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Abstract

Special education teachers face significant challenges in managing student information and maintaining effective communication with parents and other stakeholders. Current Learning Management Systems (LMS) lack flexibility in attendance tracking, parental engagement, and collaboration with therapists and educators, leading to excessive administrative workloads. This research explores a design solution aimed at streamlining teacher workflows by automating attendance tracking, enabling targeted communication, and integrating a centralized information-sharing system. Through a qualitative study, including both an AI-generated persona and an interview with a real special education teacher, we identified key pain points such as fragmented communication channels, manual reporting inefficiencies, and inconsistent collaboration among school staff. Our proposed system integrates automation features, including real-time updates, dynamic student group management, and AI-assisted messaging, to reduce teacher workload while improving communication and collaboration. Findings highlight the importance of balancing automation with personalization, ensuring that digital solutions enhance, rather than replace, meaningful interactions.

Keywords: Special education, Learning Management System, teacher workload, communication automation, AI-assisted messaging, parental engagement, collaboration.

1 Introduction

Teachers, especially homeroom teachers, face an overwhelming workload caused by managing information and maintaining ongoing communication with parents and students. A significant gap exists between the capabilities of current systems and the actual needs of educators. For example, existing platforms often lack the necessary level of detail in reporting or make it challenging to establish consistent, transparent communication with parents. Furthermore, there is often a mismatch between the way teachers report issues and how these reports are perceived by parents, leading to increased demands on teachers' time. Many are forced to dedicate long hours both during and after the school day to direct communication with parents, adding to their workload and stress. This additional burden impacts their ability to balance their professional responsibilities with their personal lives.

Efficient information management and transparent communication with parents are crucial for improving students' learning experiences and enhancing the work environment for teachers. Addressing this issue could significantly reduce the workload for educators, improve

transparency with parents, and minimize misunderstandings that can harm trust and collaboration between schools and families. Furthermore, finding a solution would contribute to maintaining a healthy work-life balance for teachers, allowing them to focus more on their educational responsibilities and less on administrative tasks.

Existing Learning Management Systems (LMS) like Moodle and Google Classroom provide some of the required functionality but fall short in addressing unique needs, such as effective communication with parents or reducing the administrative burden on teachers. These platforms also lack optimization features, such as real-time automated form submissions and notifications. While they are helpful in some areas, they are not specifically designed to bridge the communication gaps or streamline administrative processes in the way that educators require.

Teachers working in special education face even greater challenges in managing communication with parents, as individualized education plans (IEPs), behavioral reports, and progress updates require constant tracking and coordination. Existing systems do not adequately support personalized updates, detailed behavioral tracking, or real-time adjustments to teaching strategies based on student needs. Additionally, special education teachers often work closely with therapists, counselors, and multiple stakeholders, making communication even more complex. A well-designed system must address these additional layers of complexity to ensure effective collaboration and reduce administrative strain on special education professionals.

We propose a design solution for the existing systems used in schools nationwide, specifically tailored to meet the needs of special needs educators. The proposed solution will include digital tracking of attendance, tardiness, and other key metrics and partially automate the communication between teachers and parents to avoid miscommunication and reduce the administrative load on teachers. It will also allow teachers to send messages and materials to specific student groups within the special needs class, as the number of students varies from class to class. The system will integrate seamlessly with existing LMS platforms to avoid disrupting current workflows. We believe this approach, which combines existing solutions with unique features specifically designed for teachers and parents, will help reduce the workload for educators and improve the efficiency of their work.

If successful, this system could have significant benefits: (1) It would enhance the effectiveness of teachers' work by reducing bureaucratic burdens and freeing up their time for educational purposes; (2) It would improve transparency and trust by facilitating better collaboration with parents through clear and immediate communication. By automating and simplifying communication through AI-driven tools, the system would reduce the need for direct

contact with each parent, while still providing detailed and structured updates. This would result in a more efficient, balanced, and productive educational environment for teachers, parents, and students alike.

2 METHOD

To understand the requirements for the student management system, we conducted a qualitative study that included two interviews. One interview was conducted with a special education teacher from Tinal Elementary School in Kfar Kama, and the other was a simulated interview using ChatGPT. The interviews were designed to gather insights into teachers' roles, workflows, communication challenges, and unmet needs.

2.1 Measures

When creating the initial persona with ChatGPT, we gave it some criteria to ensure that we get a high quality persona. We got these criteria from [1] combined with our own understanding of what a good persona should be. The criteria given were: (1) Accuracy & Realism – The persona should be grounded in real data, accurately represent the target user segment, be detailed, and feel believable; (2) Relevance to Goals – The persona must align with project objectives, focus on key users, and aid decision-making; (3) Clarity & Comprehensibility – The persona should be easy to read, free of jargon, visually clear, and well-structured for stakeholder understanding; (4) Actionability – The persona must guide design and strategy by clearly outlining needs, pain points, and user interactions; (5) Empathy & Humanization – The persona should be relatable, engaging, and include storytelling elements that foster empathy; (6) Completeness – The persona must provide a holistic view of the user, covering all relevant aspects without over-generalization; (7) Memorability – The persona should be distinctive and engaging to ensure easy recall and reference; (8) Consistency & Iteration – The persona must be internally coherent, used consistently across teams, and updated as new data emerges.

2.2 Design Process

The purpose of this section is to explain our workflow in designing the solution, including our problem identification, stakeholder analysis, persona creation, interviews, and design refinements. This process was also partially influenced by the course requirements, where we were instructed to conduct the interview with ChatGPT first, and then conduct it with the actual teacher (real person interview). The process is also illustrated in figure 1.

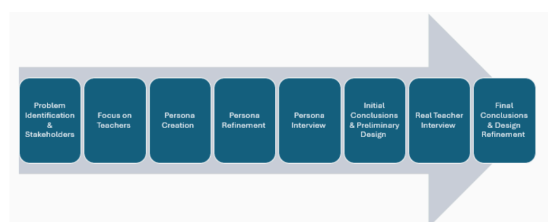


Figure 1. Design process workflow.

2.1.1 Identifying the Problem and Stakeholders

Our first step in the design process was to identify the key challenges that teachers face in communication and information management. Through discussions and a review of existing tools, we mapped the gaps in current solutions and outlined the needs of different stakeholders. This helped us establish the core requirements for our proposed system.

Initially, we identified three main stakeholders involved in schools: the teachers, the parents, and the students, and came up with several ideas that could involve all of them. However, after presenting our ideas in our class, we were advised to focus on one stakeholder, and design the solution for them. Therefore, we chose to focus on teachers, specifically, special needs teachers.

2.1.2 Initial Design Idea

After choosing to focus on improving the communication between parents and teachers, we brainstormed several solutions to accomplish this. Our initial ideas included automating some processes that teachers have to deal with, such as, sending forms straight to the parents through Mashov, rather than having to do this process manually by giving the students a paper slip. We also thought about partially automating the interaction between parents and teachers by having a sort of “Chatbot” take over the initial part of the interaction with the parents, and then including the teacher when needed, or making templates for the teachers when they need to send a common type of message to parents (e.g., regarding the material learned in class).

2.1.3 Persona Creation

Once we had a stakeholder in mind, we began crafting a prompt for ChatGPT to generate a persona. We carefully considered multiple aspects, including:

- The purpose of the persona
- Key insights from our problem identification
- The project context
- Evaluation criteria for persona quality
- Background and work experience – covering the teacher's daily routine, responsibilities, and general challenges.
- Technical aspects – focusing on the tools and platforms teachers currently use.

By integrating these elements, we created a prompt to generate a persona that was both realistic and relevant for the project. We structured it with the following characteristics:

- Age: 30
- Gender: Female
- Marital Status: Married for 5 years
- Children: One child
- Experience: 4 years at the current school
- Role: Homeroom teacher for a special education class
- Additional Responsibilities: Science coordinator and head of the teacher's committee
- Duties: Supervises the playground during breaks on Mondays and Wednesdays; attends training sessions after school on Tuesdays; leads the school science newspaper club.

Then, we prompted ChatGPT to generate a persona by expanding upon these elements (this is the initial part of the prompt, the full prompt is in [appendix A1](#)):

"Hi, as part of our ethical planning for AI systems course, we want to build a student behavior management system for teachers (e.g., recording absences/sick days or sending school forms to parents) in order to help improve the communication between teachers and parents and help reduce the workload that teachers deal with on a day to day basis. [...] Help me build a persona so that I can build this system."

The persona we got from ChatGPT was named Maya Cohen and represents a 30-year-old special education teacher with four years of experience at Tinal Elementary. She juggles multiple responsibilities, including teaching, managing administrative tasks, and coordinating with other stakeholders. Maya's pain points include excessive paperwork, fragmented communication channels, and a lack of centralized tools for managing her workload. The full persona description is listed in [appendix A2](#). Figure 2 presents the final persona.

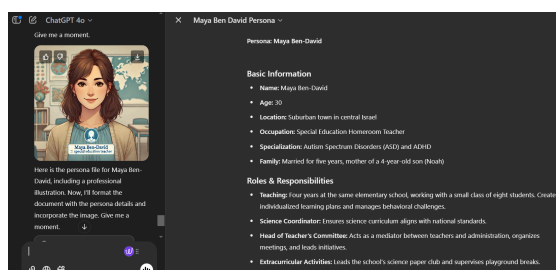


Figure 2. ChatGPT-generated persona.

2.1.4 Persona Refinement

We then tested our persona by presenting it to another group using the "Six Thinking Hats" strategy. The feedback revealed that the persona's day-to-day life was unrealistically packed with activities. We then refined the persona based on feedback from a peer review and the criteria listed in the measures section. This iterative process ensured that the persona accurately reflected the complexities of special education teaching and provided a solid foundation for designing the proposed system.

2.1.5 Personal Interviews

To further validate our insights, we conducted structured interviews using ChatGPT and the real teacher.

2.1.5.1 ChatGPT Interviews

During the interview session with ChatGPT, we created a detailed conversation to test how well the generated persona aligned with real teachers' experiences. We followed these steps: (1) Persona Verification – We provided ChatGPT with the structured persona and asked it to role-play the teacher; (2) Question Entry – Questions were entered one by one to ensure clear, detailed responses; (3) Refinement – Midway through, we noticed excessive detail and redundant answers, leading us to refine the interview flow; (4) Adjustments – We instructed ChatGPT to avoid suggesting solutions repeatedly and focus more on describing challenges. Through this process, we reached initial conclusions that impacted our final design concept, presented in the findings section.

2.1.5.2 Real Teacher Interview

To further validate our design decisions, we conducted in-depth interviews with real teachers using the same question found in [appendix A4](#). This allowed us to confirm the accuracy of our persona, gather feedback on the usability of the proposed features, and identify additional areas for improvement that we had not previously considered.

2.1.6 Design Refinement

This stage was repeated twice during the design process. We started with an initial concept and, through an iterative process, refined it based on insights from both the ChatGPT interview and the real teacher interview.

3 Findings

After conducting both the ChatGPT and real teacher interviews, we identified key themes that shaped our final design solution. These findings highlight the challenges

special education teachers face in workload management, communication, and collaboration, reinforcing the need for an improved system to support them in their daily responsibilities.

3.1 Workload and Prioritization

Both interviews revealed that teachers struggle with a heavy workload, balancing teaching, administrative tasks, and parent communication. Maya, our ChatGPT-generated persona, frequently felt overburdened by fragmented schedules and outdated tools for behavior reporting and attendance tracking. She noted, *"The amount of paperwork is overwhelming. From documenting absences and writing behavior reports to responding to parent queries, it often feels like there aren't enough hours in the day to get everything done."* These inefficiencies forced her to rely on manual workarounds, reducing the time she could dedicate to teaching.

The real teacher interview confirmed similar challenges, with the teacher noting, *"Every day I exceed my scheduled hours. There are days I should finish by the 6th or 7th lessons, but I often stay until 14:30 or 15:00 just trying to complete my work."* The dual responsibilities of being a special education teacher and a coordinator negatively impacted her classroom presence, making it difficult to prioritize direct student engagement. She explained, *"Sometimes, I have important meetings, and I have to leave my students with another teacher or an assistant, which disrupts their routine."* These insights emphasized the importance of reducing administrative burdens through automation and workflow optimization in our proposed system.

3.2 Limitations of Existing Tools

Communication and documentation processes in schools are fragmented across multiple platforms, creating inefficiencies that hinder teachers' productivity. Maya relied on WhatsApp, email, and phone calls, which lacked integration and often resulted in miscommunication. She expressed frustration, stating, *"None of these tools talk to each other. I spend a lot of time switching between platforms, which is frustrating and inefficient."*

Similarly, the real teacher interview highlighted the limitations of the Mashov system, which does not accommodate the personalized schedules of special education students. *"Mashov only allows me to create one fixed class list, but my students' schedules are flexible. I have to manually track attendance and ignore irrelevant names in the system,"* the teacher noted. This system limitation led her to rely on WhatsApp for communication, even though school policies discouraged it. Additionally, key student information such as attendance, therapy schedules, and updates from

other staff members was spread across multiple systems, making it difficult to access relevant data efficiently. *"I have to duplicate updates across Mashov, WhatsApp, and 'Sisma leKol Talmid,' which is a huge waste of time,"* she explained. Maya also echoed these frustrations, stating, *"I log attendance in one system, track behavior in another, and email reports separately. It would be so much easier if everything was in one place."* These findings reinforced the need for a centralized, integrated system that consolidates communication, minimizes redundancy, and ensures all stakeholders have access to the same real-time information.

3.3 Communication Barriers

Another recurring issue was the inefficiency of existing parent-teacher communication methods. Maya's interactions with parents were complicated by unresponsive behavior and the use of multiple channels, often requiring repeated follow-ups. *"Some parents don't reply to messages or emails, even after multiple reminders. For example, if I send a form for a field trip or a behavior report, it often takes several follow-ups to get a response."* Group chats on WhatsApp frequently deviated from their intended purpose, making it difficult to track relevant discussions.

The real teacher we interviewed faced similar issues: *"Parents rarely check Mashov, so I have to send the same message multiple times via WhatsApp or call them directly. It's exhausting."* Additionally, parents preferred text messaging over direct phone calls, leading to delays in urgent matters. *"I prefer calling parents because I can get immediate feedback, but most of them just text back instead,"* she said. Maya described a similar challenge, saying, *"I call parents when it's something urgent or when I need to have a more personal discussion. But sometimes, they don't answer and just text me back hours later, which slows things down."*

Moreover, the expectation to be available outside of school hours contributed to work-life imbalance, with the teacher often responding to messages late at night. *"I plan my lessons for the next day in the evening after my son goes to sleep because there's no other time,"* she admitted. Maya faced the same struggle, noting, *"I often end up answering parent messages late at night or during weekends, which cuts into my personal time."* To address these challenges, our system must offer scheduled messaging, streamline communication between teachers and parents, and reduce reliance on informal channels while ensuring accessibility for all users.

3.4 Challenges with Collaboration

Collaboration among teachers, therapists, and other school staff is hindered by the lack of a unified system for sharing student updates. The real teacher interview reinforced these issues, highlighting how critical student updates were often

communicated informally. *"There is no single place where I can see real-time updates about my students. If I need information, I have to ask different teachers, therapists, or assistants individually,"* she said. This lack of coordination forced her to chase down necessary details, adding to her already heavy workload. *"Sometimes I don't even know when my students have had emotional outbursts or if something happened in class which is affecting their behavior in my class, and I often have to chase teachers regarding those issues. It would be great if there was a system that would allow me to get updates about those kinds of things,"* she added. Without a shared digital workspace, teachers must manually coordinate schedules and updates, creating inefficiencies that impact their ability to provide timely support to students. Maya did not mention this issue. These findings underscored the need for a collaborative platform where all relevant stakeholders can input, track, and access student-related information in real time.

3.5 Vision for an Ideal Solution

The real teacher interview provided a clear vision for an improved system, emphasizing the need for a centralized platform that facilitates real-time updates on student progress, attendance, and behavioral incidents. The system should allow teachers, parents, and therapists to contribute relevant information, ensuring seamless collaboration. *"I need a place where I can see everything in one glance—attendance, behavior updates, and input from other staff,"* the teacher explained. Maya had a similar vision, saying, *"If I had a system that let me see attendance, behavior incidents, and progress updates in one place, it would save me so much time and stress."*

Additionally, it must support personalized student schedules and flexible group management to accommodate the unique needs of special education classrooms. The teacher emphasized the importance of customization, stating, *"Each student has a different schedule, and I need a system that adapts to that, not one that forces a rigid structure."* A key concern raised was the lack of parent engagement with formal school communication tools. *"I wish that parents would use the Mashov more, so I wouldn't have to rely on WhatsApp,"* the teacher commented. Therefore, the system should incorporate features that encourage parental involvement, reducing teachers' reliance on informal channels while improving accessibility for families.

3.6 Implications for Final Design Solution

Based on these findings, the final system must prioritize automation to alleviate administrative burdens, enabling teachers to spend more time on direct student engagement. The system must integrate flexible scheduling tools tailored

to special education needs, ensuring that individualized learning plans, therapy sessions, and other key updates are easily managed. To support teacher well-being and work-life balance, features such as scheduled messaging and notification management should be implemented. Additionally, parental engagement strategies should be incorporated to encourage the use of formal communication systems, reducing reliance on informal messaging apps. Some of these considerations will ensure that the final design is both practical and user-friendly, effectively addressing the core challenges identified in our research.

4 Final Design Solution

Based on the key themes identified in our research, we designed a system that addresses the most pressing challenges faced by special education teachers. Our final design focuses on three core areas: centralized information management, effective and focused communication, and improved time management. These improvements directly respond to the pain points highlighted in the interviews, ensuring a more streamlined workflow for teachers while enhancing collaboration with parents and other stakeholders. The system introduces automation and integration features that reduce administrative overhead, eliminate redundant manual processes, and provide a structured communication flow between teachers, parents, and support staff. The following sections outline the major use cases and the expected benefits of the system.

4.1 Automated Attendance Tracking

4.1.1 Current Workflow

In the existing system, when a student is absent, the teacher manually marks attendance and later contacts the parent to confirm the reason for the absence. Many parents fail to report absences proactively, leading to unnecessary follow-ups. Additionally, if a student is marked absent but is only late, there is no automated way to update their status in real time. The real teacher interview highlighted this challenge: *"I manually mark absences, but sometimes parents don't inform me ahead of time. If I don't follow up, I might not know why the student was absent until the next day."* The current workflow is displayed in figure 3.

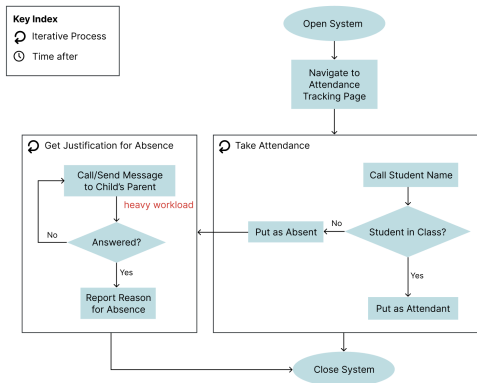


Figure 3. Attendance tracking workflow.

4.1.2 Proposed Solution

Our system automates absence tracking and parent communication by integrating Mashov with a cloud-based communication platform that enables automated WhatsApp messaging through APIs. When the teacher marks attendance, the system generates and sends an automated message to parents of absent students, asking them to confirm the reason for the absence. Parents can select from multiple options: sickness, late arrival, other reasons, or a request to speak with the teacher. If a parent selects "Late arrival," the system updates the attendance record accordingly and notifies the teacher in real time. If medical verification is required, the system prompts the parent to submit a digital document, reducing paperwork and ensuring a streamlined approval process. This automation ensures that attendance records are always up to date while minimizing unnecessary administrative work for teachers.

The system integrates Mashov with a cloud-based communication API (e.g., Twilio, WhatsApp Business API), enabling seamless automated messaging. When a relevant event occurs, such as an absence, permission form request, or schedule change, the system generates and sends an appropriate message to parents. By leveraging API-based automation, the system ensures efficient, real-time communication, eliminating the reliance on manual messaging and reducing the risk of lost or ignored updates. The current workflow is displayed in figure 4. Refer to [appendix A5](#) for examples of the automation solution.

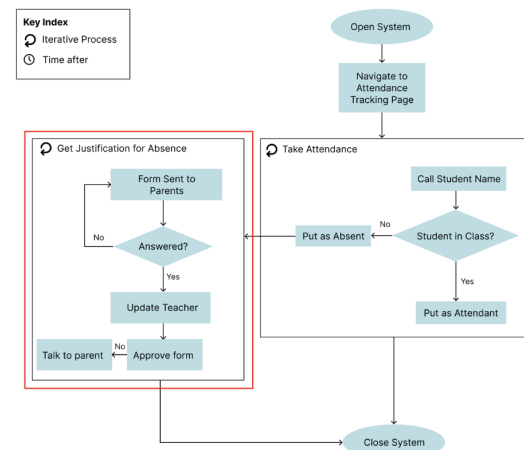


Figure 4. Our proposed improvement to the attendance tracking workflow.

4.2 Digital Permission Forms for School Events

4.2.1 Current Workflow

For school events requiring parental permission, such as field trips or special activities, teachers currently rely on printed permission slips. Students must bring these home, have them signed, and return them to the teacher. This process is inefficient, as forms are often lost, delayed, or require manual tracking and data entry. The real teacher described the challenge: *"Sometimes students lose the permission slip, and I have to print it again. Then I manually track who has returned it, but since another staff member uploads them to the system, I don't always know the status in real time."* The current workflow is displayed in figure 7.

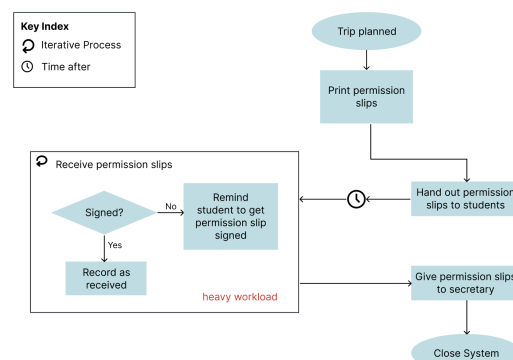


Figure 7. Permission slip handout workflow.

4.2.2 Proposed Solution

Our system digitizes and automates permission form collection by connecting Mashov to a cloud-based platform that enables WhatsApp message automation through APIs. The teacher can create a school event in the system's calendar, attach a digital permission form, and set a deadline for responses. The system then sends a WhatsApp message containing a link to the form to all relevant parents. Responses are tracked in real time, and parents who have not yet completed the form receive automated reminders before the deadline. This system eliminates paper-based permission slips, reduces administrative workload, and ensures that all permissions are properly recorded. The concept mimics the automated message of the previous feature (see figure 5 in [appendix A5](#)).

4.3 Dynamic Class Grouping for Targeted Communication

4.3.1 Current Workflow

In special education settings, students' schedules are dynamic, with different students attending different lessons based on their needs. However, the current system does not support flexible grouping, forcing teachers to send information to all students, leading to confusion among parents. The real teacher explained: *"My class structure changes every lesson, but in the system, I only have one fixed class list. When I need to send homework, I have to send it to everyone—even those who aren't in that specific lesson—which causes confusion among parents."* The current workflow is displayed in figure 8.

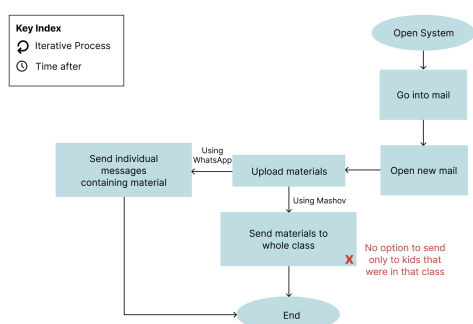


Figure 8. Workflow of sending messages/materials to parents.

4.3.2 Proposed Solution

Our system introduces dynamic class grouping, which automatically updates based on the lesson schedule. This is done by not only connecting the student to the larger class in the system, but also their individual lessons. This allows teachers to select a specific group of students attending a lesson and send materials only to them. By ensuring that

parents receive information relevant to their child's actual schedule rather than the full class list, the system reduces miscommunication and unnecessary follow-ups. This feature ensures clear and effective communication while minimizing manual sorting efforts for teachers. The current workflow is displayed in figure 9. Figure 10 describes our proposed implementation of this feature.

Figure 9. Improvement suggestions workflow of sending messages/materials to parents workflow.

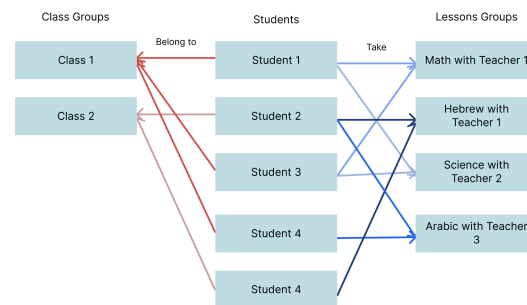


Figure 10. Our solution is to group students not only by class, but by individual lessons, too. That way, the teacher can select which "group" she wants to send a message to.

5 Discussion

Our research process was shaped by multiple iterations, each adding depth to our understanding of the challenges faced by special education teachers. Initially, using ChatGPT to generate a persona provided a structured starting point, giving us insight into common pain points such as administrative overload, fragmented communication, and the lack of efficient tools. However, while the AI-generated persona captured broad themes, it lacked nuance and prioritization. The simulated responses tended to generalize issues rather than highlight the most pressing concerns, making it difficult to determine which pain points were most impactful. Engaging in a real teacher interview was a turning point, as it grounded our findings in firsthand experiences and allowed us to focus on the problems that directly affected teachers' daily work. The emotional aspect, which was missing in the AI-generated responses, became evident in the real interview, revealing frustration, exhaustion, and the constant juggling required to balance multiple responsibilities.

One of the most striking takeaways from the real interview was the level of improvisation required to work around the limitations of existing systems. The teacher described numerous manual processes—such as tracking attendance on paper before entering it into the system or maintaining separate lists to manage dynamic class structures—showing how much extra effort was needed simply to stay organized.

This highlighted a fundamental disconnect between the tools available and the real needs of educators. While existing LMS platforms provided basic administrative functions, they did not support the flexible workflows required in special education. The lack of automation in repetitive tasks, such as collecting permission slips or sending updates to specific student groups, reinforced the need for a system that not only centralizes information but also proactively assists teachers in reducing their workload.

The research process also challenged some of our initial assumptions about communication. While we expected that a centralized platform would solve many problems, the reality proved more complex. The real teacher interview revealed that many parents did not engage with formal communication tools like Mashov, preferring more direct and familiar channels such as WhatsApp. This led us to reconsider our approach, acknowledging that any system designed for teachers must also account for parent behavior and accessibility. Instead of assuming that parents would adapt to new systems, we needed to integrate solutions that worked within their existing habits while still reducing the strain on teachers. This was an important realization, shifting our focus from simply building a better teacher-facing system to one that fosters greater parental participation without increasing the teacher's workload.

Another important insight was the extent to which collaboration between different stakeholders—teachers, therapists, counselors, and administrators—relied on informal communication rather than structured data sharing. The teacher expressed frustration over constantly having to seek out updates about students rather than having a single place where all relevant information was available. While we initially considered communication between teachers and parents as the primary challenge, it became clear that internal collaboration was just as problematic. The lack of a centralized system for sharing student progress and behavioral updates created unnecessary delays and inefficiencies, reinforcing the need for a platform that enables real-time input from multiple stakeholders.

Throughout the design process, we also became more aware of the emotional toll that administrative inefficiencies take on teachers. Beyond the practical frustrations of managing fragmented communication, there was a deeper sense of burnout from constantly having to compensate for system shortcomings. The teacher described working late into the night to finalize lesson plans and respond to parent messages, reflecting a broader issue of work-life balance in education. This underscored the importance of integrating solutions that not only streamline workflows but also help set boundaries—such as scheduled messaging and automated reminders—to ensure that teachers are not constantly on call. The challenge, however, was to introduce

automation in a way that felt supportive rather than impersonal. Teachers still need to maintain a sense of connection with students and parents, meaning that automated features must enhance, rather than replace, meaningful communication.

Reflecting on the process, we realized the value of an iterative, multi-step approach. Had we relied solely on the AI-generated persona, we might have designed a solution that was functionally sound but disconnected from the lived experiences of educators. Conversely, if we had gone into the real interview without the structured insights provided by the AI-generated persona, we might have lacked direction and struggled to distill the key issues. The combination of the two approaches—starting with an AI-assisted overview and refining through real-world validation—proved to be an effective method for developing a well-rounded, user-centered solution.

Ultimately, this project reinforced that designing for education requires more than just technical fixes; it demands an understanding of the daily realities of teachers and the social dynamics that influence their work. A well-designed system must be intuitive, reduce friction in communication, and account for the complexities of different stakeholders. It should not merely digitize existing processes but rethink them to make teachers' lives easier. The process also highlighted the importance of flexibility—recognizing that different teachers, parents, and students have different needs, and that a one-size-fits-all approach is unlikely to succeed. By incorporating real feedback, adapting to user behaviors, and prioritizing usability, we were able to refine a design that responds to the true challenges faced by special education teachers, rather than just the ones we initially expected to find.

6 Future Work

While our proposed system significantly improves communication, information management, and administrative efficiency for special education teachers, there remain several areas for further development and research. Future work will focus on enhancing parental engagement, improving collaboration between educators and therapists, and leveraging AI tools to optimize communication and personalization. Additionally, scalability and adaptability across different educational contexts will be important considerations for future iterations of the system.

Encouraging Parental Involvement. Encouraging greater parental engagement with school systems like Mashov remains a key challenge, as many parents avoid using it due to unfamiliarity or a preference for informal channels like WhatsApp. To address this, future work should focus on school-led initiatives such as training sessions, instructional

videos, and technical support to improve digital literacy. Additionally, a more user-friendly parent interface with intuitive navigation, automated guidance, and multi-language support could enhance accessibility and encourage broader adoption. These efforts would help transition communication from fragmented channels to a more structured and efficient system.

Facilitating Collaboration Among Teachers and Therapists. Special education teachers must coordinate with parents, therapists, and other educators to track students' progress, but inconsistent communication creates gaps in information. Currently, teachers rely on informal conversations and fragmented records, making it difficult to piece together a complete picture. Future work should explore a collaborative system for real-time updates from all stakeholders, ensuring that therapy session summaries, behavioral observations, and home-related incidents are centrally documented. Additionally, implementing role-based access for secure information sharing would enhance collaboration while protecting student privacy. Research into digital collaboration tools in special education could further refine this approach.

Leveraging AI to Improve Communication with Parents. A key challenge in teacher-parent communication is the need for individualized messaging, with teachers frequently tailoring their tone based on each parent's engagement level. At the same time, much of this communication is repetitive. As the teacher explained, *"I have to tailor my communication differently for each parent, but a lot of my messages are repetitive. It would be helpful if there was a way to make this process smoother."*

Future work should explore AI-powered tools to streamline and personalize teacher-parent communication. AI-driven message generation could assist in composing responses that are both professional and empathetic while adapting to each parent's engagement patterns. Automated replies for common queries—such as attendance, school events, or student progress—would further reduce the time teachers spend drafting similar messages.

7 Conclusion

Our system streamlines communication and reduces administrative burdens for special education teachers

through automation and improved collaboration. By addressing key pain points in attendance tracking, student grouping, and parent-teacher interactions, it enhances efficiency while supporting better student care. Future work should focus on increasing parental engagement and refining AI-driven communication for broader impact.

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Appendix

Appendix A1: Persona Creation Prompt

Hi, as part of our ethical planning for AI systems course, we want to build a student behavior management system for teachers (e.g., recording absences/sick days or sending school forms to parents) in order to help improve the communication between teachers and parents and help reduce the workload that teachers deal with on a day to day basis. Help me build a persona so that I can build this system.

Here are some basic characteristics for the persona:

Age: 30 Female Mother of one, married for 5 years 4 years of experience in the school Homeroom teacher for special education class Other responsibilities as science coordinator and head of teacher's committee Every monday and wednesday she is in charge of supervising the playground during breaks Once a week on tuesdays, she stays after school hours to receive further training In charge of the school paper club, specifically for science news the

Criteria for a good persona are as follows:

1. **Accuracy & Realism Data-Driven** – Is the persona grounded in real data (e.g., user research, interviews, analytics) rather than assumptions? **Representative** – Does it accurately reflect the target user segment, avoiding stereotypes? **Details & Specificity** – Are demographics, psychographics, motivations, and behaviors sufficiently detailed to create a realistic depiction? **Credibility** – Does the persona feel like a believable, real person? Is the narrative cohesive and free of contradictions?
2. **Relevance to Goals Alignment with Objectives** – Does the persona align with project goals and provide insights that directly impact design, product, or business decisions? **Focus on Key Users** – Is the persona relevant to primary user groups, avoiding unnecessary or overly broad characteristics? **Willingness to Use** – Does the persona improve the team's ability to make informed decisions about the user group?
3. **Clarity & Comprehensibility Concise & Clear** – Is the persona easy to read and understand at a glance? **Avoids Jargon** – Is the language simple and free of unnecessary technical terms? **Visually Appealing** – Is the persona presented in an organized and visually clear format? **Clarity** – Is the information well-structured, making it easy for stakeholders to comprehend and apply?
4. **Actionability Guides Decision-Making** – Can the persona inform design, product development, marketing, or communication strategies effectively? **Scenario-Based** – Are realistic scenarios or journey maps included to reflect how the persona interacts with the product/service? **Prioritization of Needs** – Are pain points, goals, and challenges clearly articulated?
5. **Empathy & Humanization Relatable & Engaging** – Does the persona evoke empathy, helping teams connect with the user on a human level? **Storytelling Elements** – Are quotes, anecdotes, or personal stories included to make the persona feel authentic? **Empathy** – Can the designer or stakeholder feel they genuinely understand the person the persona represents?
6. **Completeness Comprehensive** – Does the persona provide enough information (background, goals, frustrations, etc.) to form a holistic understanding of the user? **Balanced** – Are all relevant dimensions of the user's experience covered (emotional, functional, and contextual)? **Avoids Over-Generalization** – Is the persona specific enough to avoid blending different user groups into one vague representation?

7. Memorability Distinctive – Is the persona memorable, making it easy to recall and reference during the design process? Engaging Description – Does the persona description highlight key traits and stories that stick with the audience?
8. Consistency & Iteration Coherent – Is the persona internally consistent with no conflicting information? Aligned Across Teams – Are personas used consistently across departments (marketing, design, product)? Updated Regularly – Is the persona revisited and refined as new data becomes available or as user needs evolve?

Appendix A2: Generated Persona

Persona: Maya Cohen

Demographics:

- **Name:** Maya Cohen
- **Age:** 30
- **Gender:** Female
- **Marital Status:** Married for 5 years
- **Children:** Mother of one (3-year-old daughter)
- **Location:** Small town with a tight-knit community
- **Occupation:** Homeroom Teacher for Special Education Class
- **Years of Experience:** 4 years in the school, 6 years in total as a teacher

Background & Professional Details: Maya is a dedicated and passionate teacher at Tinal Elementary. She works primarily with special education students, focusing on individualized learning plans and emotional support. In addition to her homeroom responsibilities, she serves as the school's science coordinator, organizing lesson plans and managing materials for the science curriculum. Maya also leads the teacher's committee, addressing teacher concerns and advocating for improvements in work conditions.

Every Monday and Wednesday, she supervises the playground during breaks, ensuring students' safety and resolving conflicts. On Tuesdays, she stays after school for professional training. Maya also mentors students through the school's science paper club, where she fosters curiosity and critical thinking by guiding students to write articles about recent scientific advancements.

Psychographics & Motivations:

- **Personality Traits:** Organized, empathetic, driven, multitasker
- **Motivations:**
 - Enhancing communication with parents to improve student outcomes
 - Reducing administrative workload to focus on lesson planning and individual student needs
 - Creating a collaborative environment among teachers
 - Staying updated with professional development and education trends

- **Goals:**
 - To efficiently track student behavior, absences, and progress
 - Streamline communication between teachers and parents
 - Reduce time spent on repetitive administrative tasks
 - Ensure no student falls behind, particularly in her special education class
- **Frustrations:**
 - Excessive paperwork and manual tracking of student behavior
 - Delays in communication with parents
 - Lack of time to fully engage in creative lesson planning due to administrative responsibilities
 - Inconsistent or unclear record-keeping across staff members

Day-to-Day Activities:

- **Morning:** Prepares classroom materials, greets students, organizes daily schedules
- **Midday:** Teaches core subjects, monitors playground, checks emails from parents
- **Afternoon:** Individual support for students with IEPs (Individualized Education Programs), coordinates with other teachers, tracks attendance and behaviors
- **After School:** Attends meetings, works on school science paper, participates in professional development

Technology Usage:

- **Competency Level:** Intermediate – comfortable with online grading platforms, attendance software, and digital communication tools
- **Tools Used:** Google Classroom, Microsoft Teams, digital gradebooks, email, and parent communication apps
- **Pain Points with Technology:**
 - Multiple platforms for different administrative tasks leading to confusion
 - Occasional technical glitches that delay reporting
 - Parents not consistently using communication platforms

Scenarios for System Use:

1. **Tracking Absences and Sick Days:** Maya logs into the system daily to record student absences. If a student is absent for more than two days, the system sends an automated follow-up message to parents.
2. **Behavior Monitoring:** During playground duty, Maya notes behavioral incidents directly in the system, which automatically updates parent communication logs.
3. **Sending School Forms:** Maya uploads and sends field trip forms to parents through the system, receiving notifications once forms are completed.

4. **Parent Communication:** The system generates weekly progress reports for parents, reducing the need for manual email drafting.

Quotes:

- “I want to spend less time filling out forms and more time engaging with my students.”
- “Communication with parents shouldn’t feel like a full-time job. I need something intuitive that works seamlessly.”

Pain Points Summary:

- Manual entry and repetitive administrative tasks
- Inconsistent communication with parents
- Lack of centralized student behavior and performance tracking
- Overlapping responsibilities causing burnout

Key Needs:

- A user-friendly system to track absences, behaviors, and forms
- Automated communication tools to reduce manual follow-ups
- Integration with existing platforms to minimize redundancy
- Secure, easy-to-access data storage for sensitive student information

Personality Snapshot: Maya is compassionate and driven, always putting her students first. She values clear communication and appreciates tools that simplify her workload. As a mother and teacher, she understands the importance of staying organized and strives to create a nurturing environment both at home and at school.

Appendix A3: Interview Questions

Hi, thank you so much for agreeing to participate in our interview! The goal of this conversation is to learn from your experiences and hear about the challenges and needs you face in your role. We want to use this for our final project for our Ethical Planning course to think of design solutions that could improve your experience when working with technology. Your feedback is very important to us and will help improve the tools and systems you use. Please feel free to answer the questions openly and in detail. You’re welcome to skip any questions or end the interview at any time.

Background

1. Can you tell me about your role? How long have you been working in this position?
2. What does a typical day at work look like for you?
3. What are your favorite and least favorite parts of your job? זה לא צריך
4. What are the main tools or resources for managing students you rely on to do your job?

Understanding the Current Workflow

5. Can you walk me through how you currently manage your administrative tasks?
6. What tools or systems are you currently using to track attendance, behavior, and grades? How effective are they for your needs?
7. How do you currently communicate with parents? Are there any challenges or limitations in this process?
8. How do you prioritize your tasks when balancing teaching, administrative work, and parent communication?

Communication and Collaboration

9. How would you prefer to communicate with your students or parents (e.g., face-to-face, email, phone)?
10. What are the biggest challenges you face in maintaining clear communication with parents?
11. What would make communication easier or more effective for you?

Challenges and Pain Points

12. What are the most time-consuming tasks in your current workflow? זה גם ענתה
13. What are the most common misunderstandings or communication issues between you and the parents?
14. How do you handle urgent communications with parents during or after school hours?
15. What specific features or tools do you feel are missing in the current LMS or systems you use?
16. What problems do you find with recording students' behavior and reporting it to parents?

Privacy and Security

17. How concerned are you about privacy and data security when using digital tools for student and parent communication?
18. Are there any specific guidelines or policies at your school regarding the use of technology for communication with parents?

Reflection and Aspirations

19. What do you believe are the biggest barriers to effective communication with parents today?
20. If you had more time in your day, how would you prefer to spend it to enhance your teaching or classroom management?
21. In an ideal world, how would you envision the collaboration between teachers and parents?
22. Thank you so much for your time and the things you've shared with us today. The information you've provided is incredibly important and will help us improve the tools available to you. If you have any additional thoughts or ideas later, feel free to reach out.

Appendix A4: Full Persona Interview

<https://docs.google.com/document/d/1XxiD7-y9DVq70RW7DsuqlifnPtC1TtlIfelHmkCBfs4/edit?usp=sharing>

Appendix A5: Automation Solution Exmaples

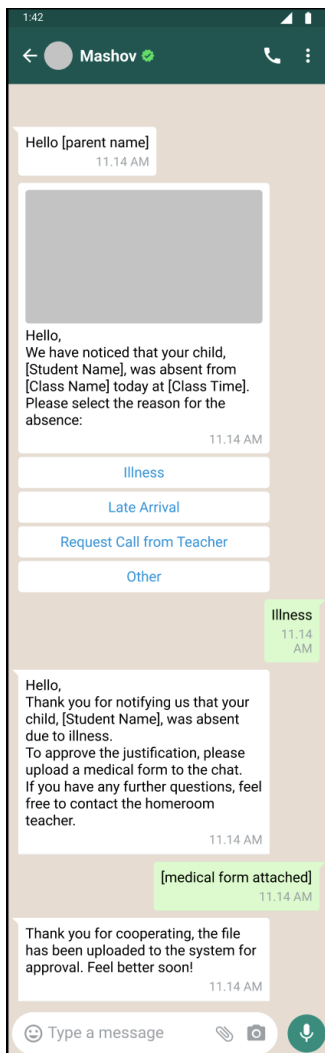


Figure 5. Example of an automated message sent to parents after their kid gets an absence.

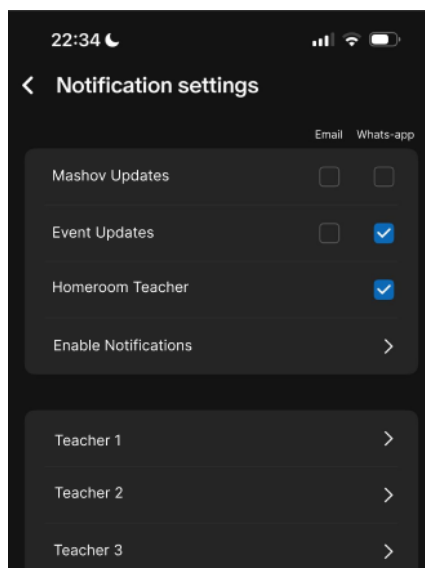


Figure 6. The parents will be able to choose the channel through which they wish to receive notifications regarding updates about their child from the school and homeroom teacher.