

# **SEN Learning App**

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## **LIST OF ABBREVIATIONS**

SNS-Special Needs Students

ERD- Entity relationship diagram

## ABSTRACT

Sudan is currently embroiled in a civil war lasting over eight months, causing extensive harm to the populace of Khartoum and Sudan at large. Given Khartoum's status as the primary capital, housing crucial centers and key educational institutions, its citizens have been compelled to migrate to other states or abroad in search of security and stability. This displacement has particularly affected special-needs children who lost access to their educational facilities, resulting in the misplacement of educational records and identification papers.

In response, we propose the development of an application designed to facilitate continued education for these children. The application aims to assess their post-war conditions and psychological well-being while employing various methodologies to ensure a seamless continuation of their education. Utilizing the Java script programming language, CSS,HTML,SQL, and the Agile method, this application will be tailored to accommodate the current circumstances, offering a safe and simplified remote education experience from the comfort of their homes.

*Keywords: Kids E-Learning, app, agile, Methodology.*

# Chapter 1

## INTRODUCTION

E-Learning educational application tailored for special needs students. In this platform, we delve into a comprehensive exploration of methodologies, conceptual frameworks, background studies, and related reviews, all designed to enhance the learning experience for individuals with unique learning requirements. Operating as a web application, our platform leverages cutting-edge programming languages to ensure an inclusive and adaptive educational environment. Let's embark on a journey where accessibility, innovation, and learning converge seamlessly

### 1.1. Background of the Study

Special needs students encompass a diverse group with unique challenges in the educational environment. These individuals may face difficulties that require tailored support to ensure their learning and development. Addressing their needs effectively involves understanding specific conditions. Here's a brief overview of some cases:

#### 1. Autism:

Autism spectrum disorder (ASD) is a neurodevelopmental condition that affects social interaction, communication, and behavior. Special needs students with autism may struggle with social cues, sensory sensitivities, and might benefit from structured routines and clear communication strategies.

#### 2. Attention Deficit Hyperactivity Disorder (ADHD):

- Individuals with ADHD often struggle with maintaining focus, impulse control, and organization, making it challenging to follow instructions and complete tasks. Tailored strategies like visual aids and clear instructions can help enhance their learning experience.

#### 3. Mental Distraction:

- Students experiencing mental distractions may have difficulty concentrating due to various factors such as anxiety or external stressors. Implementing mindfulness techniques, creating a quiet workspace, and offering flexible learning options can aid in minimizing distractions and promoting better focus.

#### 4. Mental Retardation (Intellectual Disabilities):

- Individuals with intellectual disabilities may have limitations in intellectual

functioning and adaptive behaviors. Specialized teaching methods, individualized learning plans, and additional support services are essential to address their specific learning needs and foster skill development.

**5. Delayed Pronunciation (Speech and Language Disorders):**

- Speech and language disorders can hinder effective communication. Tailoring instruction to accommodate their communication style, incorporating speech therapy, and encouraging alternative forms of expression, such as visuals or technology, can support students with delayed pronunciation.

Understanding the unique needs of special education students is crucial for creating inclusive and effective learning environments, ensuring that each individual can reach their full potential.

This application aims to offer a tailored educational approach for children, fostering the ability to practice and enhance their academic and behavioral skills within the comfort of their home. The child's activities will be closely monitored, ensuring individualized progress with necessary guidance under the supervision of a guardian.

**1.2. Significance of the Study**

This application plays a crucial role in ensuring that children with special needs, impacted by the effects of war, can sustain their education. Specifically based in Khartoum, it not only facilitates ongoing educational programs but also monitors individual cases, tailoring instructional methods to meet the unique needs of each child.

**1.3. Objectives**

1. To establish an auxiliary platform to address the teaching needs of special individuals, taking into account the surrounding circumstances.
2. To provide relevant information, activities, and lessons tailored to the child's specific health condition.
3. To offer suitable visual and audio aids to support children with special needs and unique cases.
4. To create a secure platform for parents to actively supervise, with the assistance of specialists in distinct cases.

#### 1.4. Scope and Delimitations

E-learning

SNS (6-12).

Guardian.

#### Delimitations:

1. Challenges in implementing specialized education during wartime conditions.
2. Inability to tailor lessons to accommodate the specific health conditions of each child.
3. Difficulty in offering suitable visual aids for children with special needs.
4. Absence of secure platforms for parents to connect with specialists addressing their children's unique cases.

#### 1.5. Conceptual Framework

The data will be gathered according to specific criteria. Subsequently, the collected information will be categorized based on age and language, followed by presentation in a manner tailored for children.

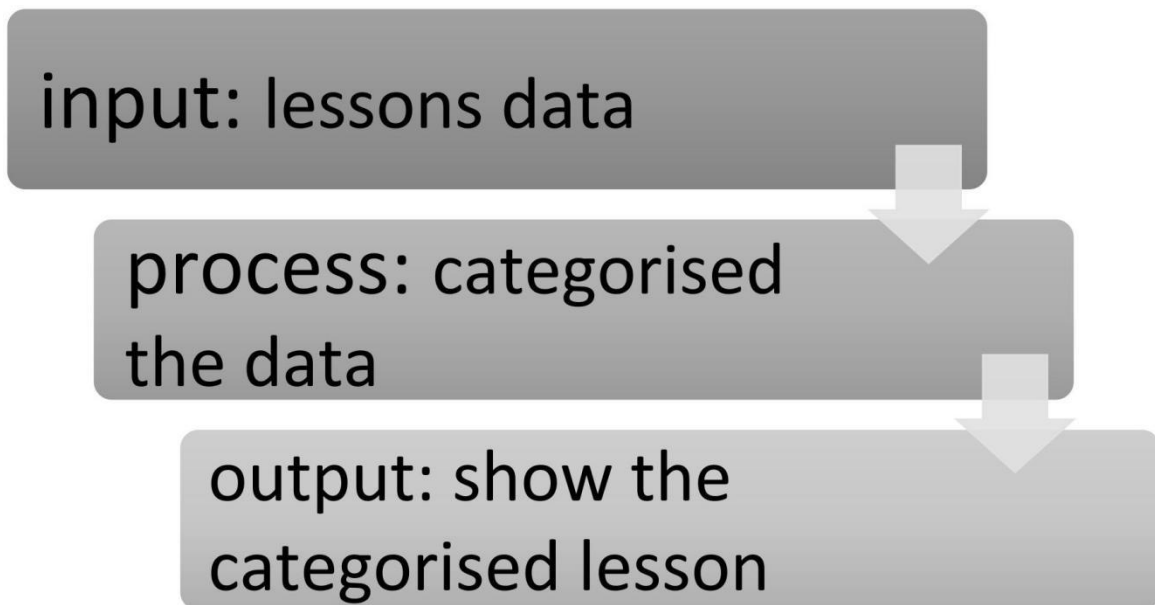


Figure 1. Conceptual Framework



## **Chapter 2**

### **REVIEW OF RELATED LITERATURE**

#### **2.1. pre school**

Pre-school education plays an important role in the preparation of children for school based on the methods of forming children's cognitive skills (self-control, observation, reflex ion).

Preschool is an early childhood program in which children combine learning with play in a program run by professionally trained adults. Children are most commonly enrolled in preschool between the ages of three and five, though those as young as two can attend some schools. Preschools are different from traditional day care in that their emphasis is learning and development rather than enabling parents to work or pursue other activities.

(<http://www.healthofchildren.com/P/Preschool.html>, n.d.)

#### **2.2. e-learning**

Research in the field of e-learning is currently experiencing rapid development, The application of e-learning in the world of education is currently the main thing and requires evaluation of its use. This study aims to determine the evaluation of models and trends in the development of e-learning (Learning Management System).

(<https://ejurnal.teknokrat.ac.id/index.php/teknoinfo/article/view/1736>, n.d.)

### **2.3. Educational app**

While the need of schools, students, educators, and parents for apps that take advantage of the latest mobile and touchscreen technology is high, the majority of educational apps that are available in popular stores such as Google Play and Apple's App Store, both free and fee-based, have no guarantee of educational value.

(<https://www.mdpi.com/721512>, n.d.)

### **2.4. An Educational app for the special needs covid-19 period :**

Online and distance education strategies offer a path for closing opportunity gaps for students with disabilities because of digital technologies' flexibility and capacity for differentiation, but fully online schooling does always guarantee an inclusive education. The COVID-19-induced shift to remote learning highlighted the need for more insight into inclusive practices for students with disabilities in online contexts, especially at the K-12 levels. The present study describes special education teachers' online teaching practices with students with disabilities and the necessary conditions for special educator use of technology in K-12 remote learning. Using in-depth interview (N = 20) and survey data with special educators teaching during the COVID-19 pandemic, findings highlight specific strategies special educators use to differentiate instruction as well as innovations in hybrid content experiences and home-school partnerships across K-12 schooling. The practices of special educators teaching in online environments provide insights into how all educators can support learners with or without disabilities in K-12 distance education settings.

Serving students with disabilities in K-12 online learning: daily practices of special

educators during the COVID-19 pandemic: Distance Education: Vol 43, No 4  
(tandfonline.com)

COVID-19 had a disastrous impact on the education sector resulting in a boom of online learning systems. This shift has severely impacted the underprivileged students with special needs due to the sudden implementation of prolonged distance learning. Thus, it creates an immense need to analyze distance learning media's effectiveness during the COVID-19 pandemic for students with special needs. The E-learning readiness and satisfaction of special needs students are scarcely investigated areas in education and e-learning literature. Established on the community of inquiry (COI) model, this study aims to determine the factors that underpin students' satisfaction with their e-learning experience through the mediated mechanism of students online learning readiness.

Surveying 178 special needs students from various Indonesian universities revealed that teaching presence, cognitive and social presence, and content quality, directly and indirectly, influence e-learning satisfaction. This extended and more comprehensive model would help educators better understand e-learning's use as an effective pedagogical platform, especially in the context of special needs students. Key policy implications and directions for future research are suggested.

ERIC - EJ1331702 - The Satisfaction of the Special Need' Students with E-Learning Experience during COVID-19 Pandemic: A Case of Educational Institutions in Indonesia, Contemporary Educational Technology, 2022

## Chapter 3

### METHODOLOGY

Methodology in the context of project development refers to a systematic and structured approach to planning, executing, and managing tasks to achieve specific goals. It provides a framework for organizing processes, guiding decision-making, and ensuring efficiency in the development lifecycle. Choosing an appropriate methodology is crucial for successful project outcomes.

#### 3.1. software engineering

Software engineering is a discipline within the field of computer science that involves the systematic design, development, testing, and maintenance of software systems. It employs engineering principles and methodologies to create reliable, efficient, and scalable software solutions.

##### ● 3.1.1 Agile methodology:

Agile is a popular and flexible methodology that has gained widespread adoption in software development and beyond. It emphasizes iterative and collaborative processes, allowing teams to respond to changing requirements and deliver high-quality products efficiently.

Agile methodology offers a dynamic and customer-focused approach to project development, making it a suitable choice for endeavors where adaptability, collaboration, and responsiveness are paramount.



### **The Methodology for the project:**

#### **1. Needs Assessment:**

- Identify and understand the specific learning needs of special needs children.
- Conduct surveys, interviews, or collaborate with experts in special education to gather insights.

#### **2. Define Learning Objectives:**

- Clearly outline the educational goals and objectives the app aims to achieve for special needs children.

#### **3. Customization and Personalization:**

- Design the app to allow for customization based on individual needs.
- Incorporate features that adapt to each child's learning style, pace, and preferences.

#### **4. Accessible Design:**

- Ensure the app is accessible to children with various disabilities, incorporating features like voice commands, large fonts, and easy navigation.

#### **5. Multi-Sensory Engagement:**

- Integrate multi-sensory elements to enhance engagement, such as audio cues, visuals, and interactive touch features.

6. Collaboration with Educators and Therapists:

- Work closely with special education teachers, therapists, and professionals to align the app with proven teaching methods and therapeutic practices.

7. Inclusive Content:

- Develop content that covers a wide range of abilities, ensuring inclusivity for children with different special needs.

8. User Testing:

- Conduct extensive user testing with special needs children and gather feedback to refine the app's functionality and usability.

9. Continuous Improvement:

- Establish mechanisms for ongoing improvement based on user feedback and advancements in special education.

10. Parental Involvement:

- Provide features that allow parents to track their child's progress, understand their learning patterns, and actively participate in their education.

11. Security and Privacy:

- Prioritize security and privacy measures to protect sensitive information and ensure a safe online learning environment.

12. Integration with Therapeutic Activities:

- Explore opportunities to integrate therapeutic activities into the app, supporting both educational and developmental goals.

- By embracing these steps, our team can create an E-Learning educational web app that is not only adaptive to the needs of special needs students but also responsive to ongoing feedback, leading to a more effective and user-friendly solution.

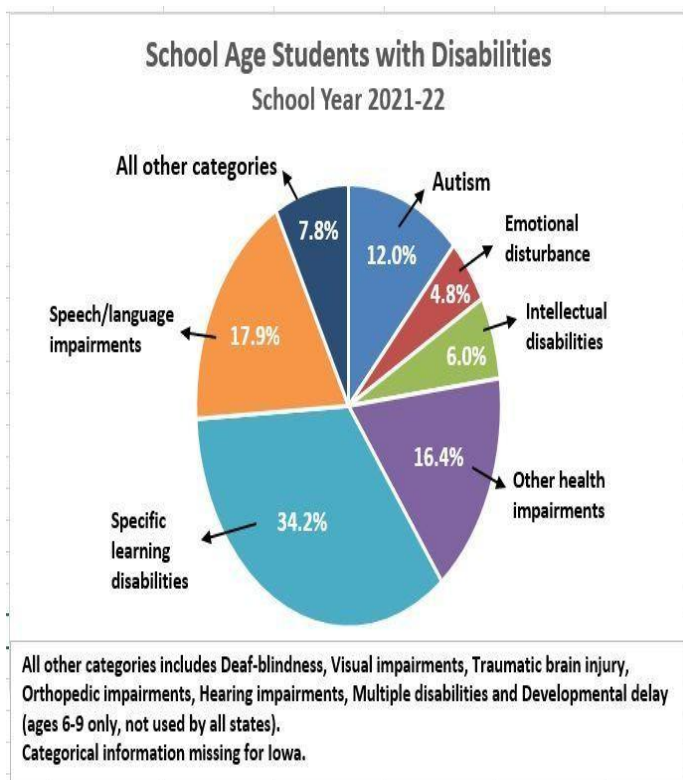
### **3.2. Information gathering technique**

Managing information involves gathering and distributing necessary information and assimilating them on the project management activities and processes.

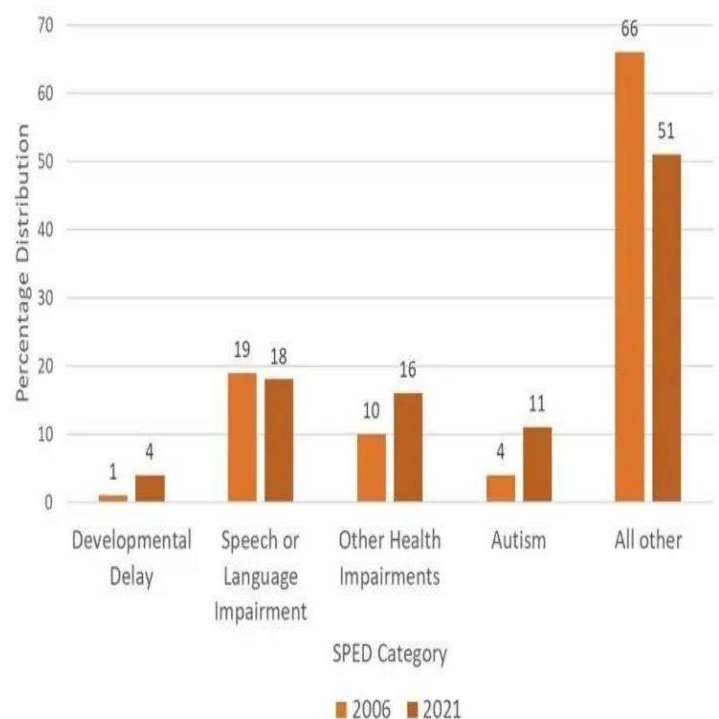
#### **3.2.1 Data Gathering**

The World Health Organization (WHO) estimates that approximately 15% of the world's population has some form of disability. Among the various types of disabilities, students

with learning disabilities represent a significant portion. Learning disabilities affect individuals' ability to acquire, process, and retain information, impacting academic performance. Specific percentages related to the prevalence of learning disabilities can vary by region and may be subject to updates, so it's advisable to consult the latest WHO or educational reports for the most accurate information.



### 3.2.2 Personal interview



A personal interview is usually a face-to-face meeting or two-way communication between the recruiter and the candidate.

## **Interview with the kids families :**

### **Interview 1:**

1. What challenges do you face in supporting your child's learning at home?

Balancing work and helping with homework can be challenging.

2. Can you share specific instances where your child struggled with traditional learning methods?

My child struggled with rote memorization; hands-on activities work better.

3. What kind of support or tools do you currently use to aid your child's learning?

Currently using online resources and educational games.

4. How do you envision an ideal learning application helping your child with learning difficulties?

An ideal app would offer personalized, interactive learning experiences.

5. Are there specific subjects or skills you find particularly challenging to teach your child?

Math concepts are particularly challenging to teach.

6. What features would you consider crucial for an application to be effective for your child?

Crucial features include adaptability, progress tracking, and parental insights.

7. How involved would you like to be in your child's learning journey through the application?

I'd like to be actively involved in guiding and monitoring.

8. Are there any concerns or reservations you might have about using a learning application for your child?

Concerns about screen time and ensuring the app aligns with educational goals.

9. How would you measure the success of a learning application in terms of your child's progress?

Success measured by improved understanding and grades.

10. What role do you see technology playing in your child's education, and how can it complement traditional teaching methods?

Technology should complement by providing dynamic and engaging learning experiences.



## Interview 2

1. What challenges do you face in supporting your child's learning at home?

Balancing work commitments with guiding my child's studies is a constant challenge.

2. Can you share specific instances where your child struggled with traditional learning methods?

Traditional memorization methods posed difficulties; my child prefers hands-on learning experiences.

3. What kind of support or tools do you currently use to aid your child's learning?

We currently use online educational platforms and interactive apps.

4. How do you envision an ideal learning application helping your child with learning difficulties?

An ideal learning app should offer adaptive content, catering to individual learning styles and difficulties.

5. Are there specific subjects or skills you find particularly challenging to teach your child?

Teaching math concepts has been particularly challenging.

6. What features would you consider crucial for an application to be effective for your child?

Crucial features include adaptability, progress tracking, and engaging multimedia content.

7. How involved would you like to be in your child's learning journey through the application?

I'd like to actively guide my child's learning journey through regular progress updates and insights.

8. Are there any concerns or reservations you might have about using a learning application for your child?

Concerns revolve around screen time management and ensuring the app aligns with our educational goals.

9. How would you measure the success of a learning application in terms of your child's progress?

Success would be measured by improved comprehension and academic performance.

10. What role do you see technology playing in your child's education, and how can it complement traditional teaching methods?

Technology should enhance traditional teaching by providing dynamic and interactive

learning experiences.

### Interview 3:

1. What challenges do you face in supporting your child's learning at home?

Time constraints often make it challenging to actively participate in my child's learning.

2. Can you share specific instances where your child struggled with traditional learning methods?

My child struggled with traditional reading methods; interactive approaches prove more effective.

3. What kind of support or tools do you currently use to aid your child's learning?

We currently leverage educational games, virtual field trips, and e-books.

4. How do you envision an ideal learning application helping your child with learning difficulties?

An ideal learning app should incorporate gamified elements, fostering a fun and educational environment.

5. Are there specific subjects or skills you find particularly challenging to teach your child?

Teaching abstract concepts in science tends to be a hurdle.

6. What features would you consider crucial for an application to be effective for your child?

Crucial features include real-time feedback, diverse content, and a user-friendly interface.

7. How involved would you like to be in your child's learning journey through the application?

I aim to actively guide and monitor my child's progress through regular check-ins and collaborative activities.

8. Are there any concerns or reservations you might have about using a learning application for your child?

Screen addiction and the need for a balance between screen time and other activities are concerns.

9. How would you measure the success of a learning application in terms of your child's progress?

Success would be measured by increased interest in learning and application of knowledge.

10. What role do you see technology playing in your child's education, and how can it complement traditional teaching methods?

Technology should serve as a supplementary tool, providing interactive simulations and collaborative platforms to enhance traditional teaching methods.

Interview 4:

1. What challenges do you face in supporting your child's learning at home?

Juggling work commitments with supporting my child's learning poses a consistent challenge.

2. Can you share specific instances where your child struggled with traditional learning methods?

My child faced difficulties in traditional math classes; interactive and visual methods proved more effective.

3. What kind of support or tools do you currently use to aid your child's learning?

We currently use online tutors, educational videos, and interactive learning platforms.

4. How do you envision an ideal learning application helping your child with learning difficulties?

An ideal learning app should offer personalized learning paths based on my child's strengths and weaknesses.

5. Are there specific subjects or skills you find particularly challenging to teach your child?

Teaching complex grammar rules has been a persistent challenge.

6. What features would you consider crucial for an application to be effective for your child?

Crucial features include adaptive assessments, progress reports, and a variety of multimedia resources.

7. How involved would you like to be in your child's learning journey through the application?

I'd like to actively participate by setting learning goals and reviewing progress together.

8. Are there any concerns or reservations you might have about using a learning application for your child?

Concerns include privacy, data security, and ensuring the app aligns with our educational values.

9. How would you measure the success of a learning application in terms of your child's

progress?

Success would be measured by increased confidence in tackling challenging topics and improved grades.

10. What role do you see technology playing in your child's education, and how can it complement traditional teaching methods?

Technology should serve as a dynamic supplement, providing simulations and collaborative tools to enrich traditional teaching approaches.

Interview 5:

1. What challenges do you face in supporting your child's learning at home?

Managing household responsibilities alongside supporting my child's learning can be demanding.

2. Can you share specific instances where your child struggled with traditional learning methods?

Traditional spelling tests were challenging for my child; we've found spelling apps more engaging.

3. What kind of support or tools do you currently use to aid your child's learning?

Currently utilizing educational board games, storybooks, and interactive online exercises.

4. How do you envision an ideal learning application helping your child with learning difficulties?

An ideal learning app should be user-friendly, offering step-by-step guidance for independent learning.

5. Are there specific subjects or skills you find particularly challenging to teach your child?

Teaching history topics has been particularly challenging due to lack of interest.

6. What features would you consider crucial for an application to be effective for your child?

Crucial features include a simple interface, progress updates, and offline access for flexibility.

7. How involved would you like to be in your child's learning journey through the application?

I'd like to be actively involved, setting a daily learning routine and reviewing completed tasks.

8. Are there any concerns or reservations you might have about using a learning

application for your child?

Concerns involve age-appropriate content and ensuring the app fosters a positive learning environment.

9. How would you measure the success of a learning application in terms of your child's progress?

Success would be measured by increased curiosity and a growing passion for learning.

10. What role do you see technology playing in your child's education, and how can it complement traditional teaching methods?

Technology should provide educational games and interactive stories, complementing our home-based learning routine.

Interview 6:

1. What challenges do you face in supporting your child's learning at home?

Balancing my role as a big sister and a mom makes supporting my child's learning a juggling act.

2. Can you share specific instances where your child struggled with traditional learning methods?

My younger sibling struggled with traditional science classes; hands-on experiments at home proved more effective.

3. What kind of support or tools do you currently use to aid your child's learning?

Utilizing educational apps, DIY science kits, and collaborative learning activities with my own children.

4. How do you envision an ideal learning application helping your child with learning difficulties?

An ideal learning app should offer diverse content suitable for various age groups, fostering shared learning experiences.

5. Are there specific subjects or skills you find particularly challenging to teach your child?

Teaching creative writing has been a challenge, but collaborative storytelling with my children has proven beneficial.

6. What features would you consider crucial for an application to be effective for your child?

Crucial features include parental controls, interactive quizzes, and a collaborative platform for joint learning.

7. How involved would you like to be in your child's learning journey through the application?

I aim to actively participate by incorporating joint learning activities and overseeing progress.

8. Are there any concerns or reservations you might have about using a learning application for your child?

Concerns revolve around age-appropriate content and ensuring the app encourages sibling collaboration.

9. How would you measure the success of a learning application in terms of your child's progress?

Success would be measured by improved comprehension and strengthened sibling bonds through shared learning.

10. What role do you see technology playing in your child's education, and how can it complement traditional teaching methods?

Technology should facilitate joint exploration and learning experiences, blending education with family dynamics.

### **Second interview with teachers:**

#### **Interview 1:**

1. How do you currently address individual learning needs in your classroom?

I address individual learning needs by employing differentiated instruction techniques, personalized learning plans, and regular assessments to identify specific areas of improvement for each student.

2. Can you share specific challenges your students face in the learning process?

Some challenges students face include diverse learning styles, varying levels of prior knowledge, and potential distractions. I actively work on adapting my teaching methods to overcome these obstacles.

3. In your experience, what types of educational technologies or applications have been most effective for children with learning difficulties?

I've found that interactive educational games, multimedia content, and assistive technology tools tailored to specific learning disabilities can be highly effective for children facing learning difficulties.

4. What features do you believe are essential for an application designed for children with learning difficulties?

Essential features for an application include adaptive learning paths, multisensory

engagement, progress tracking, and accessibility features to cater to diverse needs and ensure an inclusive learning environment.

5. How could an application complement your teaching methods and curriculum in the classroom?

An application could complement my teaching by providing supplementary resources, individualized practice exercises, and real-time progress updates, allowing me to tailor my lessons based on students' performance.

6. What role do you think parents should play in supporting their children's learning through an application?

Parents should actively participate by monitoring their child's usage, providing feedback to educators, and reinforcing learning concepts at home. A collaborative approach between school and home is crucial for success.

7. Are there any specific subjects or skills where you see the greatest potential for improvement through a learning application?

I see great potential for improvement in foundational skills like literacy and numeracy, as well as in executive functioning and organization through a well-designed learning application.

8. How do you assess the progress of students with learning difficulties, and how could an application assist in this process?

Assessing progress involves continuous formative assessments and tracking improvements. An application can streamline this process with data analytics, allowing for more informed and timely interventions.

9. What resources or support do you currently wish you had to better assist students with learning difficulties?

Additional resources such as speech therapists, special education aides, and access to a variety of assistive technologies would enhance my ability to support students with learning difficulties more effectively.

10. How do you envision the integration of such an application into the overall educational experience of children with learning difficulties?

Integration would involve aligning the application with existing curriculum goals, providing training for educators and parents, and ensuring seamless communication to create a holistic and supportive learning environment for children with learning difficulties.

Interview 2:

1. How do you currently address individual learning needs in your classroom?

Individual learning needs are addressed through a combination of flexible lesson plans,

one-on-one guidance, and leveraging technology for personalized learning experiences.

2. Can you share specific challenges your students face in the learning process?

Students often grapple with diverse backgrounds and varied learning paces. Overcoming these challenges involves fostering a collaborative classroom culture and employing differentiated instructional strategies.

3. In your experience, what types of educational technologies or applications have been most effective for children with learning difficulties?

Educational technologies like interactive simulations, speech-to-text tools, and adaptive learning platforms have proven beneficial for addressing the unique needs of children with learning difficulties in my experience.

4. What features do you believe are essential for an application designed for children with learning difficulties?

Key features for an application should include customizable content, gamified elements, accessibility options, and a user-friendly interface to ensure engagement and accommodate diverse learning styles.

5. How could an application complement your teaching methods and curriculum in the classroom?

An application can seamlessly integrate into my teaching methods by offering supplemental resources, enabling flipped classroom approaches, and facilitating communication channels for real-time feedback and support.

6. What role do you think parents should play in supporting their children's learning through an application?

Parents play a crucial role by actively participating in their child's learning journey through regular communication with teachers, setting a conducive home learning environment, and reinforcing concepts covered in the app.

7. Are there any specific subjects or skills where you see the greatest potential for improvement through a learning application?

Improvements can be significant in areas like problem-solving skills, emotional regulation, and collaborative learning. A targeted application can provide tailored activities to enhance these specific skills.

8. How do you assess the progress of students with learning difficulties, and how could an application assist in this process?

Assessing progress involves ongoing formative assessments and feedback loops. An application can enhance this process by providing detailed analytics, allowing for data-driven decisions and personalized interventions.



9. What resources or support do you currently wish you had to better assist students with learning difficulties?

Additional support in the form of educational aides, professional development opportunities for teachers, and increased access to specialized resources would greatly benefit the assistance provided to students with learning difficulties.

10. How do you envision the integration of such an application into the overall educational experience of children with learning difficulties?

The integration of the application should be seamless, involving collaborative planning with educators, professional development sessions, and a phased implementation approach to ensure a smooth transition and maximum impact on learning outcomes.

Interview 3:

1. How do you currently address individual learning needs in your classroom?

Addressing individual learning needs in the art classroom involves recognizing diverse artistic styles and preferences, offering personalized projects, and providing constructive feedback tailored to each student's creative journey.

2. Can you share specific challenges your students face in the learning process?

Challenges in the learning process may stem from varying levels of artistic confidence, exposure to different mediums, or difficulty expressing emotions through art. Overcoming these challenges involves fostering a supportive and expressive environment.

3. In your experience, what types of educational technologies or applications have been most effective for children with learning difficulties?

In my experience, art applications that allow experimentation with various techniques, virtual canvases for digital art, and platforms for collaborative projects have been effective tools for nurturing creativity in students with diverse learning needs.

4. What features do you believe are essential for an application designed for children with learning difficulties?

Essential features for an application catering to art education include a range of artistic mediums, interactive tutorials, adaptive difficulty levels, and opportunities for collaboration to enhance social and creative skills.

5. How could an application complement your teaching methods and curriculum in the classroom?

An art application can complement my teaching methods by providing additional opportunities for creative expression, allowing students to explore different art forms, and fostering a sense of community through shared artistic projects.

6. What role do you think parents should play in supporting their children's learning through an application?

Parents can support their children's artistic learning through the application by engaging in creative activities together, attending art events, and encouraging a positive attitude toward self-expression.

7. Are there any specific subjects or skills where you see the greatest potential for improvement through a learning application?

Subjects or skills with the greatest potential for improvement through a learning application often include those involving fine motor skills, spatial awareness, and emotional expression through visual and auditory mediums.

8. How do you assess the progress of students with learning difficulties, and how could an application assist in this process?

Assessing progress involves not only technical proficiency but also growth in creative expression. An application can assist in this process by providing a portfolio feature and opportunities for peer and self-assessment.

9. What resources or support do you currently wish you had to better assist students with learning difficulties?

Additional resources or support I wish for include access to a variety of art supplies, workshops for parents to engage in creative activities with their children, and collaboration with local artists for immersive experiences.

10. How do you envision the integration of such an application into the overall educational experience of children with learning difficulties?

Integration of the application should align with the principles of artistic expression, offering a diverse range of projects and ensuring that technology enhances rather than replaces hands-on creative experiences in the classroom.

Interview 4:

1. How do you currently address individual learning needs in your classroom?

Individual learning needs are addressed through a thorough assessment of cognitive and emotional factors, implementing personalized learning plans that consider not only academic abilities but also socio-emotional well-being.

2. Can you share specific challenges your students face in the learning process?

Students often face challenges related to executive functioning, emotional regulation, and self-esteem. Identifying and addressing these psychological factors is crucial for creating a conducive learning environment.

3. In your experience, what types of educational technologies or applications have been most effective for children with learning difficulties?

Psychologically informed technologies, such as cognitive-behavioral therapy apps and interactive mindfulness exercises, have proven effective in supporting children with learning difficulties by addressing emotional and cognitive aspects simultaneously.

4. What features do you believe are essential for an application designed for children with learning difficulties?

Essential features for an application should encompass cognitive-behavioral strategies, mindfulness exercises, adaptive content to cater to varying emotional states, and built-in tools for self-regulation and resilience development.

5. How could an application complement your teaching methods and curriculum in the classroom?

An application can complement teaching methods by incorporating evidence-based psychological strategies, providing tools for emotional self-regulation, and fostering a positive and supportive virtual learning environment.

6. What role do you think parents should play in supporting their children's learning through an application?

Parents can support their children's learning through the application by reinforcing positive psychology principles at home, participating in mindfulness exercises together, and fostering open communication about emotions and challenges.

7. Are there any specific subjects or skills where you see the greatest potential for improvement through a learning application?

The greatest potential for improvement through a learning application lies in enhancing emotional intelligence, self-awareness, and social skills—areas that significantly impact overall well-being and academic success.

8. How do you assess the progress of students with learning difficulties, and how could an application assist in this process?

Assessment of progress involves not only academic achievements but also emotional and social development. An application can assist by providing insights into emotional states, allowing for a more comprehensive evaluation.

9. What resources or support do you currently wish you had to better assist students with learning difficulties?

Additional resources such as access to counseling services, psychological assessments, and professional development for educators in psychological strategies would enhance the support system for students with learning difficulties.

10. How do you envision the integration of such an application into the overall educational experience of children with learning difficulties?

Integration of the application should involve collaboration with psychologists, incorporating evidence-based practices, and ensuring that the psychological well-being of students remains a central focus throughout the educational experience.

#### Interview 5:

1. How do you currently address individual learning needs in your classroom?

Addressing individual learning needs involves a comprehensive psychological assessment to identify cognitive strengths and challenges. Personalized interventions then target specific cognitive processes to optimize learning outcomes.

2. Can you share specific challenges your students face in the learning process?

Students often grapple with psychological barriers such as attention difficulties, anxiety, and self-esteem issues. Identifying and addressing these underlying psychological factors is essential for overcoming learning challenges.

3. In your experience, what types of educational technologies or applications have been most effective for children with learning difficulties?

Effective educational technologies for children with learning difficulties often incorporate principles of cognitive-behavioral therapy, neurofeedback, and virtual reality therapy to enhance cognitive functioning and emotional regulation.

4. What features do you believe are essential for an application designed for children with learning difficulties?

An application designed for children with learning difficulties should include features like adaptive learning paths, cognitive training exercises, and modules focused on building resilience and self-efficacy.

5. How could an application complement your teaching methods and curriculum in the classroom?

Integration of the application into teaching methods involves aligning with psychological principles of motivation, incorporating positive reinforcement, and providing tools for students to develop metacognitive skills and self-regulation.

6. What role do you think parents should play in supporting their children's learning through an application?

Parents play a crucial role in supporting their children's learning through an application by reinforcing positive psychological strategies at home, fostering a growth mindset, and collaborating with educators to address any emotional challenges.

7. Are there any specific subjects or skills where you see the greatest potential for improvement through a learning application?

Subjects with the greatest potential for improvement through a learning application often

include those requiring executive functions, such as planning, organization, and self-monitoring, which are key psychological domains.

8. How do you assess the progress of students with learning difficulties, and how could an application assist in this process?

Assessment of progress involves not only academic achievements but also monitoring changes in psychological well-being. An application can assist by providing data on emotional states and adaptive learning patterns.

9. What resources or support do you currently wish you had to better assist students with learning difficulties?

Additional resources or support I wish for include access to psychological counseling services, professional development in neuropsychology for educators, and tools for monitoring and addressing emotional well-being.

10. How do you envision the integration of such an application into the overall educational experience of children with learning difficulties?

Integration of the application should prioritize a psychologically informed curriculum, involve ongoing collaboration with psychologists, and ensure that the learning environment fosters positive mental health and emotional resilience.

### **3.3.1 ERD**

#### **ERD (Entity-Relationship Diagram)**

##### **Entities:**

1. User:

- UserID (Primary Key)
- Name
- Age
- Gender
- Grade Level

2. Guardian:

- GuardianID (Primary Key)
- UserID (Foreign Key)
- Relationship
- Contact Information

### 3. LearningProfile:

- ProfileID (Primary Key)
- UserID (Foreign Key)
- LearningStyle
- Challenges
- Progress

### 4. Activities:

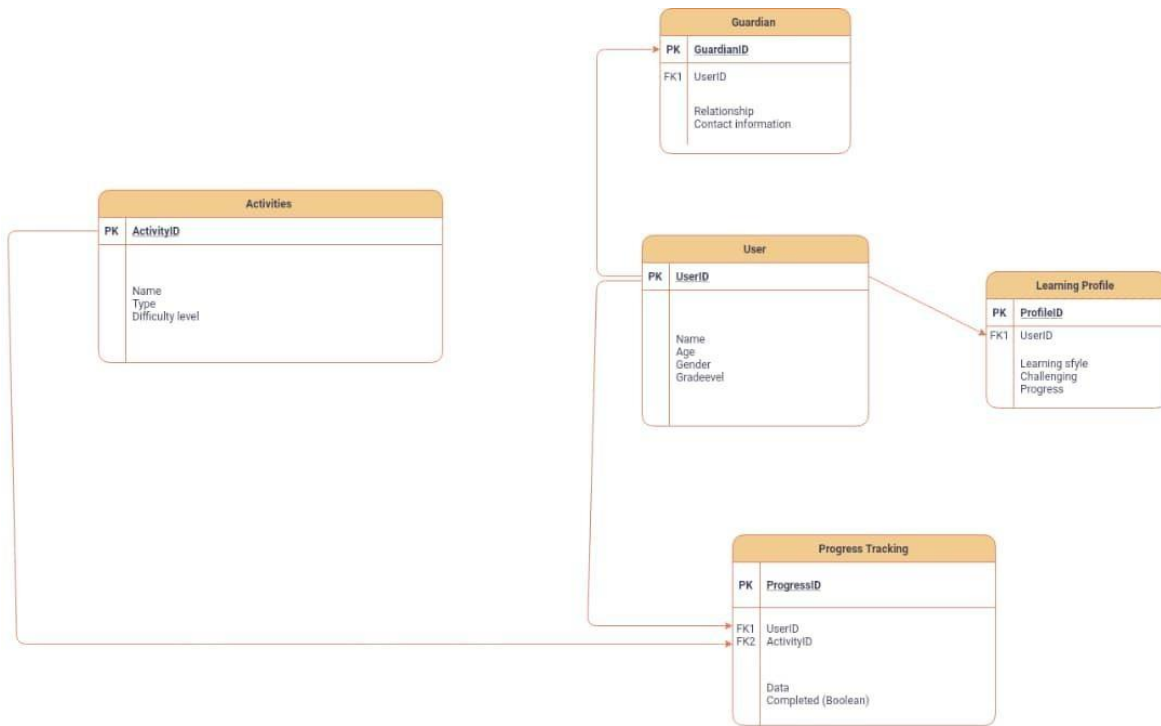
- ActivityID (Primary Key)
- Name
- Type (e.g., Reading, Math)
- Difficulty Level

### 5. ProgressTracking:

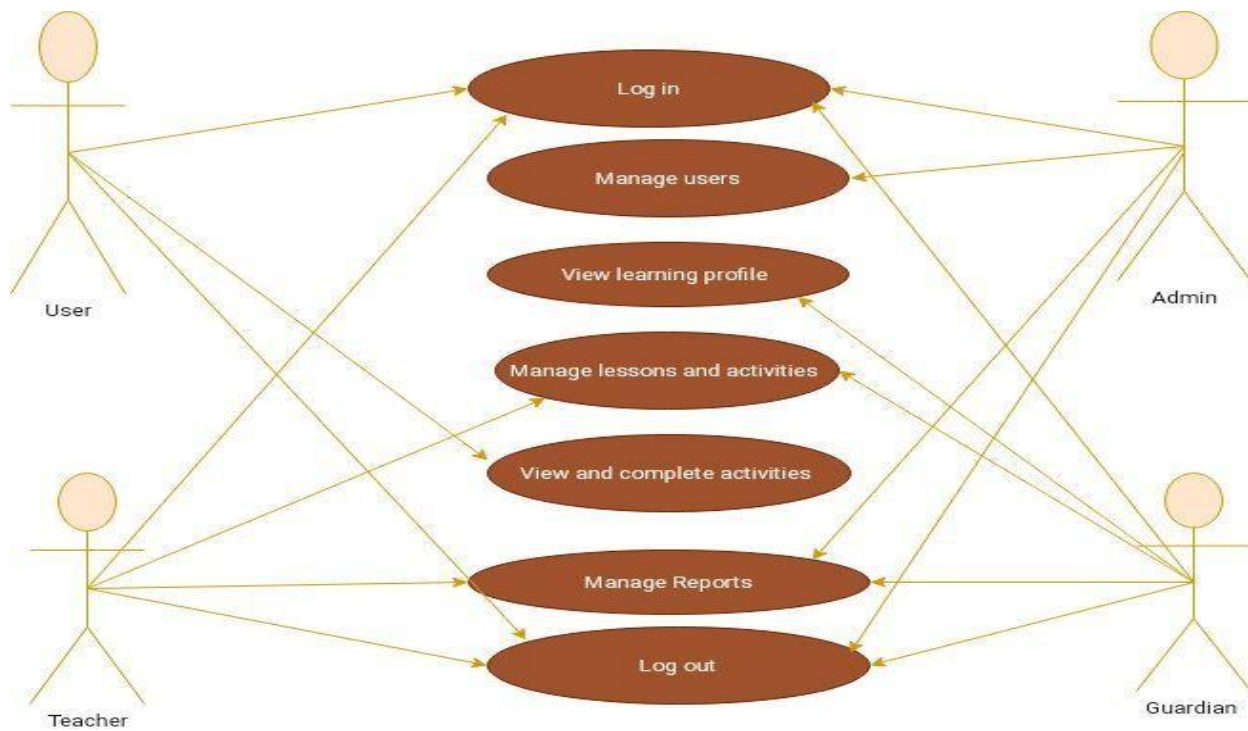
- ProgressID (Primary Key)
- UserID (Foreign Key)
- ActivityID (Foreign Key)
- Date
- Completed (Boolean)

### Relationships:

- One-to-One between User and Guardian (one user has one guardian)
- One-to-One between User and LearningProfile (one user has one learning profile)
- One-to-Many between User and ProgressTracking (one user can have multiple progress entries)
- Many-to-Many between Activities and LearningProfile (an activity can be associated with multiple learning profiles, and a learning profile can have multiple activities)



### 3.3.2 Use case



### Use case Description:

[Admin]

|

v

[Login] --> [Manage Users] --> [View Reports]

|

v

[Add User] <-|

|

v

[Edit User] <.....|

|

v

[Guardian]

|

v

[Login] --> [View Learning Profile] --> [Explore Activities]

|

v

[Select Activity] <-----|

|

v

[Assign Activity] --> [Monitor Progress]

[Student] |

v

[Login] --> [View Assigned Activities]

|

v

[Select Activity] --> [Complete Activity] --> [Mark as Done]

[Teacher] |

v

[Login] --> [Add New Lessons ]

|

v

[View the last activities ] --> [Mark the activities ] --> [Add new activities ]

,

Note: Add/View=Manage



### **3.4 Analysis: Description of the current system**

Currently, children facing exceptional circumstances, such as those affected by war, are being excluded from formal education. Some of these children are resorting to self-education, a practice that poses potential challenges when lacking proper supervision and guidance. It is crucial for these individuals to receive education tailored to their specific needs, employing specialized methods and instructors familiar with their conditions. This entails adhering to set standards outlined by a dedicated application, incorporating practical applications, and implementing a comprehensive plan to assess the child's progress. The analysis should extend beyond academic achievements, delving into the child's psychological well-being at each stage and lesson. This approach, guided by specialists and teachers, ensures a more effective and personalized educational experience.

