
Design Thinking for Software Engineering

Parents struggle to track children's learning progress

1. Observation

- Parents must access multiple platforms such as school portals, WhatsApp groups, emails, and homework apps to track progress, making the information scattered and difficult to follow in a continuous manner.
- Learning updates are shared inconsistently across platforms, causing parents to feel unsure about which system contains the latest and most reliable information about their child's performance.
- There is no single dashboard that combines attendance, assignments, test results, and teacher feedback, forcing parents to mentally piece together progress from different sources.
- Parents receive a high volume of notifications from different apps, leading to important academic updates being overlooked among general messages and reminders.
- Some parents struggle with multiple logins, complex interfaces, language limitations, or poor internet connectivity, reducing their ability to consistently monitor learning progress.
- Due to scattered and unclear information, parents experience frustration and anxiety, and feel less confident in their ability to support and guide their child's learning effectively.

2. Stakeholder Identification

- **Parents**
Parents interact with multiple platforms to track their child's homework, assignments, test scores, and overall learning. They are often the ones noticing gaps or delays in progress and trying to support the child's learning journey.
- **Students (Children)**
Students complete assignments, quizzes, and tests that generate the learning data. Their engagement and communication with parents and teachers directly influence how easily progress can be monitored.

- **Teachers**

Teachers update grades, provide feedback, assign tasks, and share learning resources through school portals or apps. Their timely updates are critical for parents to understand a child's current learning status.

- **School Administrators**

Administrators manage the digital systems, ensure data is accurate, and coordinate communications between teachers, students, and parents. They maintain the overall structure and accessibility of learning information.

- **EdTech Platform Providers**

Developers create and maintain the apps or portals used for tracking learning. The design, notifications, and accessibility of these platforms affect how easily parents and teachers can monitor progress.

3. Interviews / Surveys

Timestamp	Name	Age	1.How often do you check your child's	2. Which platforms do you use to track your c	3. How easy is it for you to	4. What type of updates do you usually
1/22/2026 19:35:19	NIRAJ DAMAI N	16-20	Daily	WhatsApp or messaging groups	Somewhat easy	Homework completion
1/22/2026 19:35:37	Dhanush J	16-20	Monthly	WhatsApp or messaging groups	Very easy	Test scores and grades
1/22/2026 19:37:47	Rahul Rathod	26-30	Weekly	Homework/assignment apps	Very easy	Test scores and grades
1/22/2026 19:45:35	Himanshu Khatri	31-40	Rarely/Never	None	Very easy	All of the above
1/22/2026 20:20:29	VIKASH	20-25	Daily	WhatsApp or messaging groups	Neutral	Test scores and grades
1/23/2026 12:29:23	Abhishek babu	16-20	Only during exams	WhatsApp or messaging groups	Somewhat difficult	All of the above
1/23/2026 12:30:44	Karthik	20-25	Monthly	WhatsApp or messaging groups	Very difficult	Test scores and grades
1/23/2026 12:32:09	Durga Prasad Dutta	20-25	Weekly	School portal/website	Very easy	Test scores and grades
1/23/2026 18:31:10	Deepak R	16-20	Daily	WhatsApp or messaging groups	Somewhat easy	Teacher feedback
1/23/2026 18:32:40	Pushpan S	26-30	Monthly	School portal/website	Neutral	Homework completion
1/23/2026 18:35:20	Jathika M	16-20	Daily	WhatsApp or messaging groups	Somewhat easy	Test scores and grades
1/23/2026 18:43:09	Jishnu M	20-25	Daily	WhatsApp or messaging groups	Neutral	Teacher feedback
1/23/2026 18:57:46	Harish	31-40	Weekly	School portal/website	Very easy	Teacher feedback
1/23/2026 19:09:06	Aiken	16-20	Rarely/Never	None	Very difficult	All of the above
1/23/2026 19:14:50	Lakshya	31-40	Weekly	School portal/website	Somewhat easy	All of the above

5. How often do you face difficult	6. How satisfied are you with the c	7. How confident are you in u	8. How frequently do you discuss i	9. How helpful do you find the ext	10. What improvements would you like to see in it
Always	Neutral	Somewhat confident	A few times a week	Helpful	Step by step progress reports
Sometimes	Satisfied	Neutral	Once a week	Slightly helpful	Step by step progress reports
Always	Satisfied	Very confident	A few times a week	Extremely helpful	A single centralized dashboard
Rarely	Neutral	Neutral	Rarely/Never	Slightly helpful	Mobile-friendly platforms
Sometimes	Satisfied	Somewhat confident	A few times a week	Neutral	Step by step progress reports
Sometimes	Neutral	Not confident at all	Daily	Helpful	Step by step progress reports
Rarely	Very satisfied	Neutral	Only during exams	Helpful	A single centralized dashboard
Never	Very satisfied	Very confident	Daily	Extremely helpful	A single centralized dashboard
Often	Satisfied	Neutral	A few times a week	Helpful	Clearer teacher feedback
Often	Satisfied	Neutral	A few times a week	Helpful	Step by step progress reports
Sometimes	Satisfied	Neutral	Daily	Helpful	A single centralized dashboard
Often	Satisfied	Neutral			
Rarely	Very satisfied	Very confident	A few times a week	Neutral	Clearer teacher feedback
Rarely	Dissatisfied	Somewhat confident	Only during exams	Helpful	Fewer notifications with more priority
Sometimes	Neutral	Very confident	Once a week	Helpful	Step by step progress reports

Timestamp	Name	Age	1. How often do you check your child	2. Which platforms do you use to track your c	3. How easy is it for you to	4. What type of updates do you usually
1/23/2026 20:14:12	Abirant Rout	16-20	Only during exams	WhatsApp or messaging groups	Somewhat easy	Test scores and grades
1/24/2026 18:05:36	ROHIT SING	26-30	Daily	WhatsApp or messaging groups	Very easy	Homework completion
1/24/2026 18:21:53	Pavitra	20-25	Daily	None	Very easy	All of the above
1/24/2026 20:15:56	Sudhakar patnayak	20-25	Weekly	WhatsApp or messaging groups	Very easy	Homework completion
1/25/2026 9:33:35	Basanti damai	26-30	Daily	WhatsApp or messaging groups	Very easy	Homework completion
1/25/2026 12:17:35	Sushmitha	16-20	Monthly	Email notifications	Neutral	All of the above
1/26/2026 7:47:16	Yashwanth R	20-25	Only during exams	WhatsApp or messaging groups	Somewhat easy	Teacher feedback
1/26/2026 12:56:22	Manjunath	26-30	Monthly	WhatsApp or messaging groups	Very easy	Test scores and grades
1/26/2026 21:19:05	Chandan	20-25	Daily	School portal/website	Somewhat easy	Homework completion
1/27/2026 7:59:39	VIJAY KUMAR	26-30	Daily	School portal/website	Somewhat easy	Homework completion
1/27/2026 8:00:48	ASHOK	26-30	Only during exams	None	Neutral	Homework completion
1/27/2026 8:01:25	RITHIK	31-40	Only during exams	None	Neutral	Homework completion
1/27/2026 8:02:18	VISHWAS RANGA	31-40	Only during exams	WhatsApp or messaging groups	Somewhat difficult	Teacher feedback
1/27/2026 8:03:08	RAMESH RANA	31-40	Rarely/Never	Homework/assignment apps	Somewhat easy	All of the above

5. How often do you face difficult	6. How satisfied are you with the c	7. How confident are you in u	8. How frequently do you discuss	9. How helpful do you find the exi	10. What improvements would you like to see in t
Always	Very satisfied	Somewhat confident	Once a week	Neutral	Fewer notifications with more priority
Often	Neutral	Somewhat confident	A few times a week	Helpful	Step-by-step progress reports
Always	Satisfied	Neutral	Daily	Helpful	Mobile-friendly platforms
Often	Very satisfied	Somewhat confident	Once a week	Extremely helpful	Mobile-friendly platforms
Often	Satisfied	Neutral	A few times a week	Extremely helpful	Step-by-step progress reports
Rarely	Satisfied	Very confident	A few times a week	Helpful	Step-by-step progress reports
Sometimes	Satisfied	Somewhat confident	Once a week	Neutral	Clearer teacher feedback
Always	Satisfied	Somewhat unsure	Only during exams	Helpful	A single centralized dashboard
Sometimes	Satisfied	Somewhat confident	Once a week	Helpful	Fewer notifications with more priority
Often	Neutral	Somewhat unsure	Rarely/Never	Not helpful at all	Clearer teacher feedback
Sometimes	Neutral	Somewhat confident	Once a week	Slightly helpful	Step-by-step progress reports
Often	Neutral		A few times a week	Not helpful at all	Clearer teacher feedback
Rarely	Satisfied	Somewhat unsure	Only during exams	Slightly helpful	Fewer notifications with more priority
Sometimes	Dissatisfied	Somewhat confident	Rarely/Never	Not helpful at all	Step-by-step progress reports

- **WhatsApp Dominance:** Users prefer tracking through WhatsApp/Messaging groups over official school portals.
- **Frequent Access:** Most users track progress daily or weekly, showing a need for real-time updates.
- **High Friction:** Many users "often" face difficulty accessing data, indicating current systems are not user-friendly.
- **Detailed Tracking:** There is a high demand for step-by-step progress reports rather than just final grades.
- **Centralization Needed:** Users want a single dashboard to see all updates (grades, homework, and feedback) in one place.
- **Mobile-First Demand:** Requests for mobile-friendly platforms show that users want to check progress on their phones.

4. Pain-Point Analysis

- **Scattered Learning Information (Systemic)**
Learning data is spread across multiple platforms such as school portals, messaging apps, and emails, making it difficult for parents to get a complete and accurate view of their child's progress.
- **Difficulty Understanding Academic Progress (Functional)**
Parents often struggle to interpret grades, feedback, and performance

indicators, which prevents them from clearly identifying learning gaps or improvement areas.

- **Delayed or Inconsistent Updates (Systemic)**

Academic updates from teachers are not always timely or consistent, causing parents to realize problems only after exams or report cards.

- **Limited Time for Monitoring (Functional)**

Due to work and household responsibilities, parents are unable to regularly check platforms or sit with children to review learning activities.

- **Stress and Anxiety About Child's Performance (Emotional)**

Parents experience frustration, guilt, and anxiety when they feel they are not adequately supporting their child's education due to unclear or delayed information.

Most Critical Pain Point

- **Scattered Learning Information Across Multiple Platforms**

This is the most critical pain point because it directly causes confusion, missed updates, and delayed intervention. When parents cannot access a unified view of learning progress, all other issues such as stress, misunderstanding, and lack of support are amplified.

5. Root Cause Identification

Critical Pain Point

Scattered Learning Information Across Multiple Platforms

Parents receive learning updates through different systems such as school portals, WhatsApp groups, emails, and homework apps. This fragmentation causes confusion, missed updates, and delays in understanding the child's actual learning progress.

Root cause analysis of (why question)

1. Why do parents feel confused about their child's learning progress?
Because learning information is spread across multiple platforms instead of one place.
2. Why is information spread across multiple platforms?
Because teachers, schools, and administrators use different tools for assignments, communication, and assessments.
3. Why are different tools used instead of a single system?
Because there is no standardized or unified learning management system followed by the school.

4. Why is a unified system not implemented?
Because schools rely on existing tools and informal communication methods due to cost and coordination issues.
5. Why do coordination and system design issues continue?
Because parent usability and ease of progress tracking are not prioritized during system planning.

Symptoms

- Parents feel confused about where to find accurate and updated learning information.
- Important academic updates are missed or noticed too late.
- Parents are unable to intervene early when a child struggles academically.
- Increased stress and frustration among parents regarding their child's learning progress.

6. Wicked Problem Understanding

Difficult to Define Clearly

- The issue varies from parent to parent depending on digital skills, time availability, and access to technology.
- Learning progress includes multiple dimensions such as grades, skills, behaviour, and understanding, making it difficult to define a single measurable problem.

Multiple Stakeholders with Conflicting Needs

- Parents seek simple, clear, and centralized information, while teachers often prefer flexible or familiar tools for sharing updates.
- Schools emphasize administrative efficiency and cost control, whereas EdTech providers focus on platform features and scalability.
- Students may resist constant monitoring, which conflicts with parents' desire for detailed progress tracking.

Cannot Be Solved by a Single Solution

- A technical solution alone cannot address communication habits, digital literacy gaps, and institutional constraints.
- Different schools operate on different systems, and a single platform may not meet the needs of all stakeholders equally.
- Behavioural change, policy alignment, and system integration are required in addition to technology.

Problem Classification

- **Wicked Problem**

The problem has unclear boundaries, involves multiple stakeholders with differing needs, and lacks a one-time or universal solution. Addressing one aspect often creates new challenges elsewhere.

7. Reflection

Incorrect Assumptions Identified

- It was assumed that parents do not regularly check their child's learning progress, but observations showed that parents try to stay involved and feel worried when they miss updates.
- It was believed that parents are careless about academics, but interviews revealed they are confused due to information being spread across many platforms.
- It was assumed that digital platforms make tracking easier, but parents reported that multiple apps and portals actually increase confusion and missed updates.

Change in Understanding Through User Perspectives

- Parents shared that they do not need complex features; they want clear, simple, and one-place information that saves time.
- Parents explained that unclear or delayed updates make them feel stressed and unsure about their child's real progress.
- Teacher and parent feedback showed that poor communication causes more problems than the child's academic ability.

Risk of Jumping to Solutions

- Creating a new app without understanding user problems could add one more platform instead of solving confusion.
- Without listening to users, solutions may ignore real issues like time pressure, digital difficulty, and emotional stress.
- Quick solutions focus on tools, but real problems exist in communication, coordination, and usability.

Skills Developed Through This Lab

- Learned to watch how people actually behave instead of guessing what their problems are
- Became better at listening patiently to users and understanding what they really mean

- Learned to look deeper into problems rather than stopping at what is visible on the surface
- Gained the ability to see the same problem from parents', teachers', and students' points of view
- Improved my way of thinking step by step instead of jumping to conclusions
- Understood how important it is to emotionally connect with users while solving real problems