AR EDUCATIONAL APP

## A PROJECT REPORT

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***In partial fulfillment for the award of the degree of***

# Bachelors of Engineering

**IN**

Computer Science with specialization in Block chain Technology



**Chandigarh University**

January-May2024

## CHAPTER1.

**INTRODUCTION 11**

|  |  |  |
| --- | --- | --- |
| **SNO.** | **DESCRIPTION** | **PAGENO.** |
| **1.** | IDENTIFICATION OF CLIENT &PROBLEM | 1 |
| **2.** | SOLUTION TO THE PROBLEM | 2-3 |
| **3.** | IDENTIFICATION OF TASK | 4-5 |
| **4.** | TIMELINE | 6 |
| **5.** | ORGANISATION OF REPORT | 6 |

# INTRODUCTION

## 1. Identification of Client/Need and issues in the current system

Elementary education is one of the most important aspects of a person's life as it builds the basic understanding required for learning in the future. It creates the crucial foundation for the development of a child's essential skills such as reading, writing, and arithmetic. One can understand how crucial elementary education is for children, but children today are mostly not interested in classes and hate that they have to go to school and study. Now why can this be the case, why do children not like school and education? The following can be the reasons for students' dislike of school and education.

**Lack of interest**: In today's world where children have access to television, smartphones, and the internet where they have access to eye-catching visuals and graphics, in this era children are still taught using blackboards and books which are neither visual nor graphics, so it is understandable that children will move away from education and towards entertainment. A simple solution to this problem is integrating education with visual and graphics

**Attention span**: Video sharing and social media apps have features like shorts and reels which decrease children's attention span drastically resulting in children being unable to stay focused during the class of on average 30 minutes. Children also have different attention spans even if they do not use these apps. Instead of learning from the classroom where every student has to try to study and focus for the same period, it is much better if they they study based on their focus span and this is easy to achieve in an app.

**Virtual Reality :** A potential side effect of learning from an app is, the child getting disconnected from the real world. As one can see around himself/herself, every person busy in his smart phone, sending emails, messaging, or busy on social media. A children must not be lost like this in the virtual as this can greatly impact his/her learning capability and reduce his real life interaction. Social interaction is also an important aspect of a person’s life and especially for children.

As stated above there are many holes in today's education system that an education app fills. Research has also shown that educational apps provide a huge boost in motivation and engagement of students in learning and gaining skills.

### 2. Solution to the Problem

Developing an AR educational app for elementary classes is a commendable initiative, but it comes with its own set of challenges. Identifying potential problems early in the development process is crucial to ensure the app's success. Here are some common challenges and considerations you might encounter:

**1. Age-Appropriate Content:**

Problem: Ensuring that the content is suitable for elementary school children in terms of complexity, language, and subject matter.

Solution: Collaborate with educators and child development experts to create age-appropriate and engaging content that aligns with the curriculum.

**2. Accessibility and Inclusivity:**

Problem: Ensuring the app is accessible to students with diverse learning needs, including those with disabilities.

Solution: Implement features such as voice narration, subtitles, and adjustable font sizes. Conduct usability testing with students of varying abilities.

**3. Device Compatibility:**

Problem: The availability of diverse devices in elementary schools may lead to compatibility issues.

Solution: Design the app to be compatible with a range of devices, including tablets and smart phones. Optimize performance for different screen sizes.

**4. User Interface for Children:**

Problem: Designing an intuitive and child-friendly user interface that is easy for young students to navigate.

Solution: Use vibrant colors, large icons, and simple navigation structures. Conduct usability testing with children to ensure the interface is intuitive for them.

**5. Teacher Involvement:**

Problem: Lack of teacher involvement may result in the app not aligning with classroom needs or learning objectives.

Solution: Collaborate closely with educators to understand classroom requirements. Provide tools for teachers to track student progress and customize the app to supplement their teaching methods.

**6. Safety and Privacy Concerns:**

Problem: Addressing concerns related to online safety and privacy, as elementary school children are a vulnerable age group.

Solution: Implement strict privacy measures, comply with regulations (such as COPPA in the United States), and ensure that the app does not collect unnecessary personal information. Educate parents and teachers about the app's security features.

**7. Engagement and Retention:**

Problem: Keeping young students engaged over time can be challenging.

Solution: Incorporate gratification elements, interactive activities, and regular updates to maintain interest. Monitor user analytics to identify patterns of engagement and adapt content accordingly.

**8. Content Relevance:**

Problem: Ensuring that the AR content aligns with the curriculum and educational standards.

Solution: Collaborate with educators to align the app's content with curriculum guidelines. Regularly update content to reflect changes in educational standards.

**9. Technical Constraints:**

Problem: Technical limitations, such as slow internet connections or outdated devices in some schools.

Solution: Design the app to work seamlessly offline, consider lightweight graphics, and provide options for lower-end devices. Consider the diverse technological infrastructure in different schools.

**10. Cost Constraints:**

Problem: Budget limitations may impact the development and maintenance of the app.

Solution: Explore grant opportunities, collaborate with educational institutions or organizations, or consider a sustainable pricing model that ensures the app's continued development and support

### 3. Identification of Tasks

Creating an augmented reality (AR) app involves several tasks that span multiple stages of development. Here's a list of key tasks involved in making an AR app:

**1. Define Objectives and Requirements:**

* Identify the purpose of the AR app.
* Define target platforms (iOS, Android, etc.).
* Outline specific features and functionalities.

**2. Market Research:**

* Analyze existing AR apps in the market.
* Identify potential competitors.
* Understand user preferences and expectations.

**3. Conceptualization and Design:**

* Develop a concept for the AR app.
* Design the user interface and user experience.
* Create wireframes and prototypes.

**4. Choose AR Development Tools:**

* Select AR development frameworks (e.g., ARKit, ARCore, Vuforia).
* Choose a suitable programming language (Swift, Kotlin, Unity, etc.).

**5. Develop 3D Models and Assets:**

* Create or acquire 3D models and assets relevant to the app's purpose.
* Optimize models for real-time rendering on mobile devices.

**6. Implement AR Features:**

* Integrate AR functionalities like object recognition, tracking, and interaction.
* Use computer vision algorithms for scene understanding.
* Implement real-time rendering of AR content.

**7. User Interface (UI) and User Experience (UX) Development:**

* Implement an intuitive and user-friendly interface.
* Ensure smooth user interactions with AR elements.
* Test usability to enhance the overall user experience.

**8. Integration with Backend Services:**

* Connect the app to backend services for data storage, user authentication, or other necessary functionalities.
* Implement APIs to communicate between the app and external services.

**9. Testing:**

* Conduct comprehensive testing for functionality and performance.
* Test on various devices to ensure compatibility.
* Debug and address any issues identified during testing.

**10. Optimization:**

* Optimize the app's performance for smooth AR experiences.
* Address resource consumption and battery life considerations.

**11. Augmented Reality Analytics:**

* Implement analytics to gather data on user interactions and app performance.
* Use analytics to improve the app based on user behavior.

**12. Security:**

* Implement security measures to protect user data and ensure secure communication with backend services.

**13. Compliance and Submission:**

* Ensure compliance with app store guidelines and regulations.
* Prepare the app for submission to app stores (Google Play Store, Apple App Store).

**14. Marketing and Launch:**

* Develop a marketing strategy for the AR app.
* Create promotional materials and assets.
* Launch the app on app stores.

**15. User Feedback and Iteration:**

* Encourage user feedback for continuous improvement.
* Analyze user reviews and ratings.
* Iterate on the app based on user feedback and emerging technologies.

### 4. Timeline

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Figure1.1

### 5. Organization of the Report

**Chapter1 Problem Identification** : This chapter introduces the current model and describes the problem in it.

**Chapter2 Problem Solution** : This chapter represents our solution to the problem.

**Chapter3 Task Review** : This chapter reviews the tasks required to build our solution

**Chapter4 Timeline** : This chapter reviews the deadlines for completion of tasks.

**Team Roles**

|  |  |  |
| --- | --- | --- |
| Member Name | UID | ROLE |
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