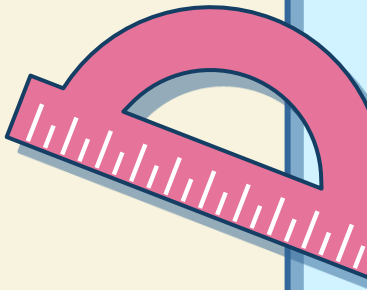
Learn Arithmetic – Mobile App UX/UI Design



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01

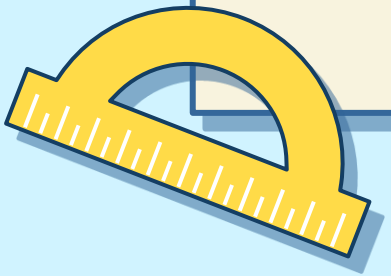
User Requirement

How we collect the user requirements?

Children → Interview

Teacher → Observation

Parent → Interview



Functional requirements – Children

1. The app shall provide different learning modes such as teacher assignments and games, etc. to cater for different learning styles and preferences.
2. The app shall include features that allow students to track progress, such as exercises filled in, correct answers, time spent on each task.
3. The app shall provide the multiplication tables that allow users to have a revision.
4. The app shall provide leaderboards to display high scores and achievements, encouraging healthy competition and motivation among users.
5. The app shall incorporate gamification elements such as rewards, badges, and points to make the learning process more engaging and encourage users to return to the app.
6. The app should include timed challenges where children can solve multiplication problems within a specific time limit, helping them improve their speed and accuracy.
7. The app shall provide instant feedback on correct and incorrect answers to enhance learning.

Non-functional requirements – Children

Usability

1. The app should provide a language button on the settings page to allow users from different countries to use their language in the app.

2. The app should provide background music and allow users to change the music to make the app interesting.

3. Navigation shall be simple and clear, with easily identifiable buttons or icons for different features and functions, such as providing a navigation bar or homepage.

4. The app should allow users to select their preferred avatar and change it on the profile page.

Look/Feel

1. The interface shall be visually appealing, with bright colours and engaging animations such as playful characters, icons, or themes to capture children's attention.

Operational

1. The system shall ensure that certain features of the app, such as multiplication tables and games, can be used offline as users may not always have access to the internet.

2. The app shall be available on multiple platforms such as iOS and Android. Additionally, the app shall be compatible with different devices (phones and tablets) so that children can easily access it.

Functional requirements – Teacher

1. The app shall allow teachers to assign different categories of tasks to students such as addition, subtraction, multiplication, and division.
2. The app shall allow teachers to view upcoming tasks as it can remind them to prepare lessons and track student progress on tasks.
3. The app shall allow teachers to see the number of students who have submitted tasks.
4. The app shall allow teachers to view each student's score and submission time for each task.
5. The app shall allow the teacher to see the answers chosen by each student on each task.
6. The app shall allow teachers to view the questions and correct answers for each task.
7. The app shall allow teachers to see an overall class analysis of each task, such as which question students answered most incorrectly.
8. The app shall allow teachers to view an analysis of each student's overall performance (percentage correct in addition, subtraction, multiplication, and division)
9. The app should allow for a chat box for teachers to communicate with each student’s parents.
10. The app should allow teachers to view the classes name they are teaching.

Non-functional requirements – Teacher

Look/Feel

1. The app's colours and components should be natural and clear.

Usability

1. The app should provide filters and a search bar to allow teachers to efficiently search and sort student tasks.

2. The app shall provide a feedback system for users to provide feedback and report issues.

Performance

1. The app should run continuously 98% of the time without crashes or technical issues.

2. The application shall allow automatic software updates on a regular basis to allow users continued access to accurate functionality for current tasks.

Security

1. The app shall have a database and backup of user information, including their task progress. (Backed up every day at 2 a.m. when the user device is connected to Wi-Fi)

2. The app shall have password access so that unauthorized access to the app is not possible.

Functional requirements – Parent

1. The app shall allow parents to view upcoming and completed tasks for their children.
2. The app shall allow parents to see the answers their children have chosen for each task.
3. The app shall allow parents to view an analysis of their child's overall performance (percentage correct in addition, subtraction, multiplication, and division).
4. The app shall provide a chat box for parents to communicate with teachers.
5. The app shall provide flashcards so children and parents can learn together.
6. Apps should provide pop-up notifications to let parents know when their children are engaging in activity on the app, such as when they complete a task.

Non-functional requirements – Parent

Usability

1. Flashcards should allow parents to choose difficulty and category.

2. Users shall be able to use all features within 15 minutes of watching the system training video.

3. The app should provide accessibility features, such as the option for larger text.

Performance

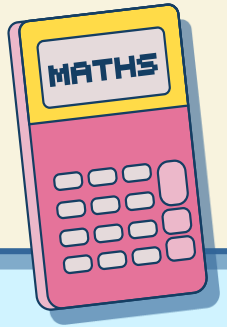
1. The average response time of the app should be less than 5 seconds.

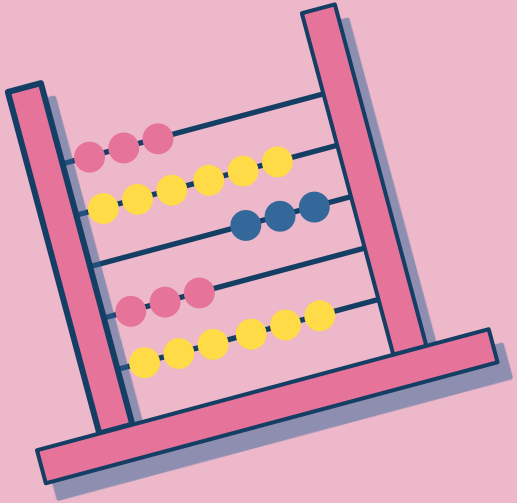
2. App download sizes should be small, up to 500 MB, to save storage space on users' mobile devices.

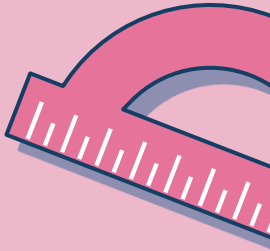
02

Prototype – Demo

Tablet







03

Usability Testing

- structured interviews
- asked two primary school children

Aim – Assess welcome page initial engagement and clarity

01

Questions

What attracted you most when you first saw the welcome screen?

Reply

1. The color is attracting.
2. The operators on screen.

02

Questions

When you see our welcome page, what do you think our app will offer?

Reply

1. Math game.
2. Math learning tools.

A clear and attractive logo that gives users a brief idea of what our app is about.

Aim – Evaluate user friendliness and understanding of the sign

01

Questions

Do you know what the required fields are?

Reply

1. Yes, I know the star represent required.
2. Yes, there is a prompt at the top "Fields

02

Questions

Do you know exactly what a valid email format is?

Reply

1. Yes, it has taught on our computer lesson.
2. Yes, the email field has examples of email formats.

Aim – Evaluate user friendliness and understanding of the sign

03

Questions

In addition to logging in using email, what other methods can you use to log in or sign up?

Reply

1. Google account
2. Facebook account

04

Questions

Please select a number between 1 and 5 based on how difficult it is to log in or register an account. Five is the hardest, one is the easiest.

Reply

1. 1
2. 1

Some input tips and examples of input content in the form can help primary school students clearly understand what should be entered and how to log in.

Aim – Measures a user's ability to locate key features and understand the importance of a homepage

01

Questions

Do you know what the main functions of our app are? Where is it located?

Reply

1. Yes, at the bottom.
2. Yes, next to the purple button.

02

Questions

Can you clearly identify the different categories of tasks? Why?

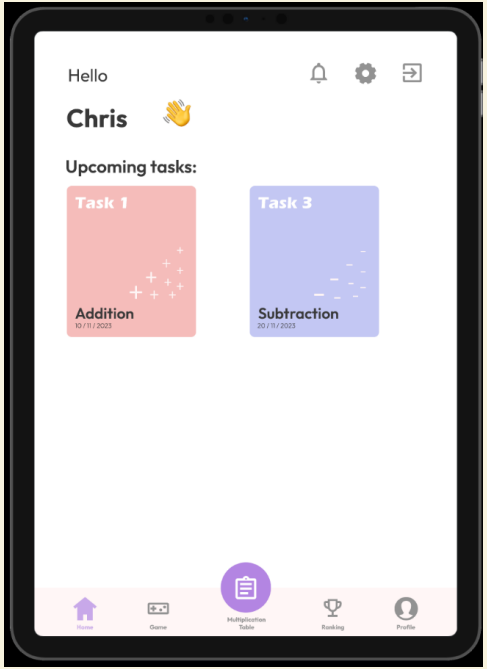
Reply

1. Yes, there are mathematical symbols identifying task categories.
2. Yes, there are task boxes that directly display “Addition" and "Subtraction".

Aim – Measures a user's ability to locate key features and understand the importance of a homepage

The navigation bar at the bottom of the interface allows users to easily identify the main features of our application.

Additionally, using math symbols allows children to easily identify different math categories.



Aim – Measure user satisfaction and effectiveness of the gaming experience.

01

Questions

Do you think the game's breakout mode will entice you to continue playing levels and earning points? Why?

Reply

1. Yes, because I can compare with others in the ranking.
2. Yes, because I would like to complete all the stages.

02

Questions

What is your favourite feature of this game?

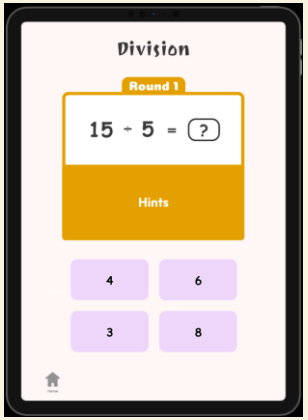
Reply

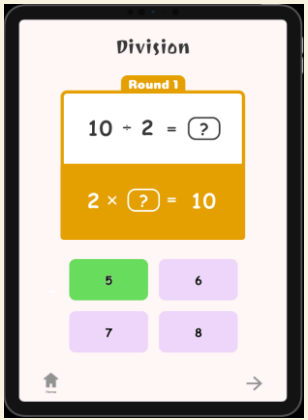
1. In the Division Game, there are some hints that help me think about the answers.
2. The answer box will directly show whether my answer is correct or wrong through colour.

Aim – Measure user satisfaction and effectiveness of the gaming experience.

The level-breaking mode in the game can attract students to challenge level by level.

In addition, the function of instant reflection of answers and the prompt function in the game can also help students learn independently.





Aim – Evaluate the user's experience and effectiveness of the multiplication table feature

01

Questions

How do you think this multiplier table differs from the usual multiplier table?

Reply

1. Display different numbers in different colours.
2. Similar except the colour are more interactive.

02

Questions

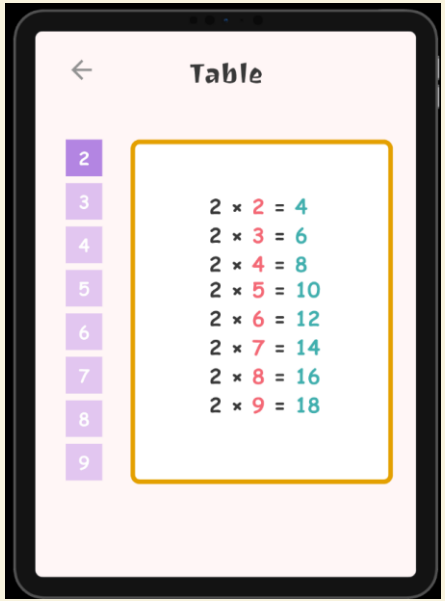
Please rate your satisfaction with this multiplier chart on a scale of 1 to 5, with 5 being most satisfied and 1 being least satisfied.

Reply

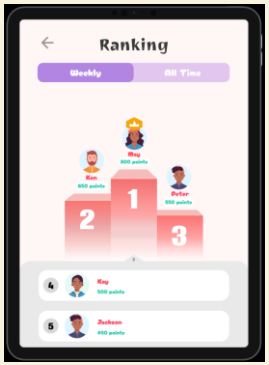
1. 1
2. 2

Aim – Evaluate the user's experience and effectiveness of the multiplication table feature

Our multiplication tables are similar to regular multiplication tables, but we display the answers and multiplicands in different colours to make the interface familiar to children and make it easier for children to identify the multiplication rules.



Aim – Assess user perceptions of ranked pages and their motivational impact.



Questions

Do ranking pages motivate you to perform better? Why?

Reply

1. Yes, the rankings showed the results of the top ten students, which made me more motivated to become one of them.
2. Yes, I want my classmates and teachers to know how good my grades are.

Rankings increase competition and motivation among students.

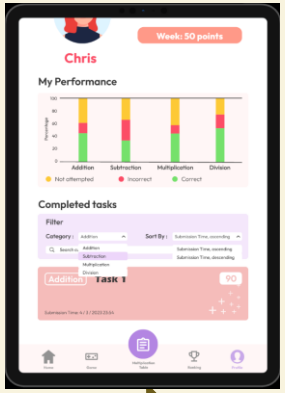
Aim – Evaluate the user-friendliness of viewing and understanding past tasks on the profile page.

Questions

Can you easily find and view your previous tasks on the profile page?

Reply

1. Yes, under the “Completed Tasks”
2. Yes, there is a search bar where I can search directly for specific tasks.



Subtitles make it easier for children to identify content in the area, and filters and search bars allow children to quickly find what they're looking for.

Aim – Assess the clarity and effectiveness of bar chart representations of student performance

01

Questions

Can you explain what the numbers and bars in the chart represent?

Reply

1. The numbers in the bar chart represent the questions I have completed.
2. The bars in the bar chart represent my questions in different categories.

02

Questions

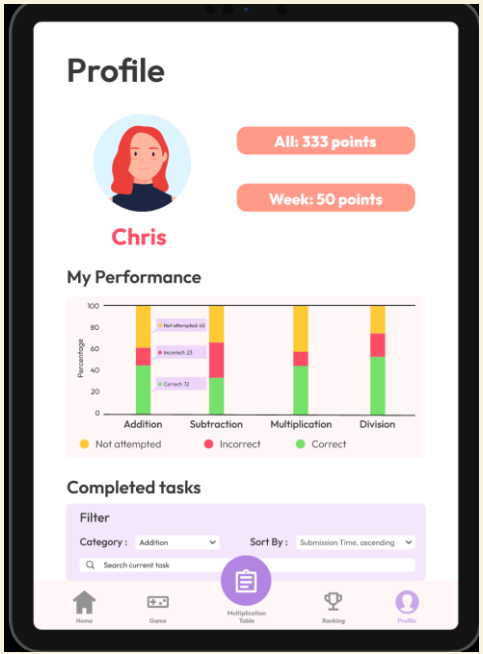
How does the bar chart help you understand your overall performance?

Reply

1. I know that if the green one is longer, the more correct answer I have got.
2. I know the length of yellow represents my unanswered questions and I'm trying to make all the yellow go away.

Aim – Assess the clarity and effectiveness of bar chart representations of student performance

Bar charts make it easy for students to identify questions they have not yet completed and answered correctly. This gives them more incentive to eliminate all yellow and increase the amount of green.



Thanks!