

Amigo: A gamified task management tool for kids

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Abstract— Students are not able to manage their time and tasks effectively as they get distracted and lose track of time thus making them stressed about their studies leading to low self-confidence in academics which worries their parents as good results in academics are not achieved by the students. The current research aimed to determine the relationship between task management skills and the academic achievement of the students. Task management is essential and it may affect an individual's overall performance and achievements. However, all of these depend on how each individual prefers to manage their work. Having a task management system will help students not only to perform better in their studies but also to have a sense of control. In this regard, data was collected from various parents and students to analyse how they are managing their tasks and what they prefer to help them in managing tasks. The research states that many parents are working and do not have the time to spend with their kids regarding their academic tasks. Parents are not satisfied with their children's task management and feel that their kids shy away from doing academic tasks. I used the design thinking approach to find the best solution for bridging this gap with an aim to design an app that helps students to manage their academic tasks and complete them on time thus reducing stress for both students and parents. My finding indicates that parents and children feel the need to have a motivating factor to incentivize them for completing tasks.

Keywords— Gamified task management tool, Kids app, Incentivization

I. INTRODUCTION

When students are incapable to see what errands are most pressing, they discover themselves wasting time on less imperative things. As a result, they run out of time to finish the additional important matters. Prioritizing is exceptionally critical at each stage of life. provided. The formatter must produce these elements while taking into account the following criteria. Task management, to not be confused with project management, is that the method of tracking, finishing and observation a task from begin to finish. Students keep in mind their tasks but simply procrastinate. The main reason behind procrastination is a lack of motivation. Everyone needs to take care of their mental health, and students' performance suffers as a result of their frequent feelings of intense stress and anxiety brought on by the demands of their academics. A task

management application can be helpful in this situation. A gamified tool for kids which will help them concentrate and provides incentivization to motivate them to complete their tasks on time. The objective of this study is:

- i. To learn what's the parent's mindset is about managing their kid's tasks and schedule.
- ii. To explore different, novel app solutions for students to help them complete their academic tasks effectively and efficiently.
- iii. Want to understand student time management.
- iv. To understand if rewarding the kids makes them interested in doing tasks.
- v. To understand the different types of requirements so as to assist the students in completing their academic tasks.

Procrastination refers to the action of on purpose postponing or delaying something. Lack of motivation is the main cause of procrastination. Task management, to not be confused with project management, is that the method of tracking, finishing and observation a task from begin to finish. When students work on a task or project, separately or during a group, they'll get to learn to arrange and organize all steps within the task. Deciding who is doing what and when is a crucial skill to assist you in completing a task. Schedules makes it easier to manage the project. Schedules additionally make sure you meet deadlines, both long-term and short-term, meaning you'll be able to assess your progress and also the quality of your work. Implementing triple-crown task management skills can assist you to better manage your resources. Task management helps you in group projects, or components of projects, more smoothly and seamlessly. Having the ability to manage totally different aspects with success can help students' complete tasks quicker and more easily while producing higher quality output.

A. Scope

A gamified task management tool for kids and parents to keep track of their academic tasks and helping them complete it on time through incentivization.

B. Aim

The aim of the research is to bridge the gap between time management and task management which affected the academic achievement of the students through incentivizing them to improve their time management and increasing self-confidence.

C. Research Questions

- i. Is mis-managing the academic tasks by kids and parents affecting the student's performance?
- ii. Does rewarding kids motivate them to do better?
- iii. Do students find it difficult to co-ordinate and complete their activities and academic commitments?

D. Literature Review

Underachievement may be a problem for students who struggle with time and task management. Students' task management scores correlate with their academic performance scores, as it was found that those students who performed poorly in academic accomplishment had significantly worse task management scores. Many of the researches done before have only focused on time management with adults and project management tools. Some researchers focused on gamified learning but never an amalgamation of gamification and task management for kids. The Impact of Time Management on the Students' Academic Achievements [1] paper states that the time management is highly related to the academic performance of the students. Time management and academic performance of the students were significantly and favorably correlated. The students who are unable to manage time well may be at risk for underachievement [2]. The reported amount of time spent on schoolwork was the single best indicator of activity-related stress [3]. A day prior to the deadline there was an increase in the submission. Number of submissions increases in a positively accelerated fashion as the deadline becomes imminent [4]. Incentives improved performance and calibration accuracy, either directly, or through an interaction with strategy training [5]. Participants in another study, felt good about an apps' reward system, they were also more satisfied with its use. Conventional task managers are, however, preferred for speed and efficiency [6].

II. MARKET STUDY ON KID'S TASK MANGEMENT TOOL

Few of the kid's task management tools were reviewed for market study to get to know more about what are the existing features and products available in the market.

A. Bear Focus Timer

The Bear Focus Timer [7] is a Pomodoro-style timer that minimizes distractions and aids in task segmentation. The tool is simple and straightforward; the software is only available in black and white. The focus periods and breaks can be fully customized, making it suitable for both older children and adults as well as younger children. Organized and straightforward, allowing kids to focus on their job rather than the timer. Bear Focus Timer is refreshing because it is not gamified. The optional white noise addition is perfect for children who require some sort of background noise to aid in concentration or block out outside noise.

B. Kazu Time

A visual timer app [8] for children aged 3 to 8 is called Kazu Time. This app uses an adorable husky dog named Kazu and a puppy (choose from three variations) racing on a sled to depict the passage of time. Children can check how far the dogs have moved along a trail after selecting a specific time and an activity (such as "Finish your duties in 15 minutes") to determine how much time is left for them to complete their task. Users can upload or shoot photographs to personalize the list by adding their own chores to the existing one. The parent gate is a straightforward math issue. Parents or children can post updates on Facebook or Twitter. Parents can decide whether to develop a reward system or just recognize children who earn stars.

C. Chore Pad

A method for assigning, monitoring, and rewarding duties called Chore Pad [9] can assist parents and children in understanding who is responsible for what chores and when around the house. Parents must allocate each duty to a particular person's card after creating it. Kids only need to go to their card and tap the date and the chore they've finished once that is set up to record it. Choosing, assigning, organizing, and tracking chores is simple and intuitive using Chore Pad. Parents can read an in-depth guide on how to set up the duties and the individual charts, give points, and explain how users earn prizes. The system heavily relies on incentives—also known as "penalty stars"—to encourage everyone to complete the work.

D. Focus Keeper Pro

A timer app is Focus Keeper Pro [10]. Some children (and adults) may benefit from using a timer to learn how to focus for longer stretches of time in order to increase their overall productivity. The timer's background screen color can be changed in a variety of ways, and it can be set to sound off after a specific amount of time with a variety of alert sounds. The software includes options for adjusting the timer's length and for including breaks. There are 13 alternatives for background sounds, and some people prefer them while working. If Focus Keeper Pro can increase a child's self-confidence, independence, and productivity throughout the day, it is unquestionably worth a try for those failing to finish tasks due to ADHD or other attention disorders.

E. Bear in Mind

A kid-friendly app for creating task lists, setting alarms, and compiling a quick phone contacts list is Bear in Mind App: To Do list, reminder, tasks [11]. From a premade list of 42 icons—including icons for remembering a lunchbox, doing homework, and taking medications—parents or children can create to-do lists and set timed reminders. Alternatively, they can create a customized reminder icon using a photo. Tasks might be a great self-directed tool for time management and self-care. There is potential for development in the alarm and reminder app. Including a feature that allows users to choose a task reminder once and have it recur every day on workdays.

	Bear Focus Timer	Kazu Time	Chore Pad	Focus Keeper Pro	Bear in Mind App
Kid Friendly	0	1	0	0.5	0.5
Easy to Use	1	0.5	0	1	0.5
Reward System	0	0.5	1	0	0
Time management	0.5	1	0	1	0.5
Gamification	0	0.5	0	0	0
Leader board	0	0	0.5	0	0
Customization	0	1	0	1	0
Motivational Content	0	0	0	0	0
TOTAL	1.5	4.5	1.5	3.5	1.5

Fig. 1. Competitor analysis table where all the apps are gauged based on different features. Kazu Time and Focus Keeper Pro are the closest competitors.

III. METHODOLOGY

A. Data Collection

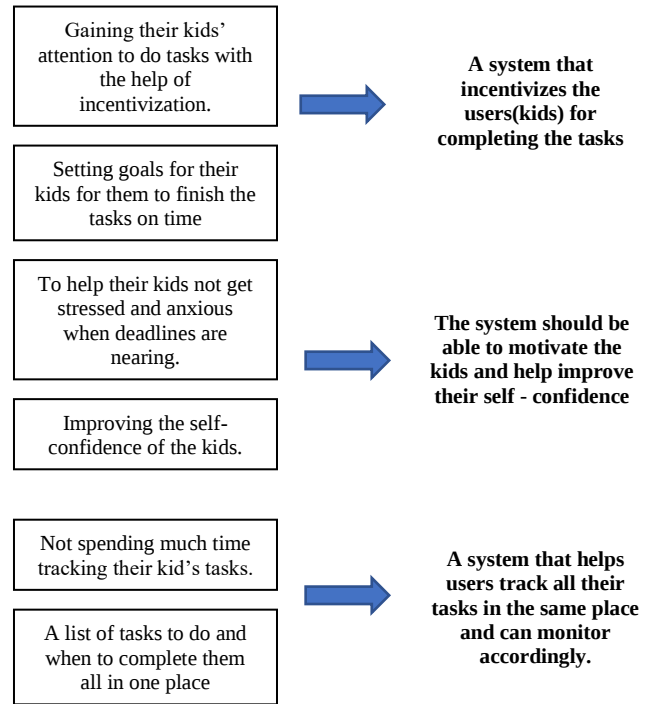
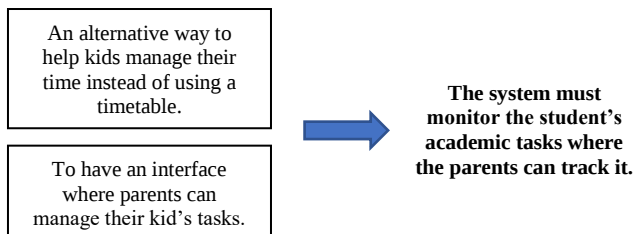
A mixed method study was conducted that is quantitative and qualitative study which help helped in gaining insights. An online survey of 45 students studying in various school and grade and parents of single, two or three kids. An in-person interview was conducted to understand the requirements and the behavioral pattern of the kids with respective to academic tasks. A usability test was conducted to test the designed solution.

B. Participants

To understand about the parents and student's mindset and what difficulties they are currently facing a survey and an interview was conducted. There were 45 participants who agreed to do an online survey and out of which 5 participants agreed for an in-person interview. The interview participants also agreed for a usability test which helped me enhance my app. There were 13 questions in the survey consisting of order and unordered questions. The parents were asked to answer 14 questions and the children were asked to answer 17 questions for the in-person interview. The responses from the survey and interview helped me shape my app design.

C. Concept Generation

From the set of requirements generated from the empathize and define phase, 4 functions were derived.



The functions were incorporated in the app to make a user centric design solution. Brainstormed ideas for generating various concepts through Giga Mapping.

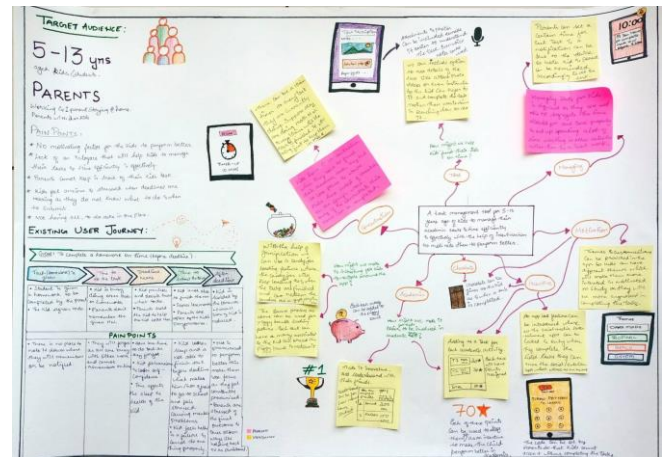


Fig. 2. Giga Map branching various ideas.

Various ideas were later clubbed and grouped to form 2 concepts. The ideas were grouped based on their similar functions, the UI, gamification, design form and motivation. Each of the groups were colour coded and all ideas grouped were under the group heading.

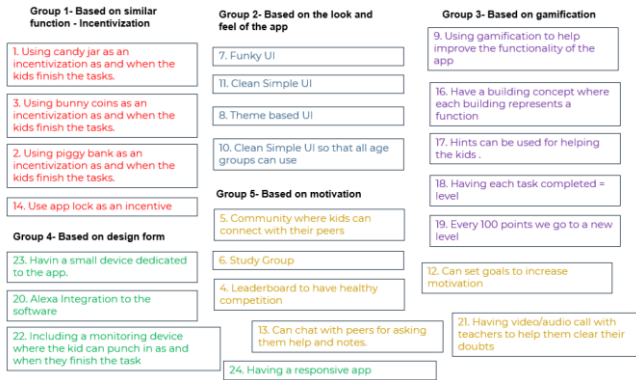


Fig. 3. Various ideas grouped

Out of the 2 concepts, 1 concept was chosen as it fulfilled all the requirements of the users. The 2 concepts varied in their design form and functions were similar. Concept 1 was an app whereas concept 2 had a combo of an app and physical device.

Concept 1 features were:

- Using a Responsive app where the kids and parents can access it from whichever device they want.
- The App will have a theme-based UI
- Gamification will be used to make it more interesting.
- Children can message their peers for help
- Can connect with them for better socializing.

Concept 2 features were:

- It is a band where kids will wear it as they might not have access to a mobile or desktop always.
- Using the band, the kid can receive new task view what it is.
- Click on complete >> and update the parents.
- This will help them monitor and know what the kid is doing.

The 2 concepts were gauged using an evaluation matrix as shown in fig.9

Requirements	Concept 1	Concept 2
To have an interface where parents can manage their kid's tasks.	1	1
An alternative way to help kids manage their time instead of using a timetable.	1	1
Gaining their kids' attention to do tasks with the help of incentivization.	1	0
To help their kids not get stressed and anxious when deadlines are nearing.	0.5	1
Improving the self-confidence of the kids.	1	0
A list of tasks to do and when to complete them all in one place.	1	0
Not spending much time tracking their kid's tasks.	1	1
Setting goals for their kids for them to finish the tasks on time	1	0
TOTAL	7.5	4

Fig. 4. Concept Evaluation Matrix

Information architecture was created to design a better user experience to enable users to quickly and intuitively navigate around the app and complete their desired tasks seamlessly, information architecture.



Fig. 5. Information Architecture of Amigo app

Creating a first visual of the amigo app by creating low fidelity wireframes to make sure a better user centric product is designed. The main aim of it was to get a clear understanding of the functionalities and designs that the app needs to support.



Fig. 6. Low Fidelity Wireframes of Amigo App

D. Usability Testing

For evaluating whether incentivization and gamified task management tool is effective I did a usability test on 5 participants. An exploratory usability testing was conducted and participants from various age groups participated to get an insight of how they respond to the design. The participants were 3 parents and 2 children who have varying device knowledge so that there is no bias while testing the design. A set of tasks were given to the participants which they had to perform so that I can assess the usefulness and friendliness of the designed app. The list of tasks given were

- Create a project
- Create a task
- View your rewards points

4. View your rank
5. Send connection request to friend

The participants were asked to rate the tasks using a 5-point Likert scale ranging from **Very difficult (1) to Very easy (5)** as shown on the table below.

TABLE I. PARTICIPANTS RATING TASKS PERFORMED

P	Device Knowledge	Task 1	Task 2	Task 3	Task 4	Task 5
1	Advance	1	2	1	2	2
2	Intermediate	1	2	2	1	2
3	Novice	2	3	2	2	3
4	Expert	1	1	1	1	1
5	Expert	1	1	1	1	1

^a. Participants (P) have rated the tasks which they were asked to perform.

The expert users found all the tasks to be easy where as the novice users had some difficulties. There were changes made to the app to enhance the user experience from the feedback received.

IV. RESULTS

From all the research I found out that 60% of the parents are working and hence could not concentrate much on their children. 70% felt that their kids should be incentivized for their completion of tasks. 50% preferred a tool which could track their kids' academic tasks as well as help in time management. Their main requirements were to help improve their kid's self confidence and helping them concentrate on their task management and complete it on time. The usability study helped asses the user value of the app and make appropriate changes according to the users. 2/5 participants felt that there should be a different style of navigation for the parents and kids so that it will be easier for parents to navigate around. 4/5 participants felt that there are too many buildings as actions instead should merge and make it less so that the users won't be overwhelmed. 4/5 participants felt that there should be a different login for parents and children. Passwords should also be included for safety in parents' login. 5/5 participants felt that there should be changes in the dashboard and make it less cluttered and have a separate dashboard for parents and children. All the tasks were able to be performed easily with some corrections required in certain features.

V. WHAT IS AMIGO?

Keeping in mind all the findings a task management tool for 5-13 years of kids to manage their academic tasks and time efficiently and effectively with the help of incentivization to motivate them perform better in their academics was designed. It is a gamified tool which will improve the concentration of the kids and engage them in a fun way to complete their academic tasks on time. It acts as a motivation to the kids with the help of a rewards system incorporated. With the help of design thinking method this solution was designed. The main function of the app was:

- i. The system must monitor the student's academic tasks where the parents can track it.
- ii. A system that incentivizes the users(kids) for completing the tasks.
- iii. The system should be able to motivate the kids and help improve their self – confidence.
- iv. A system that helps users track all their tasks in the same place and can monitor accordingly.

After extensive brainstorming sessions many ideas were formed and grouped based on similarity and function. Using this the concept Amigo was conceptualized.

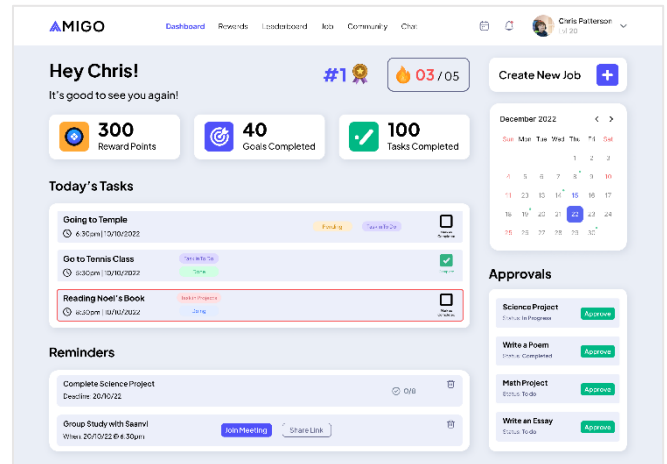


Fig. 7. Parent dashboard of Amigo app

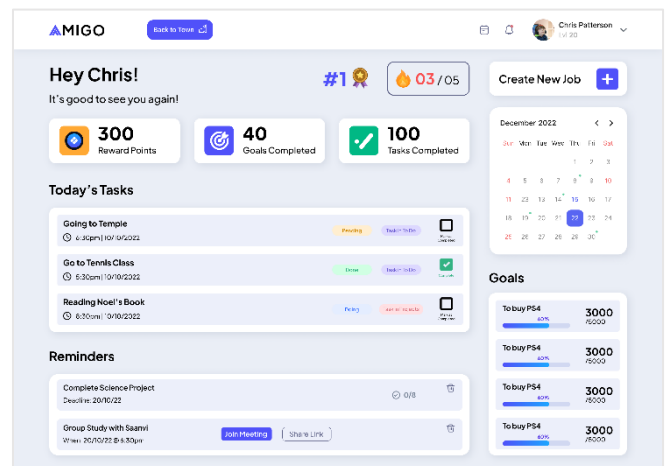


Fig. 8. Children dashboard of Amigo app

A task management app for kids to monitor their academic tasks. Parents can also use the app to input new tasks. Rewards system is incorporated where the bunny coins can be used as reward points and be associated with all the tasks. As and when they complete the tasks the bunny points keep adding up and the kids can redeem these points in the end. Leaderboard feature where the kids with whom they are connected will be listed and placed on a rank basis. The rank will be decided for who has the most bunny points.

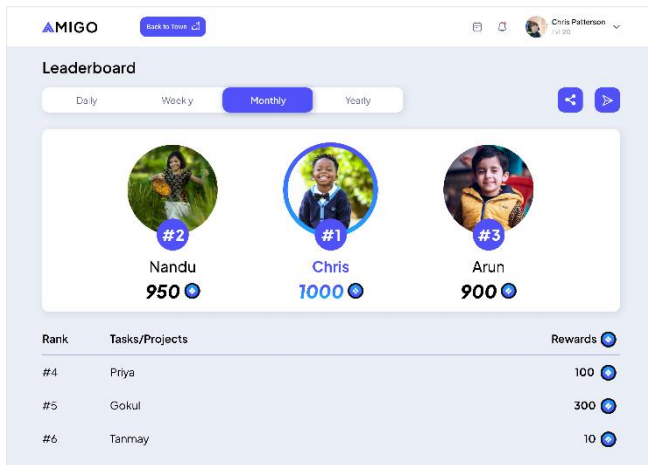


Fig. 9. Leaderboard based on the most bunny points collected daily, weekly, monthly and yearly

Gamification is included where kids will have different gameplays to choose from – Animal escape or Space invaders. There will be points associated to each task and there are levels where when you get 100 points you will go to next level. Whenever the kids miss to complete the task, the points associated will be deducted so this will motivate the kids to not miss. There will be chests on certain checkpoints when they reach which they can unlock and avail special feature.

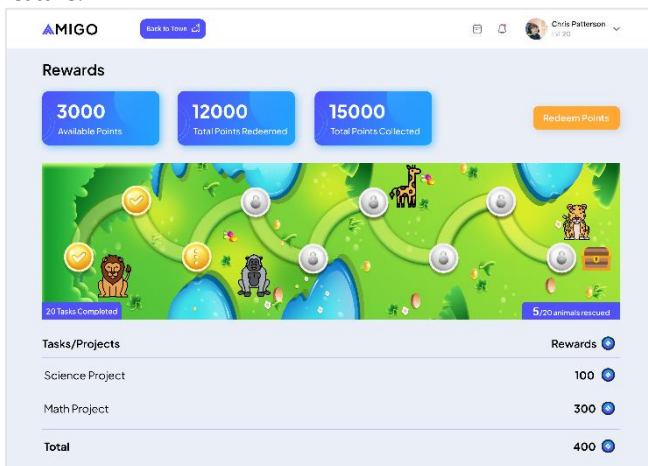


Fig. 10. Rewards screen to unlock rewards and to review reward statistics

There will be a town where each building is associated with a function as in dashboard center.



Fig. 11. Menu to navigate around the app. Each menu is associated as a building.

VI. DISCUSSION

Parents were not satisfied with the kids' performance in academics before the app was designed. They felt that their kids found it difficult to manage their time and lost self – confidence in the end. There was no single app that helped kids and parents to keep track of the academic tasks. No motivating factor for the kids to perform better. Kids feel lazy to perform difficult tasks as they think that it is difficult to do and pile it all up in the end. Kids get easily distracted and never focus on their tasks. The proposed solution enhances the kid's confidence and keeps track of their academic tasks. Parents felt that incentivization can help their kids to concentrate and take their academic tasks easily. The research helped shape the app and present forward a user-friendly task management tool. After the usability testing there were many changes which were made keeping in mind the users' feelings and feedback. There was a separate login for parents and kids. A different navigation bar for parents and kids. Simpler UI for the kids. Dashboard was redesigned as it was very cluttered. Having the projects and tasks tab in the same page making it easier to shift between them. The app supported the findings of how gamification and incentivization will help enhance the kid's interest in completing their academic tasks and how it will improve their self-confidence. The app also helped manage the kid's tasks and time efficiently and effectively.

Children often feel stressed in the end or when deadlines are nearing as they have no idea what to do and feel stressed and anxious. Parents are worried that their children are not performing well in their school causing tension in the parent's minds. Parents prefer to have an interface through which they can track the tasks of their kids and when deadlines are nearing. Kids feel lazy to perform difficult tasks as they think that it is difficult to do and pile it all up in the end. Kids get easily distracted and never focus on their tasks. Parents feel an incentivization can help their kids to pay attention and do their tasks on time.

Overall, the designs impressed the participants and made them feel the need to use it often in their daily lives and feel that it will make it easier and motivate the parents and kids to perform their duties respectively.

CONCLUSION

Many kids face the problem of not being able to complete their academic tasks on time and hence get de motivated as they are not able to submit the tasks on time. Kids procrastinate and wait till the last day to submit tasks which increases stress and pressure and cannot perform better or end up not submitting. This will cause them to hate to go to school. The solution solves this issue. A task management tool for 8-15 years of kids to manage their academic tasks and time efficiently and effectively with the help of incentivization to motivate them perform better in their academics. The findings have helped establish an understanding of how gamified task management tool can improve a kid's performance and self-confidence. However, the study's limitation includes that there was lesser quantitative and qualitative sample. To gain a more holistic knowledge a more enhanced study is required to be applied. Future work will include conducting an ethnographic study to monitor the real time use of the proposed solution.

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