. Instructions were solely focused on ensuring participants could effectively navigate and interact with the system. After each session, standardized usability questionnaires were distributed to collect feedback, while researchers unobtrusively observed and recorded user interactions for analysis.

A total of 5 participants tested the system, which was conducted in the Admin Office of Agusan National High School (ANHS), located in A.D Curato Street, Butuan City.

4. Results and Discussion

4.1 Discussion

This section provides an evaluation of the extent to which the study's objectives were met through the implementation and assessment of the web-based scheduling system and resource management utilized by Agusan National High School. The discussion will be centered on the performance of the Greedy Algorithm in managing prioritized Grade 11 ICT schedules, processing non-ICT teacher requests, and minimizing ComLab scheduling conflicts. The ability of the system in accurately plotting ComLab schedules, efficiently allocating laboratory slots, and its overall impact on user experience and satisfaction will be evaluated based on the collected data.

4.1.2 The Implemented Scheduling Algorithm

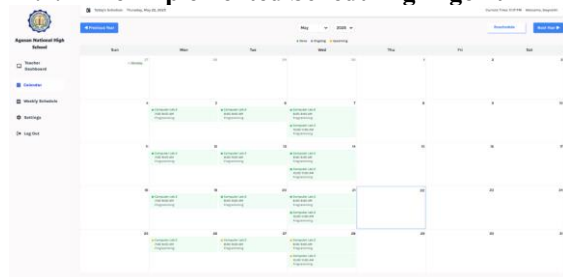


Figure 4.1.2 Timetable

This section details the implemented scheduling algorithm. Its output, the Timetable illustrated in Figure 4.1.2, demonstrates effective conflict resolution concerning resource allocation, a critical part of school scheduling. A detailed examination of this Timetable reveals that resources, specifically the computer laboratories, are assigned without apparent overlaps for these facilities during the same time slots. The scheduling process, evidenced by this output,669

aimed to achieve an organized and efficient utilization of Agusan National High School's resources. By successfully resolving potential resource conflicts and structuring the class and lab assignments, the algorithm contributes to a more organized operational environment and supports the optimal use of available facilities. Therefore, this implementation successfully addresses key requirements for the implementation of scheduling algorithm

4.1.3 Evaluation of the Developed System

The usability of the web-based scheduling system and resource management at Agusan National High School (A.D. Curato Street), developed using a Greedy Algorithm, was assessed through qualitative feedback from fifteen (15) participants, including Head Teachers and Teachers, who interacted with the system. Data gathered via open-ended questions and user interviews, potentially guided by usability principles like those in the System Usability Scale (SUS) focused on their experiences with the system's efficiency, ease of use, and overall satisfaction.

Analysis of the item-level responses (Table 4.2) indicates strengths in system consistency and user confidence (Q9 mean = 4.4; Q3 mean = 4.33), with users generally finding the system easy to use and agreeing they would like to use it frequently (Q1 mean = 3.4). However, areas for potential refinement were also suggested, particularly concerning the initial learning curve (Q10 "needed to learn a lot" mean = 1.8, interpreted positively as disagreement with needing to learn a lot) and perceived system complexity (Q2 "unnecessarily complex" mean = 1.67, also interpreted positively as disagreement with complexity).

5. Conclusion

5.1 Summary

This research culminated in the successful development and evaluation of an effective web-based scheduling and resource management system for Agusan National High School (ANHS). The system adeptly manages prioritized Grade 11 ICT ComLab schedules and non-ICT teacher reservations, including reservation confirmation, through the robust implementation of a Greedy Algorithm for automated request processing and conflict resolution. The system demonstrated considerable effectiveness in resolving key scheduling challenges; qualitative feedback affirmed that automating class and teacher ComLab scheduling and eliminating manual verification processes positively impacted operational efficiency. Furthermore, positive user reception was confirmed by an average System Usability Scale (SUS) score of 73.5, indicating "Good" perceived usability. Qualitative data also highlighted user satisfaction with the system's simplicity and automation, despite some initial acclimatization requirements. In summary, the developed system offers a potent solution to the problems of unreliability, conflicts, and uncertainty inherent in ANHS's manual scheduling practices. It successfully demonstrates that a customized web-based system employing a Greedy Algorithm can significantly enhance Computer Laboratory resource management and contribute to an improved learning environment within a secondary school context

5.2 Conclusion

This research culminated in the successful development and evaluation of an effective web-based scheduling and resource management system for Agusan National High School (ANHS). The system adeptly manages prioritized Grade 11 ICT ComLab schedules and non-ICT teacher reservations, including reservation confirmation, through the robust implementation of a Greedy Algorithm for automated request processing and conflict resolution. The system demonstrated considerable effectiveness in resolving key scheduling challenges; qualitative feedback affirmed that automating class and teacher ComLab scheduling and eliminating manual verification processes positively impacted operational efficiency. Furthermore, positive user reception was confirmed by an average System Usability Scale (SUS) score of 73.5, indicating "Good" perceived usability. Qualitative data also highlighted user satisfaction with the system's simplicity and automation, despite some initial acclimatization requirements. In summary, the developed system offers a potent solution to the problems of unreliability, conflicts, and uncertainty inherent in ANHS's manual scheduling practices. It successfully demonstrates that a customized web-based system employing a Greedy Algorithm can significantly enhance Computer Laboratory resource management and contribute to an improved learning environment within a secondary school context.

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