

**DESIGN AND DEVELOPMENT OF HAFAZTRACK PRO: A PROTOTYPE DIGITAL DASHBOARD FOR TAHFIZ HAFAZAN MONITORING****REKA BENTUK DAN PEMBANGUNAN HAFAZTRACK PRO: PROTOTAIP PAPAN PEMUKA DIGITAL UNTUK PEMANTAUAN HAFAZAN TAHFIZ**

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**Abstract**

*Monitoring Quranic memorization (hafazan) is an essential component of tahfiz education to ensure that students' memorization processes are implemented in a systematic and continuous manner. Although existing systems such as ASIS are used to record students' hafazan data, their usage is largely limited to tabular data storage, which is less intuitive and does not support analysis or visualization of memorization progress. This limitation makes it difficult for teachers to comprehensively assess students' development and carry out timely and appropriate interventions. Therefore, this study aims to design and develop HafazTrack Pro, a prototype digital dashboard for systematic and visual monitoring of tahfiz students' hafazan progress. This study adopts a design and development approach by developing a prototype system based on hafazan data from eleven selected students at SMTDR Lenggong, Perak. The data were extracted from the ASIS system, processed using Google Sheets, and subsequently integrated into a digital dashboard for visualization purposes. The system was developed through collaboration between lecturers in Mathematics and Computer Science as technical developers, and Quranic teachers (ustaz) as content experts to ensure alignment with hafazan monitoring requirements. The developed prototype was evaluated at an early stage by Quranic teachers and students to assess its usability and suitability for hafazan monitoring. The feedback obtained indicates that the dashboard has the potential to enhance understanding of memorization progress through visual*

*elements such as progress graphs, juzuk completion indicators, and performance summaries. This study contributes to the development of a more systematic, interactive, and data-driven digital approach to hafazan monitoring in tahfiz institutions.*

**Keywords:** Al-Quran memorization, tahfiz, monitoring, dashboard, halaqah

### **Abstrak**

Pemantauan hafazan al-Quran merupakan komponen penting dalam pendidikan tahfiz bagi memastikan proses hafalan pelajar dapat dilaksanakan secara sistematik dan berterusan. Walaupun sistem sedia ada seperti ASIS digunakan untuk merekod data hafazan pelajar, penggunaannya masih terhad kepada penyimpanan maklumat dalam bentuk jadual yang kurang intuitif serta tidak menyokong analisis atau visualisasi kemajuan hafazan. Keadaan ini menyukarkan guru untuk menilai perkembangan pelajar secara menyeluruh dan membuat intervensi yang bersesuaian pada masa yang tepat. Oleh itu, kajian ini bertujuan untuk mereka bentuk dan membangunkan *HafazTrack Pro*, iaitu satu prototaip papan pemuka digital bagi pemantauan hafazan pelajar tahfiz secara sistematik dan visual. Kajian ini menggunakan pendekatan reka bentuk dan pembangunan (design and development) dengan membangunkan prototaip sistem berasaskan data hafazan sebelas orang pelajar dari SMTDR Lenggong, Perak. Data diperoleh daripada sistem ASIS, diproses menggunakan Google Sheets, dan seterusnya diintegrasikan ke dalam papan pemuka digital bagi tujuan visualisasi. Sistem ini dibangunkan dengan kerjasama pensyarah dalam bidang Matematik dan Sains Komputer sebagai pembangun teknikal, serta guru halaqah sebagai pakar kandungan bagi memastikan kesesuaian keperluan pemantauan hafazan. Prototaip yang dibangunkan telah dinilai secara awal oleh guru al-Quran bagi menilai kebolegunaan serta kesesuaian sistem dalam konteks pemantauan hafazan. Maklum balas yang diperoleh menunjukkan bahawa papan pemuka ini berpotensi membantu meningkatkan kefahaman terhadap perkembangan hafazan melalui visual seperti graf kemajuan, indikator juzuk, dan ringkasan prestasi. Kajian ini menyumbang kepada pembangunan pendekatan digital yang lebih sistematik, interaktif dan berasaskan data dalam pengurusan pemantauan hafazan di institusi tahfiz.

**Kata kunci:** Hafazan, tahfiz, pemantauan, papan pemuka, halaqah

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## **1.0 Introduction**

Quranic memorization (hafazan) is a core component of tahfiz education and contributes significantly to the spiritual and cognitive development of students. Over time, tahfiz education in Malaysia has expanded in parallel with globalization, reflected in the establishment of new tahfiz institutions under both government and private administration. Public demand for tahfiz education has also increased steadily. In recent

years, there has been a growing trend among parents to choose the academic tahfiz stream for their children at the secondary school level (Kaimin et al., 2025). This phenomenon is reflected in the encouraging enrolment figures reported by both public and private tahfiz institutions such rapid development demonstrates ongoing efforts to strengthen and improve the tahfiz education system in Malaysia.

According to Nawi et al. (2021), in response to these developments, the Malaysian government introduced a dedicated policy framework for tahfiz institutions known as the Dasar Pendidikan Tahfiz Negara (DPTN). This policy was established to support the educational development and welfare of tahfiz institutions throughout the country. It also aims to ensure that tahfiz institutions remain sustainable and continue contributing to national development in the future. In addition, the DPTN serves as a national guideline for harmonizing tahfiz education management across Malaysia. The policy is aligned with the National Education Policy as well as existing state-level legislation (JAKIM, 2021). Through this initiative, the government has set a target of producing 125,000 Quran memorizers by the year 2050. The Dasar Pendidikan Tahfiz Negara therefore provides an important long-term policy foundation for strengthening the quality of tahfiz education while ensuring alignment with the mainstream national curriculum (Rasid & Nasri, 2025). In realizing this aspiration, school administrators and tahfiz teachers are required to address various challenges and shoulder significant responsibilities. Continuous and systematic improvement is necessary to ensure that the tahfiz education system develops effectively and achieves its intended goals (Ismail et al., 2025).

In Malaysia, institutions such as *Sekolah Menengah Tahfiz Darul Ridzuan* (SMTDR) implement the *Kurikulum Bersepadu Tahfiz* (KBT), in which students memorize the Quran in a structured and sequential manner. Under the KBT framework, students are required to complete the memorization of all 30 juz'. *Hifz al-Quran* is also a compulsory subject in the *Sijil Pelajaran Malaysia* (SPM) (Saad et al., 2024). In this context, tahfiz teachers play an important role in improving the teaching and learning process of *Hifz al-Quran*, so that classroom instruction remains engaging and motivates students to strengthen their memorization. Continuous enhancement is essential to ensure that teaching practices remain relevant to current educational developments and aligned with the national curriculum.

Given these expectations, early and continuous monitoring of memorization progress is essential to ensure that students do not fall behind and are able to complete the memorization of 30 juz' within the prescribed academic timeline. Systematic hafazan monitoring enables teachers to identify students who are lagging behind more effectively and to implement timely intervention strategies that help them return to the expected pace of memorization. For example, targeted support programmes such as *muqayyam*, an intensive short-term memorization camp designed to strengthen revision, improve retention, and help students catch up on unfinished *muqarrar*, can be organized for students who are behind schedule. Each academic year, students follow a standardized syllabus known as *muqarrar*, which specifies the surahs or number of pages to be memorized. This structured arrangement helps ensure progressive and measurable hafazan achievement. To support this process, Munif (2025) reported that many tahfiz institutions have adopted structured monitoring systems to enable teachers to monitor students' progress more systematically and efficiently.

At *Sekolah Menengah Tahfiz Darul Ridzuan (SMTDR)*, students' memorization progress is monitored continuously on a daily, weekly, and monthly basis, with records maintained through the ASIS system. This system enables teachers to document individual performance and identify memorization patterns for instructional purposes. However, ASIS primarily functions as a data storage platform in which information is presented mainly in tabular form. Although useful for record keeping, this form of presentation is less intuitive and less suitable for rapid interpretation, progress visualization, and trend analysis. As a result, teachers may face difficulties in identifying students' progress patterns, detecting delays, and making timely instructional decisions, particularly when managing a large number of students. This situation highlights a significant gap between the need for effective hafazan monitoring and the limitations of existing systems.

To address this gap, this study introduces *HafazTrack Pro*, a smart digital dashboard designed to enhance the monitoring of Quranic memorization among tahfiz students. The system integrates visual analytics such as progress graphs, juzuk completion indicators, and performance summaries to facilitate clearer and more efficient interpretation of hafazan data. Unlike ASIS, which focuses primarily on data recording, *HafazTrack Pro* emphasizes data visualization and interpretability, enabling teachers to monitor student progress more effectively and to support timely intervention.

The prototype was developed using hafazan records of selected students from SMTDR Lenggong, Perak. The development process involved collaboration among lecturers in Mathematics and Computer Science, Quranic teachers, and students to ensure both technical functionality and pedagogical relevance. By leveraging data visualization techniques, *HafazTrack Pro* aims to support a more systematic, efficient, and data-driven approach to hafazan monitoring within the KBT framework.

## 2.0 Problem Statement

Quranic memorization (hafazan) is a fundamental component of tahfiz education that requires continuous and systematic monitoring to ensure effective tracking of students' progress. Although existing systems such as ASIS are used to record hafazan data, their functionality is primarily limited to tabular data storage without analytical or visualization features. Consequently, the recorded information is less intuitive and provides limited support for meaningful interpretation of students' memorization development.

In practice, teachers are required to manually examine large volumes of hafazan records to assess individual progress, identify learning delays, and evaluate overall performance. The absence of visual tools such as progress graphs, performance indicators, and trend analysis makes it difficult to obtain a clear and comprehensive overview of students' hafazan achievement. This challenge becomes more significant in environments with a large number of students under a halaqah system.

Furthermore, the lack of real-time and dynamic monitoring capabilities restricts teachers' ability to make timely instructional decisions and provide early interventions for students who are lagging behind. This situation highlights a clear gap between the need for efficient, data-driven monitoring and the limitations of current systems. Therefore,

there is a need for a more systematic, interactive, and visually oriented approach to enhance the effectiveness of hafazan monitoring in tahfiz education (Shaharuddin et al., 2024).

### 3.0 Methodology

This study adopted a design and development approach to construct HafazTrack Pro: A Prototype Digital Dashboard for Tahfiz Hafazan Monitoring. The methodology aligns with the systematic framework of the ADDIE model (Branch, 2009), specifically focusing on the analysis, design, development, and evaluation phases to produce a functional monitoring prototype. Figure 1 illustrates the conceptual flow of the study method, mapping out the progression from baseline data acquisition to the final system refinement.

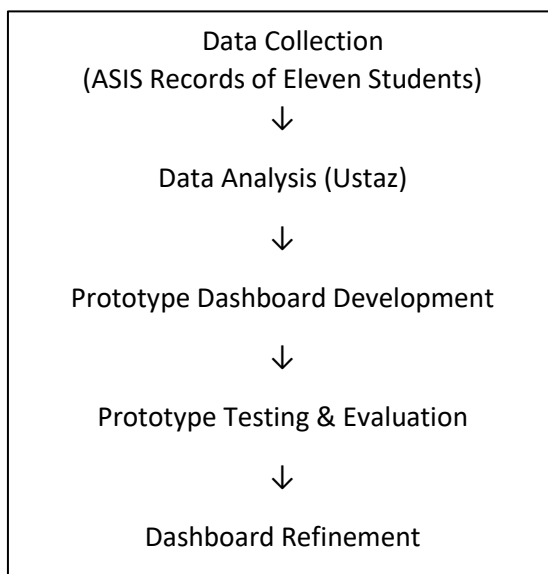


Figure 1: Conceptual Flow of Study Method

The conceptual flow in Figure 1 comprises five sequential stages that operationalize the prototype development. First, Data Collection involves gathering baseline historical *hafazan* records from the school's existing Academic System Information Structure (ASIS). This stage targets the records of eleven selected students to establish realistic data parameters, tracking frequencies, and baseline metrics necessary to feed the initial database. Second, Data Analysis involves a comprehensive evaluation of these retrieved records alongside the elicitation of expert user requirements from the *halaqah* teachers (*Ustaz*). This phase criticalizes current manual monitoring gaps and establishes the required system workflows. Third, Prototype Dashboard Development translates these analyzed pedagogical requirements and metrics into visual and functional digital interfaces. This engineering phase focuses on constructing the backend architecture and frontend visualizations, such as progress graphs and achievement status.

Fourth, Prototype Testing & Evaluation assesses the prototype’s functional usability, interface clarity, and data accuracy with real stakeholders, including the *ustaz* and students. Finally, Dashboard Refinement systematically incorporates the continuous feedback, feature requests, and bug reports gathered during the testing phase. This final optimization ensures the platform is fully stabilized, robust, and customized for a seamless, actual classroom deployment.

### 3.1 Research Design

This study employed a design and development approach to develop a digital dashboard for hafazan monitoring. The study focused on the design and development phases of the ADDIE model (Branch, 2009), with the aim of producing a functional prototype to support systematic tracking of students’ memorization progress in tahfiz education.

### 3.2 Data Source and Participants

Hafazan progress data were obtained from the ASIS system, involving eleven selected students from the SMTDR Lenggong. All students were under the supervision of a single halaqah teacher to ensure consistency in monitoring practices and data collection. Although the institution comprises multiple halaqah groups, this specific study purposefully selected a single group as a controlled pilot environment. Since HafazTrack Pro is currently in its prototype phase, testing the system within a single halaqah unit was vital to deeply analyze specialized user requirements, verify dashboard functionality, and fix technical bugs. This focused scope ensures the prototype is fully optimized and stabilized before it is scaled and deployed to the larger sample size of the entire school.

### 3.3 Requirement Analysis (Expert Feedback from Ustaz )

Prior to prototype development, a preliminary requirement analysis was conducted based on feedback from two expert ustaz (halaqah teachers) from the SMTDR Lenggong. The summary of the expert feedback is presented in Table 1.

Table 1: Expert Feedback on Hafazan Monitoring Requirements

Expert	Expert feedback	System implication
P1	Monitor weekly memorization consistency through pages submitted and active hafazan days.	Weekly submission indicators and consistency status were included.
P1	Teachers require visualisation of monthly and yearly progress trends.	Progress graphs were developed for trend monitoring.
P1	Comparison between target muqarrar and actual achievement is important.	Target-versus-actual comparison and gap indicators were included.
P2	Students with delayed or stagnant progress should be identified early to prevent them from falling behind.	Duration tracking and average completion indicators were integrated into the dashboard.
P2	Teachers require information on the dynamic duration and average completion time taken to reach specific memorization targets.	Duration and average completion indicators were included.

P2	The interface must be straightforward and intuitive for teachers to quickly review student status during a busy halaqah session.	A clean layout with a centralized visual summary card for each student was implemented to ensure ease of use.
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The participants, coded as P1 and P2, each had more than three years of experience in teaching Quranic memorization. Both were also hafiz with academic backgrounds in tahfiz and qiraat. The purpose of this stage was to identify the essential monitoring components required for an effective hafazan monitoring system. Expert feedback focused on determining the types of progress indicators, visualisation requirements, and functional features needed to support systematic tracking of students' memorization progress.

### 3.4 Implementation Procedure

The prototype was implemented in a real classroom setting involving eleven students and one halaqah teacher at the SMTDR Lenggong. During the study period, the system was used to record and monitor students' hafazan progress. Teachers and students interacted with the prototype and provided feedback based on their experience of using the system.

## 4.0 System Design

The design of HafazTrack Pro was developed to support systematic monitoring of tahfiz students' memorization progress through a structured and user-friendly digital dashboard. The system focuses on facilitating data entry, progress tracking, and visual representation of hafazan achievement. HafazTrack Pro is a role-based system consisting of four main user interfaces: administrator, teacher (ustaz halaqah), parents and students. Each interface was designed to address specific user needs in hafazan monitoring. The system design was informed by the requirement analysis conducted with expert halaqah teachers to ensure alignment with actual teaching and monitoring practices in tahfiz education.

### 4.1 System Conceptual Design

The conceptual design of HafazTrack Pro is based on a data-driven monitoring approach that transforms traditional hafazan record-keeping into a structured digital system. HafazTrack Pro is conceptualised as a digital monitoring system that transforms traditional manual hafazan recording into a structured and visualised format. The system aims to assist halaqah teachers in tracking students' memorization progress more efficiently and systematically.

The core concept of the system is based on three main components:

- Data Input Module – for recording students' hafazan progress (surah, juzuk, and status).
- Processing Module – for organising and calculating progress indicators.
- Output Module – for visualising data in the form of graphs and summaries.

### 4.2 System Architecture

A spreadsheet-based architecture was selected due to its flexibility, accessibility, and suitability for educational institutions with limited technical infrastructure. The system

architecture is based on a spreadsheet-based digital platform, which integrates structured data entry and automated visualisation functions. The architecture consists of:

- User Layer: Teachers and students as primary users
- Data Layer: Hafazan records stored in structured spreadsheets
- Processing Layer: Automated calculations for progress tracking
- Presentation Layer: Dashboard visualisation (graphs, indicators, and summaries)

This layered structure allows real-time updates and easy interpretation of students' hafazan performance. This architecture supports efficient data management while maintaining simplicity for end users.

### 4.3 System Features

The HafazTrack Pro dashboard includes several key features designed to support the systematic monitoring of students' Qur'anic memorization progress. As shown in Figure 2, the main dashboard interface is presented in Malay.

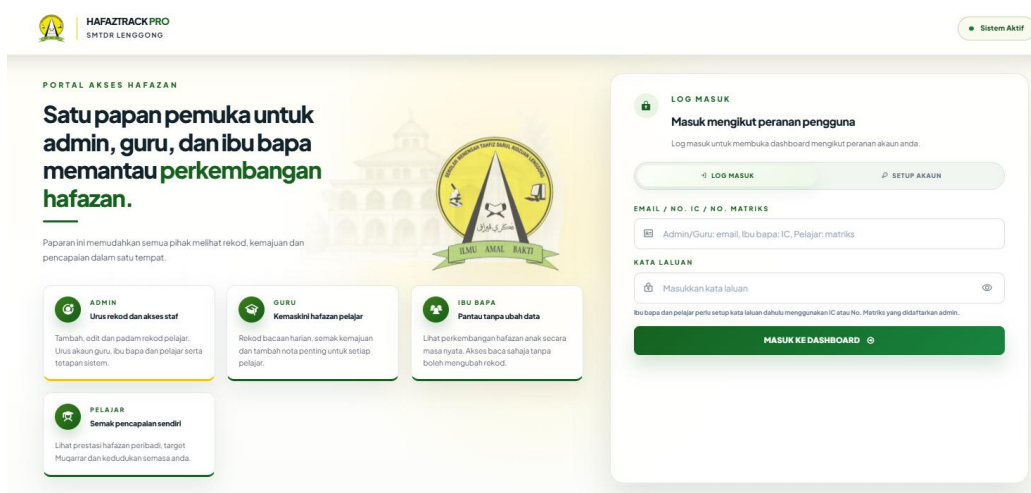


Figure 2: Main Dashboard Interface of HafazTrack Pro

The HafazTrack Pro dashboard has several main features:

- **Progress Graphs:** Shows a visual view of *hafazan* progress over time.
- **Juzuk Indicators:** Tracks completed *juzuk* for each student.
- **Performance Summary:** Gives an overview of each student's progress.
- **Status Tracking:** Shows the current status (e.g., Not Started, In Progress, Completed).

These features help teachers monitor students easily, compared to old paper-based methods. Additionally, HafazTrack Pro has four interfaces, while the old system only had three. Previously, there were only accounts for Admins, Teachers, and Parents. Students did not have their own access, so they had to ask their parents or teachers for updates, which sometimes caused them to miss out on information. In this new system, a Student Interface is introduced. Students can now log in at the school computer lab during their free time or whenever they want to check their latest memorization progress.

### 4.3.1 Admin Interface

The admin interface shown in Figure 3 provides system-level control for managing users, monitoring system activity, and ensuring data consistency within HafazTrack Pro.

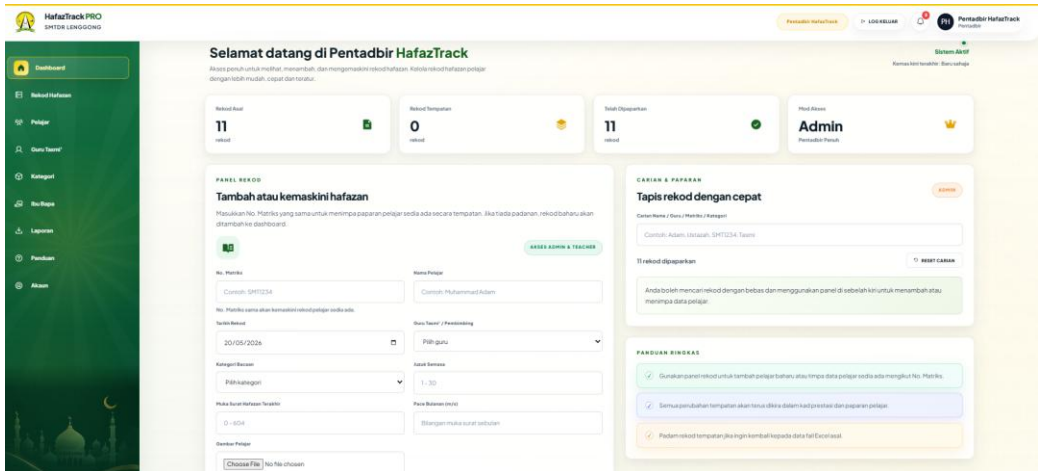


Figure 3: Admin Interface of HafazTrack Pro

This interface ensures centralized control of system data and supports efficient management of hafazan records across users.

### 4.3.2 Teacher Interface

The teacher interface is designed to support halaqah teachers in recording, updating, and monitoring students' Qur'anic memorization progress as shown in Figure 4.

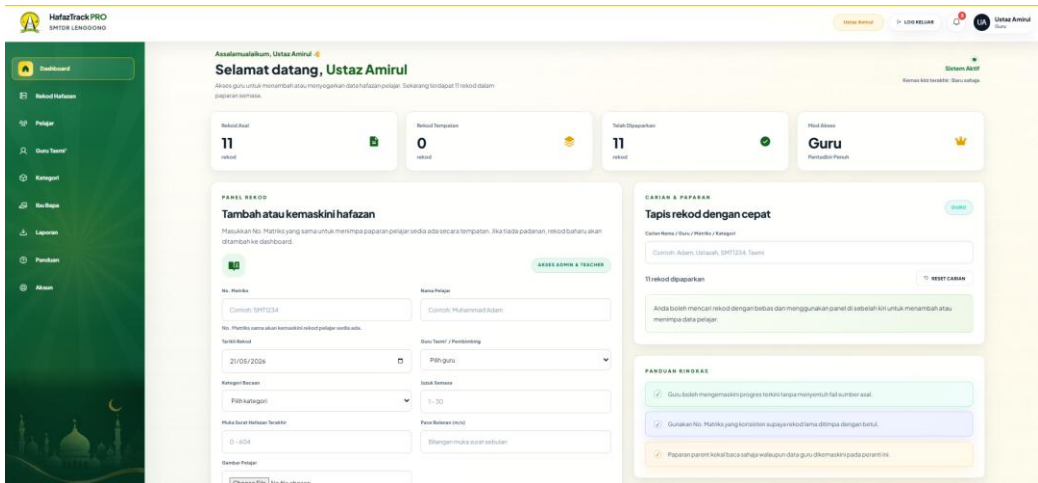


Figure 4: Teacher Interface of HafazTrack Pro

This interface serves as the main operational module for daily hafazan tracking activities. It allows teachers to enter student memorization data, update progress status, and view performance analytics through visual dashboards such as graphs and summary indicators. This interface enhances the efficiency of hafazan monitoring by reducing

reliance on manual record-keeping and enabling real-time progress tracking for each student.

#### 4.3.3 Parent Interface

The parent interface in Figure 5 is designed to provide parents and students with access to Qur’anic memorization progress. This interface enables both stakeholders to monitor hafazan achievement outside the classroom environment, thereby supporting continuous learning and self-monitoring. Through this interface, users can view simplified progress summaries, including memorization status, completed surahs or juzuk, and overall performance indicators presented in a user-friendly visual format. Parent can log in using their IC number.

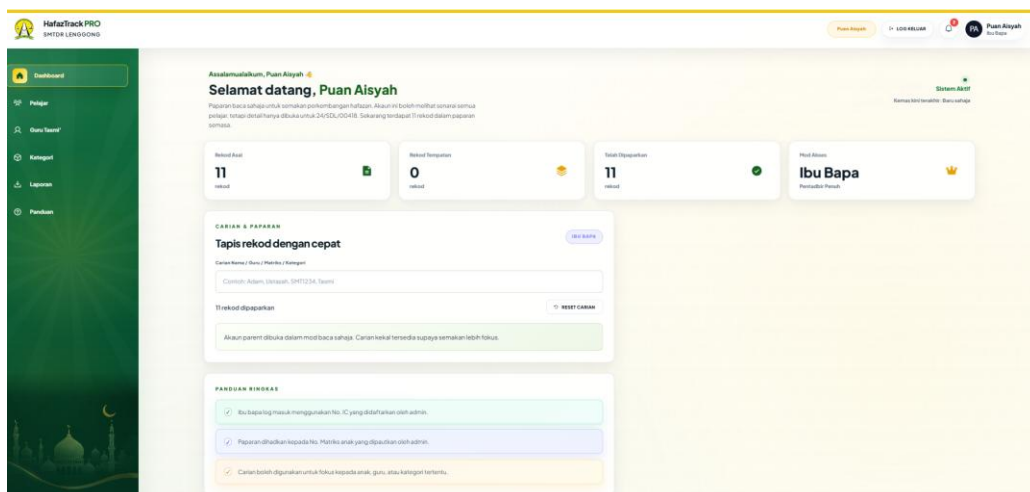


Figure 5: Parent Interface of HafazTrack Pro

This feature enhances transparency in hafazan monitoring and encourages active involvement from both parents and students in tracking memorization progress. These features enable teachers to monitor student progress in a more structured and visual manner compared to traditional record-keeping methods.

#### 4.3.4 Student Interface

The student Interface is a new addition introduced in HafazTrack Pro. In the previous system, only three interfaces were available: Admin, Teacher, and Parent. Students did not have their own access and had to rely on their parents or teachers for updates, which sometimes caused them to miss out on information regarding their progress.

To solve this issue, HafazTrack Pro introduces a dedicated Student Interface. Students can now log in at school or whenever they want to independently check their latest memorization progress and milestones using their Matric ID. Figure 6 below illustrates the main view of this interface.

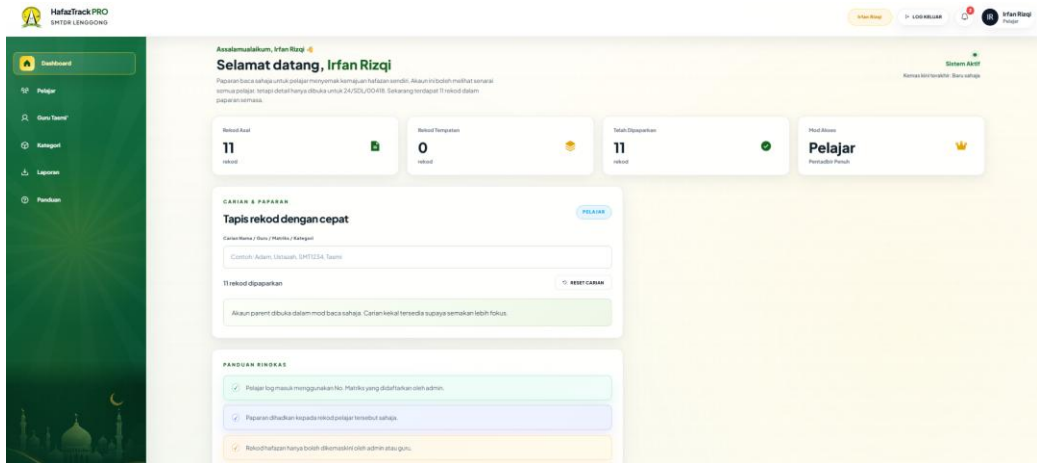


Figure 6: Student Interface of HafazTrack Pro

**Key Features for Students:**

- **Personal Progress View:** Allows students to see their own hafazan graphs and completed juzuk.
- **Real-Time Status:** Updates students instantly on their current memorization status (In Progress / Completed).
- **Self-Motivation:** Helps students stay on track with their goals without needing to wait for updates from teachers or parents.

4.4 Data Flow Design

The system shown in Table 2 follows a simple input–process–output (IPO) flow. It maps out how data enters the system, how it is processed, and the final output generated for the user.

Table 2: Data Flow Design for HafazTrack Pro

Component	Description
Input	Teacher enters hafazan data (surah, juzuk, status)
Process	System organizes and computes progress automatically.
Output	Dashboard displays graphs, status, and alerts

The system outputs were further validated through additional interface screens that reflect expert-identified requirements, including student progress tracking, juzuk monitoring, and alert mechanisms for memorization performance (Figures 7–11). Figure 7 show student progress tracking.



Figure 7: Student Progress Tracking

One of the key expert requirements is the need for a structured performance classification based on muqarrar achievement levels to support systematic evaluation of

students' memorization progres. Students are classified into Excellent (100%), Good (75%), Moderate (50%), and Needs Guidance (<50%) based on memorization achievement starting from Juzuk 30 shown in Figure 8.

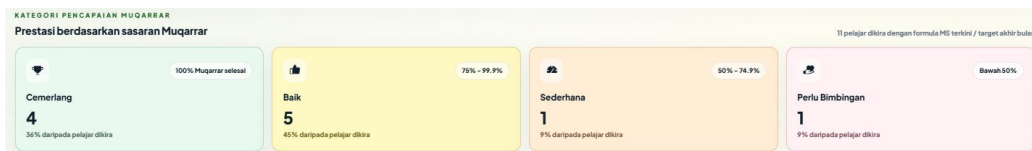


Figure 8: Performance Based on *Muqarrar*

Figure 9 presents the teacher data entry interface (input module), which serves as the main entry point for recording students' hafazan progress data.

PANEL REKOD

Tambah atau kemaskini hafazan

Masukkan No. Matriks yang sama untuk menimpa paparan pelajar sedia ada secara tempatan. Jika tiada padanan, rekod baharu akan ditambah ke dashboard.

AKSES ADMIN & TEACHER

**No. Matriks**

**Nama Pelajar**

No. Matriks sama akan kemaskini rekod pelajar sedia ada.

**Tarikh Rekod**

**Guru Tasmil / Pembimbing**

**Kategori Bacaan**

**Juzuk Semasa**

**Muka Surat Hafazan Terakhir**

**Pace Bulanan (m/s)**

**Gambar Pelajar**

 No file chosen

Pilih gambar daripada komputer. Jika kosong, gambar sedia ada akan dikekalkan.

Preview rekod akan muncul di sini.

📄 SIMPAN REKOD

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Figure 9: Teacher Data Entry Interface (Input Module)

Through this interface, teachers can systematically enter relevant information such as memorization performance, completion status, and other progress indicators based on the prescribed *muqarrar*. The structured design of the input module facilitates consistent data recording and supports accurate monitoring of students' memorization development over time.

Figure 10 illustrates the overall record of hafazan progress. The analysis provided by this feature is highly valuable for students, as it allows them to strategize and manage their memorization schedule more effectively.

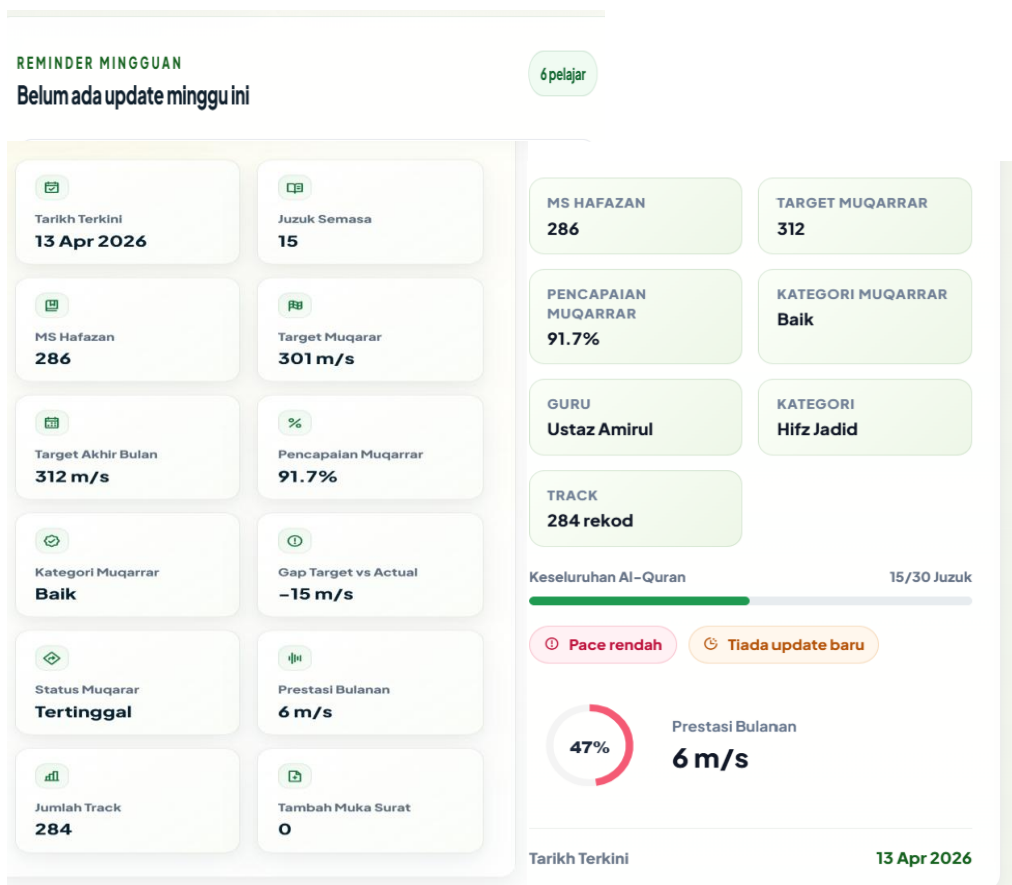


Figure10: Overall Record of Hafazan Progress

Figure 11 displays the Hafazan Performance Graph (Actual vs Target) interface, which serves as the core analytical module of the system. This visualization provides a comparative analytics framework that maps a student's live progress against their institutional milestones. As illustrated in the interface, the system processes raw logging inputs such as dates, specific categories, surah selections, and verse counts (*Helaian/Baris*) and translates them into dynamic trendlines.

A defining feature of this analytical module is the 'Target Muqarrar' threshold (represented by the dotted yellow line and shaded boundary). Rather than using a

generic baseline, this target line is dynamically generated based on the school's official academic calendar (*takwim*). The system integrates the specific dates and target page numbers set by the school administration, creating a standardized benchmark tailored to the institution's syllabus. The primary line chart then plots the student's 'Actual Hafazan' (solid green line) directly against this calendar-based target. A key mathematical and pedagogical advantage of this graph is its interactive tooltip feature, as shown on the *04 Mac 2026* data point. When hovered, the system delivers real-time granular metrics (e.g., *Bil Ayat Hafazan (Actual Hafazan): 145* against *Target Muqarar: 279*). This immediate visual contrast provides clear, objective insights that eliminate self-evaluation ambiguity for students. By analyzing the peaks, valleys, and gaps between their actual performance line and the school's *takwim* threshold, students can diagnose their learning pace, self-regulate their revision schedules, and plan their daily memorization targets more strategically and effectively.

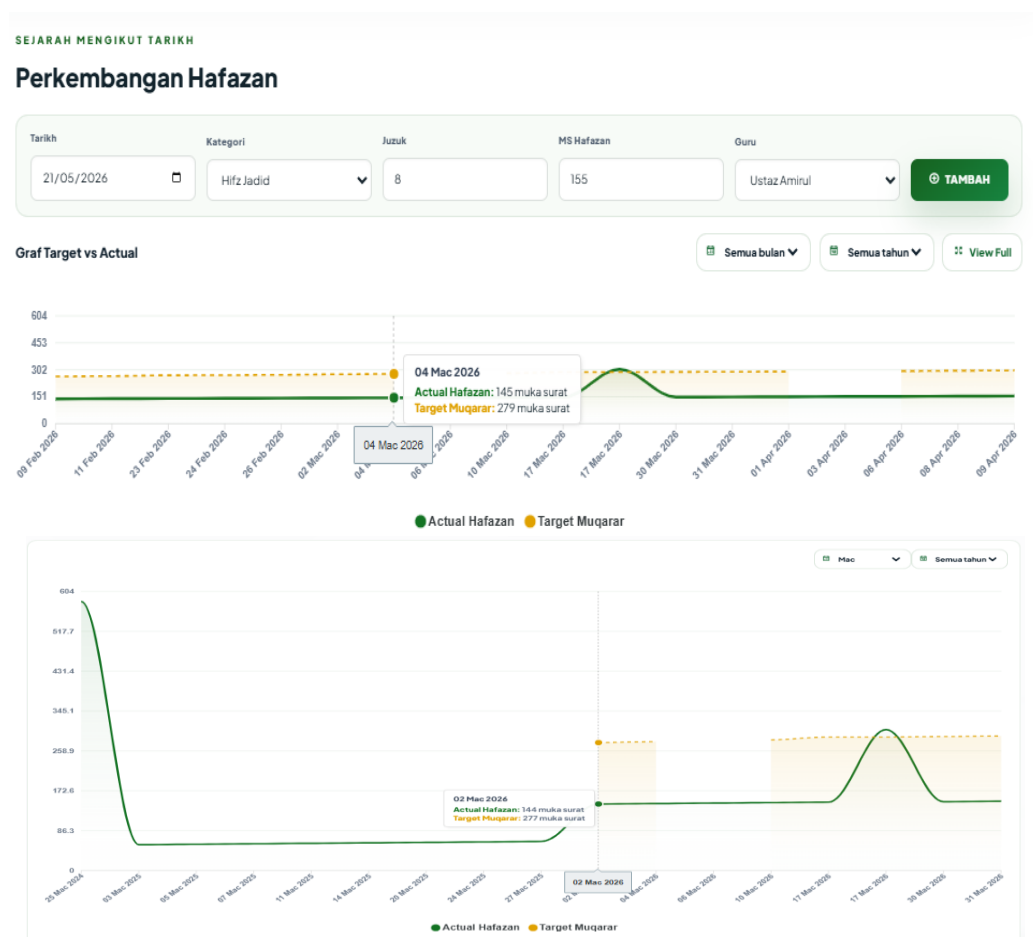


Figure 11: Hafazan Performance Graph (Actual vs Target)

Figure 12 displays the comprehensive table of the student's memorization records. The data presented in the table includes the date, category, juz', page number, target muqarar, and gap status.

Jadual penuh rekod

View Full

TARIKH	KATEGORI	JUZUK	MS HAFAZAN	TARGET	GAP	STATUS	GURU
09 Apr 2026	Hifz Jadid	8	155	298	-143	Tertinggal	Ustaz Amirul
08 Apr 2026	Hifz Jadid	8	154	297	-143	Tertinggal	Ustaz Amirul
06 Apr 2026	Hifz Jadid	8	153	295	-142	Tertinggal	Ustaz Amirul
03 Apr 2026	Hifz Jadid	8	152	tiada	tiada	Tiada target	Ustaz Amirul

Figure 12: Comprehensive Table of Student Memorization Records

The functions implemented in the HafazTrack Pro dashboard are categorized in Table 3, demonstrating how each feature aligns with the expert requirements.

**Table 3:** Functions implemented in HafazTrack Pro.

Expert Requirement	System Screen	Function Category	Evidence (Figure)
Overall performance summary	Performance summary dashboard	Performance Analytics	Figure 7
Progress tracking	Group halaqah progress	Progress Monitoring	
Achievement indicator	Top students	Performance Ranking	
Alert / intervention mechanism	Students need intervention	Early Warning System	
Performance monitoring based on structured benchmark (muqarrar)	Muqarrar-Based Performance Classification	Evaluation System	Figure 8
Weekly monitoring & alert for updates	Weekly Reminder Module	Monitoring & Alert	Figure 10
Current hafazan tracking (pages & juz status)	Current Progress Dashboard	Progress Tracking	
Target vs actual performance comparison	Target vs Actual Module	Performance Tracking	
Monthly muqarrar achievement tracking	Monthly Muqarrar Summary	Evaluation System	
Muqarrar-based classification (100%, 75%, 50%, <50%)	Performance Classification System	Evaluation System	
Progress tracking with comparison between target and actual performance over time	Hafazan Performance Graph (Actual vs Target)	Performance Analytics / Time-series Tracking	Figure 11

## 5.0 Results and Analysis

This section evaluates the extent to which the developed HafazTrack Pro system fulfils the expert-identified requirements outlined in Section 3.0. The analysis is conducted by comparing the specific feedback from experts with the implemented system features and interface design. This mapping ensures that the system's development is grounded in practical needs and addresses the critical monitoring gaps identified during the requirement gathering phase.

To validate the system's effectiveness, a traceability analysis was performed between the expert recommendations and the final system output. This section details how each requirement ranging from consistency monitoring to early intervention mechanisms has been translated into functional modules within HafazTrack Pro. Importantly, every requirement identified by the experts has been successfully implemented and integrated into the final system. The following comparison table (Table 4) serves as evidence of the system's compliance with the expert's technical and pedagogical needs.

Table 4: Comparison Between Expert Requirements and System Implementation

Expert Requirement (Section 3.0)	System Implementation (Section 4.0)	Evidence (Figure)	Status
Weekly Consistency Monitoring: Monitoring via pages submitted and active hafazan days	Weekly Reminder Module & Progress Dashboard: Tracks pages and juzuk status weekly.	Figure 10	Implemented
Trend Visualization: Visual representation of weekly and monthly progress trends.	Performance Analytics: Hafazan Performance Graphs (Actual vs Target) and summary dashboards.	Figure 10 & 11	Implemented
Target vs Achievement: Comparison between target muqarrar and actual performance.	Performance Tracking: Target vs Actual Module including gap indicators and achievements.	Figure 10,11 &12	Implemented
Early Intervention: Early identification of students with delayed progress.	Early Warning System: Alert/intervention mechanisms and Muqarrar-based classification.	Figure 7 & 8	Implemented
Duration Tracking: Information on duration taken to complete memorization targets	Time-series Tracking: Inclusion of duration and average completion indicators in analytics.	Figure 10	Implemented

In conclusion, the development of HafazTrack Pro strictly adhered to the requirements gathering phase, ensuring a direct correlation between expert feedback and the final system output. The transition from qualitative requirements to functional system modules demonstrates that the system has been developed with a high degree of precision and purpose. By fulfilling all identified criteria, the developed system stands as a complete and validated tool, ready to address the practical challenges of Hafazan monitoring

## 6.0 Discussion

The development of HafazTrack Pro shows a successful shift from the previous system (ASIS) to a more advanced digital dashboard. While the ASIS system was already in use, its function was limited to basic recording, such as tracking page numbers and dates. Under the old method, teachers had to manually compile data and share student lists, page counts, and muqarrar status via WhatsApp at the end of every month. This manual process is often prone to delays and lacks visual clarity, making it difficult for stakeholders to grasp student progress at a glance (Hafizuddin et al., 2026).

In contrast, HafazTrack Pro improves this process by providing real-time data and automated analysis. By including features like the Early Warning System, this prototype fulfills the need for "early intervention," which is critical in preventing students from feeling overwhelmed or dropping out (Awang et al., 2025). Instead of waiting for monthly manual updates, teachers can now instantly identify struggling students through the dashboard.

The graphical representation of progress also replaces manual reporting, making it easier to see if a student is excelling or needs extra help. This shift directly aligns with the broader need for digital transformation in Tahfiz management (Yoo et al., 2021), where automated tools are increasingly used to replace traditional, error-prone manual processes.

## 7.0 Conclusion

This paper has described the design and development of HafazTrack Pro, a digital dashboard prototype created to modernize the monitoring of Tahfiz memorization. Through this development process, every requirement identified by experts was successfully transformed into functional system features. The implementation of tools such as the Early Warning System and performance graphs proves that the system is not only technically functional but also highly practical in helping teachers monitor student progress.

The results show that HafazTrack Pro has met all the essential needs for consistent and effective hafazan tracking. Overall, this prototype represents a significant step forward in integrating digital technology with Quranic education. For future work, this study can be expanded by testing the system in various Tahfiz institutions to evaluate its long-term impact on student performance and memorization consistency.

For future studies, it is highly recommended to expand the deployment of HafazTrack Pro to a larger and more diverse participant group. Once the current prototype is fully stabilized, scaling up the system to encompass the entire school, as

well as multiple other tahfiz institutions, will significantly strengthen the reliability, scalability, and broader applicability of the system in various Quranic education settings.

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