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ASC Timetables for Setting Subjects in Integrated Islamic Elementary School; Intelligent Planning for Learning Systems

Yahya[1*], Wahyu Fitrina Defi[2], Weli Febrina[3]
[1,3]Universitas Negeri Padang, Indonesia, [2]STAIN Mandailing Natal, Indonesia
[1]yahya_tambunan@yahoo.com, [2]wahyufitrina@stain-madina.ac.id, [3]welifebrina2017@gmail.com

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***Corresponding Author**

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ABSTRACT

This study investigates the implementation and effectiveness of ASC Timetables, an intelligent planning system, in setting subjects for an Integrated Islamic Elementary School at Riyadhoturrohman Panyabungan. The research explores the complexities of scheduling subjects within the context of Islamic education and analyzes the intelligent planning mechanisms integrated into ASC Timetables. A qualitative research approach, employing in-depth interviews, observations, and document analysis, was utilized to gather data from teachers, school administrators, and staff directly involved in using ASC Timetables.The findings of this study reveal the intricate process of subject scheduling in an integrated Islamic elementary school and highlight the significance of intelligent planning systems in managing diverse subjects while adhering to Islamic educational principles. The research illuminates the challenges faced by educators and administrators and discusses the solutions provided by ASC Timetables. Moreover, it identifies the system's ability to adapt and optimize schedules, ensuring an effective and balanced allocation of learning hours for various subjects. This research contributes to the understanding of how intelligent planning systems like ASC Timetables enhance the efficiency of subject scheduling in a unique educational context. The insights gained from this study can inform educational practitioners, policymakers, and system developers, guiding the integration of intelligent planning tools in diverse educational environments, especially those with specific cultural and religious requirements.

INTRODUCTION

A well-organized and systematic learning system is one way to achieve quality education. This will affect learning and is an indication of the achievement of educational quality (Waren, 2006). The learning system refers to the structures and processes used for the learning process in schools. This will involve interactions between teachers, students, learning materials, and the learning environment created. An effective learning system is designed to support the growth and development of students, encourage deep understanding, build relevant skills, and form positive attitudes and values. A good learning approach recognizes the diversity of learners and tries to meet the unique learning needs of each individual.

To design it all, each school will prepare the best curriculum according to the characteristics of the school it supports (Bele, 2020). Integrated Islamic Elementary School is a type of elementary school that provides formal elementary level education with a focus on an Islamic educational approach. This school integrates the national education curriculum with Islamic values and teachings. The aim of this approach is to educate students not only in terms of academic knowledge, but also in terms of Islamic moral, religious and ethical values.

Integrated Islamic Elementary Schools usually teach subjects such as mathematics, natural sciences, Indonesian, and history, but also include Islamic religious subjects such as morals, fiqh, hadith science, reading the Koran, and Islamic values in their curriculum. Apart from that, students are also taught ethics, morality and leadership values based on Islamic teachings. This approach aims to create an educational environment that supports students' balanced academic and spiritual development. Although its main focus is Islamic education, the school also ensures that students receive adequate general education in accordance with National Education Standards.

Riyadhoturrohman Panyabungan Integrated Islamic Elementary School is an Islamic school located in Panyabungan, North Sumatra which integrates the Islamic curriculum and the national curriculum. Some of the subjects at this school are mathematics, science, social studies, Indonesian, Arabic, civics, Islamic religious education, fiqh, moral beliefs, prayer practices, history of Islamic culture, physical education and health sports (PJOK), tahfidz, hadith , and prayer with a total of 15 subjects, 7 classes, 7 teachers with areas of competence spread across Elementary School Teacher Education, Islamic Religious Education, and PJOK.

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In practice, when dividing classes and making a list of subjects at the beginning of the semester, the Riyadhoturrohman Panyabungan Islamic Elementary School always experiences difficulties in organizing the subjects, the teachers who teach, the systematics of learning so that it does not appear chaotic and makes students comfortable. Managing the list of subjects manually one by one will take a long time and be a headache for the person doing it. Meanwhile, when the school year starts, everything must be ready, including the list of subjects. This is the problem at this school.

However, as time goes by, with the increasingly rapid flow of digitalization, everything can be done easily and in a short period of time. So that human power will only play a role at the end of the activity, namely seeing the suitability of the data processing results that have been created using the information technology/applications/devices used.

ASC Timetables is software specifically designed to help educational institutions such as schools, universities or training institutions in creating and managing learning schedules. This software allows users to create lesson schedules easily and efficiently, optimize classroom use, monitor teacher availability, and avoid schedule conflicts between subjects or extracurricular activities.

Furthermore (Purnomo, 2019) explains that ASC Timetables is an application that compiles lesson schedules in XML format including information about lesson schedules, time periods, days, subjects, teachers, classrooms, classes, lessons and cards. Apart from that, the application also contains documents that include several administrative actions such as admin login, data reset, uploading XML files, extracting data, and downloading data in Excel format.

Then, according to (Khairunnisa Samosir et al., 2020), compiling a list of subjects in the current era should be avoided using a manual system. Many applications can be used. At SMPN 31 Padang, the preparation of subject lists uses the web, so that data related to each year's subjects can be stored online. In research conducted by (Irfan & Wahyuddin, 2020) in developing lesson schedules using a Recursive Algorithm using the Visual Basic 6 programming language and MySQL database. The end result is that the lesson schedule processed with this software provides an accurate, precise and effective schedule. Graph coloring can also be a solution in compiling lesson schedules to make it easier to allocate rooms, teachers and lessons (Hidayatulloh, 2015).

This article will describe the use of ASC Timetables to compile a list of subjects at the Riyadhoturrohman Panyabungan Islamic Elementary School, which consists of many subjects with a limited number of teachers. So it is necessary to use this software so that the learning schedule is prepared correctly, effectively, and does not require a long time.

LITERATURE REVIEW

Subject scheduling is the process of planning and organizing lesson schedules for students in an educational institution. This process involves determining the sequence of subjects, days, times, and places where the subjects will be taught. Subject scheduling aims to create a balanced schedule, ensuring that each subject is taught in sufficient time and in accordance with the established curriculum (Nugraha et al., 2022).

An important aspect of course scheduling involves consideration of student needs, teacher availability, and the facilities and time available at the school. This process requires a deep understanding of the school curriculum, student needs, and teacher skills and specialization (Erwin & Cahyana, 2015).

Good subject scheduling is the key to creating an efficient and productive learning environment at school. A good schedule ensures that students get balanced exposure to a variety of subjects, while teachers have sufficient time to deliver the material in an effective manner. Subject scheduling also plays an important role in ensuring that teaching and learning takes place without interruption, helping to create an environment conducive to quality education.

ASC Timetables is software designed to help schools, educational institutions and teachers in preparing lesson schedules easily and efficiently. The program provides a solution for managing complex lesson schedules by considering various factors such as room availability, teacher preferences and course requirements.

With ASC Timetables, users can enter information about teachers, subjects, classes, rooms, and other preferences into this software. The program then uses intelligent algorithms to create an optimal lesson schedule that minimizes conflicts and meets all predetermined requirements. Apart from that, ASC Timetables also allows users to easily adjust schedules, manage attendance, and print lesson schedules that have been prepared.

With comprehensive features, ASC Timetables helps schools and teachers save the time and effort required in manually compiling lesson schedules, while ensuring that the resulting schedules are efficient and meet the needs of all parties involved.

ASC Timetables have several uses that are very beneficial for schools, educational institutions and teachers in the process of planning and managing lesson schedules:

Create an automatic lesson schedule

ASC Timetables allows automatic creation of lesson schedules taking into account factors such as teacher

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availability, room, subject and other preferences.

Reduce schedule conflicts

The program uses intelligent algorithms to minimize schedule conflicts between subjects, teachers, and rooms, ensuring that each class gets an optimal schedule.

Manage complex requirements

ASC Timetables is able to manage complex requirements, including teacher rotation, blended learning, and schedule changes flexibly.

Save time and Effort

By automating the schedule preparation process, ASC Timetables helps save the time and effort that would normally be required in manually planning lesson schedules.

Manage room availability

This program helps optimize space usage by ensuring that rooms are used efficiently without overlapping.

Monitoring attendance and schedule changes

ASC Timetables allows monitoring of student attendance and allows changes to schedules quickly and efficiently if necessary.

Print schedules and reports

Users can easily print lesson schedules and related reports for distribution to teachers, students and school staff.

Increase the efficiency of school management

By having an organized and efficient lesson schedule, schools can increase their operational efficiency and ensure that the learning process runs smoothly.

As such, ASC Timetables provides a robust and efficient solution for managing school timetables, helping to overcome complexity issues and enabling greater focus on the learning process.

The following are general steps for using ASC Timetables in compiling a lesson schedule (Amurakid, n.d.):

1. Enter Basic Data
   Teachers: Enter teacher information along with their preferences regarding teaching time, subjects taught, etc.
   Subjects: List all the subjects taught at school along with their specific requirements.
   Classes/Rooms: Determine the rooms available and the classes that will cover a particular subject.
2. Prepare a schedule
   Select Arrangement Options: Select the automatic schedule preparation option based on the preferences and requirements that have been entered.
   Optimize Schedule: The program will use intelligent algorithms to find the best solution by minimizing conflicts and meeting preset requirements.
3. Adjust the Schedule (If Necessary)
   Check and Correction: Check the schedule that has been created. If there are conflicts or other problems, you can correct the schedule manually or use automatic features to make changes.
4. Additional Evaluation and Adjustments
   Re-Evaluate: Conduct a thorough schedule evaluation to ensure that all preferences and requirements are met.
   Advanced Adjustments: Adjust the schedule if there are changes in teacher preferences, room availability, or other requirements.
5. Simulation and Testing
   Simulation: Some ASC Timetables programs allow users to perform simulations to view various schedule options before selecting the most suitable one.
   Schedule Testing: Test the continuity of the schedule for the next few weeks to ensure smooth implementation.
6. Print Schedules and Reports
   Print Schedule: Print lesson schedules for distribution to teachers, students and school staff.
   Print Reports: Print reports regarding schedules, teacher preferences, and other statistics for managerial and evaluation use.
7. Maintenance and Monitoring
   Data Maintenance: Keep teacher, subject and room data updated regularly.
   Monitoring: Regularly monitor the schedule and user reactions to identify problems and improve the schedule if necessary.

It is important to note that these steps may vary depending on the version of ASC Timetables used, so it is advisable to refer to the user guide provided by the software manufacturer or contact customer support if we encounter difficulties at any stage.

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METHOD

The research in this study used a qualitative approach to gain an in-depth understanding of the implementation of ASC Timetables in lesson time planning at Integrated Islamic Elementary School Riyadhoturrohman Panyabungan. This approach allows researchers to explore the views, experiences and beliefs of people involved in the planning process (Sugiyono., 2015). This research uses a case study research design, focusing on Integrated Islamic Elementary School Riyadhoturrohman Panyabungan which uses ASC Timetables. The case study design provides an opportunity to explore in depth contextual and specific information related to the implementation of the lesson time planning system at the school. Research participants included teachers, principals and administrative staff who were directly involved in the use of ASC Timetables at Integrated Islamic Elementary School Riyadhoturrohman Panyabungan. The selection of participants was based on their experience and knowledge of the lesson time planning system.

Data collection techniques were carried out by: 1) In-depth interviews were conducted with participants to understand their views on ASC Timetables, the challenges they face, and the benefits they see from this system, 2) Observations were carried out on the lesson time planning process using ASC Timetables in the school environment . This observation will provide insight into daily practice in using the system, 3) Document analysis, meaning that data will also be obtained through analysis of related documents, such as lesson schedules produced by ASC Timetables, records of schedule changes, and feedback from parents or participants educate.

Data analysis in this research was obtained through interviews, observation and document analysis and will be analyzed using the content analysis method. This analysis will help identify patterns, themes and insights that emerge from the qualitative data, thereby enabling in-depth conclusions to be drawn about the implementation of ASC Timetables at Integrated Islamic Elementary School Riyadhoturrohman Panyabungan.

RESULT

The results of the study on ASC Timetables in the context of an Integrated Islamic Elementary School shed light on the effectiveness and intricacies of using intelligent planning systems in educational environments with specific cultural and religious requirements. The research findings can be summarized as follows:

1. Efficient Subject Allocation

ASC Timetables proved highly efficient in allocating subjects within the constraints of an integrated Islamic curriculum. The system demonstrated the ability to balance various subjects, ensuring a comprehensive educational experience for students. Through intelligent algorithms, ASC Timetables optimized subject schedules, taking into account the specific requirements of Islamic education, and enabled a harmonious integration of academic subjects with religious studies.

2. Adaptability and Flexibility:

One of the key strengths of ASC Timetables was its adaptability. The system demonstrated flexibility in accommodating changes and unforeseen events, allowing for quick adjustments to the schedule while maintaining the overall integrity of the educational program. This adaptability ensured that the school could respond effectively to dynamic situations, guaranteeing a smooth flow of educational activities.

3. Enhanced Collaboration and Communication:

ASC Timetables facilitated improved communication and collaboration among teachers, administrators, and parents. The system provided a centralized platform where stakeholders could access updated schedules, reducing confusion and enhancing transparency. This streamlined communication ensured that everyone involved in the educational process was well-informed and aligned, leading to a more cohesive learning environment.

4. Time and Resource Optimization:

By automating the scheduling process, ASC Timetables optimized the use of time and resources. Educators could focus more on teaching, curriculum development, and student engagement, while administrative staff benefited from reduced workload related to manual scheduling tasks. This optimization led to a more productive and efficient use of the school's resources.

5. Preservation of Cultural and Religious Values:

ASC Timetables successfully preserved the cultural and religious values of the Integrated Islamic Elementary School. The system allowed for the integration of Islamic teachings and practices into the daily schedule, ensuring that religious education remained a central focus. This preservation of cultural and religious values was fundamental in maintaining the school's identity and ethos.

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In conclusion, the results of the study underscore the significant positive impact of ASC Timetables in the Integrated Islamic Elementary School. Through its intelligent planning capabilities, the system not only streamlined the subject scheduling process but also enhanced collaboration, optimized resources, and preserved the cultural and religious values of the institution. These findings highlight the invaluable role of intelligent planning systems in shaping effective and culturally sensitive educational environments.



FIGURE 1. THE PROCESS FOR INPUT SUBJECT AT ASC TIMETABLES

DISCUSSION

In the context of an Integrated Islamic Elementary School, the implementation of ASC Timetables and intelligent planning for learning systems holds significant promise. Let's delve into the discussion about how these technologies can be effectively utilized in this specific educational setting.

Utilizing ASC Timetables, the school can efficiently schedule Islamic subjects, Arabic language classes, and other core subjects without conflicts. The software's ability to handle complex schedules ensures that students receive a balanced curriculum without overwhelming overlaps. Then, flexibility in curriculum design, intelligent planning systems can analyze students' learning capacities and preferences. This allows for the adaptation of the curriculum, ensuring that Islamic education is not only integrated seamlessly but also tailored to individual student needs, fostering a deeper understanding of the subject matter.

Utilizing ASC Timetables can effectively manage resource allocation, including classrooms, teachers, and specialized equipment needed for Islamic education. This prevents resource wastage and ensures that the school operates efficiently. It will enhancing teacher-student interaction. Intelligent planning by analyzing teaching methods and student responses, intelligent planning systems can provide insights to teachers. This information can be used to tailor teaching approaches for Islamic subjects, fostering better engagement and understanding among students.

Utilizing ASC Timetables can assist in scheduling Islamic and Arabic language classes at times that respect religious obligations, ensuring that these crucial subjects are given the attention they deserve within the school's schedule.

Intelligent planning as a sensitivity to cultural and religious diversity is essential. Intelligent planning systems can incorporate cultural considerations, accommodating the diverse backgrounds of students and ensuring a respectful learning environment (Hendler, 1992).

The last, utilizing ASC timetables as a continuous improvement. ASC Timetables, through data analysis, ASC Timetables can provide feedback on the effectiveness of the current schedule. This data-driven approach enables the school to make continuous improvements in subject allocation and scheduling. Learning systems that utilize intelligent planning can provide real-time feedback on student performance, allowing educators to make data-driven decisions to enhance teaching methods, ensuring that Islamic education is impactful and meaningful.

ASC Timetables will get the parental engagement. Transparent communication through scheduled parent-teacher meetings facilitated by well-organized timetables can enhance parental engagement. Parents can have dedicated time to discuss their child's progress in Islamic education. By involving parents in the intelligent planning process, their input can be considered, fostering a collaborative approach to education. This ensures that the Islamic education program aligns with parental expectations and cultural values.

In conclusion, the integration of ASC Timetables and intelligent planning systems in an Integrated Islamic Elementary School offers a comprehensive solution. It not only optimizes the logistical aspects of scheduling but also enhances the quality of Islamic education by tailoring it to individual student needs and cultural sensitivities. Through

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these technologies, the school can create a harmonious and effective learning environment, ensuring that students receive a well-rounded education that includes a meaningful and impactful Islamic education component.

CONCLUSION

In conclusion, this research delved into the intricate world of subject scheduling within the unique context of an Integrated Islamic Elementary School. The study focused on ASC Timetables, an intelligent planning system, shedding light on its implementation and effectiveness in managing the diverse subjects of an Islamic education while adhering to the specific requirements of the school's cultural and religious context.

The findings of this research have illuminated several crucial aspects. Firstly, ASC Timetables emerged as a robust solution for the complex task of subject scheduling in an integrated Islamic educational setting. Its adaptive features and intelligent algorithms allowed for the efficient allocation of learning hours, ensuring a balanced curriculum while respecting the principles of Islamic education. This adaptability is vital in accommodating the diverse subjects inherent in Islamic studies, ensuring a comprehensive learning experience for the students.

Secondly, the study revealed the importance of integrating intelligent planning systems like ASC Timetables into educational environments with specific cultural and religious requirements. By automating the scheduling process, educators and administrators can focus on delivering quality education while the system takes care of the intricate task of subject allocation. This integration not only enhances efficiency but also ensures that the educational principles and values are preserved and respected, aligning with the ethos of the institution. Furthermore, the research highlighted the collaborative role of technology and education. ASC Timetables not only streamlines the scheduling process but also enhances the overall educational experience for both teachers and students. It fosters an environment where educators can concentrate on teaching, and students can focus on learning, unburdened by the complexities of manual scheduling.

In essence, this study underscores the transformative potential of intelligent planning systems in educational settings. ASC Timetables, through its adaptability, efficiency, and alignment with cultural and religious values, stands as a testament to the synergy between technology and education. As we move forward, the insights from this research can guide educational institutions worldwide in adopting similar intelligent planning solutions, ensuring a harmonious balance between tradition and modernity, and ultimately, fostering enriched learning environments for all.

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