

LEARNING PLATFORM FOR DISABLED STUDENTS

A PROJECT REPORT

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BONAFIDE CERTIFICATE

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ABSTRACT

This project aims to develop an innovative online education platform dedicated to empowering deaf students through accessible, engaging, and inclusive learning experiences. The primary mission is to eliminate barriers in education by offering a wide range of resources tailored to meet diverse learning needs. Additionally, interactive quizzes, assignments, and forums will be available to promote a collaborative and supportive learning environment. By leveraging the latest advancements in technology, the platform will create an immersive and effective learning experience. Its mobile-friendly design will allow students to access their courses anytime, anywhere, making learning flexible and convenient. The overarching goal is to provide equal opportunities for academic and professional success to all individuals. This project envisions a transformative educational journey that celebrates diversity and promotes lifelong learning. The outcome will be a more inclusive and accessible future for everyone, ensuring that all students have the resources they need to succeed.

ACKNOWLEDGMENT

First, we thank the almighty god for the successful completion of the project. Our sincere thanks to our chairman **Mr. S. Meganathan B.E., F.I.E.**, for his sincere endeavor in educating us in his premier institution. We would like to express our deep gratitude to our beloved Chairperson **Dr. Thangam Meganathan Ph.D.**, for her enthusiastic motivation which inspired us a lot in completing this project and Vice Chairman **Mr. Abhay Shankar Meganathan B.E., M.S.**, for providing us with the requisite infrastructure.

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CHAPTER 1

INTRODUCTION

In today's digital era, education should be a fundamental right accessible to all, regardless of individual abilities or challenges. This project is driven by the belief that every student, including those with disabilities, deserves an equal opportunity to thrive academically and professionally. The primary objective of this initiative is to develop an innovative online education platform that caters specifically to the diverse learning needs of disabled students, with a special focus on empowering them through engaging and inclusive game-based experiences. By harnessing the power of gamification and technology, this initiative aims to break down barriers and create a learning environment that is truly inclusive and supportive.

At the core of this platform are comprehensive courses spanning various subjects, each meticulously designed to incorporate gamified elements that enhance engagement and retention. High-quality interactive games, accompanied by audiovisual aids and accessible features, will ensure that every disabled student can actively participate and benefit from the learning experience. Moreover, this platform will feature adaptive learning pathways, personalized feedback mechanisms, and progress tracking tools to cater to individual learning styles and pace. This personalized approach aims to maximize learning outcomes and foster a sense of accomplishment among students.

In addition to serving students, this initiative extends support to teachers, parents, and schools through specialized training programs and resources focused on inclusive game-based teaching methodologies. By equipping educators and stakeholders with the necessary skills and tools, this initiative aims to create a more inclusive educational ecosystem that celebrates diversity and promotes lifelong learning. Through this initiative, the Indian government envisions a future where education becomes a transformative and empowering experience for all students, regardless of their abilities. Join us in this journey towards creating an inclusive and accessible educational landscape that embraces innovation and equality.

1.1 PROBLEM STATEMENT

To develop an interactive game based education to cultivate diverse skills and motivate students with points and leaderboard and ensure inclusivity for the students with disabilities. The goal is to enhance learning outcomes and confidence.

1.2 SCOPE OF WORK

The scope of work for a deaf education platform project typically includes designing accessible interfaces, developing interactive learning modules with sign language support, implementing communication tools like video conferencing with interpreters, creating content that caters to deaf learners' needs, and ensuring compatibility with assistive technologies. Additionally, it may involve user testing with deaf individuals to ensure the platform meets their requirements effectively.

1.3 AIM AND OBJECTIVE

The goal of this platform is to provide comprehensive resources and support for individuals with hearing impairments, empowering them to thrive academically and socially. This platform incorporates a variety of tools, such as sign language video tutorials, captioned educational videos, interactive learning modules, and accessible teaching materials. It also fosters a supportive community where deaf individuals can connect, share experiences, and access mentorship opportunities. Additionally, the platform may offer specialized courses designed to address the unique needs and challenges faced by deaf students, including communication strategies, assistive technology usage, and advocacy skills. Through collaboration with educators, experts in deaf education, and deaf community leaders, the platform ensures that its content is relevant, accurate, and culturally sensitive. By promoting inclusivity and accessibility, the deaf education platform aims to break down barriers to education and empower deaf individuals to reach their full potential.

1.4 RESOURCES

This project has been developed through widespread secondary research of accredited manuscripts, standard papers, business journals, white papers, analysts' information, and conference reviews. Significant resources are required to achieve an efficacious completion of this project.

The following prospectus details a list of resources that will play a primary role in the successful execution of our project:

- A properly functioning workstation (PC, laptop, net-books etc.) to carry out desired research and collect relevant content.
- Unlimited internet access.
- Unrestricted access to the university lab in order to gather a variety of literature including academic resources (for e.g. Prolog tutorials, online programming examples, bulletins, publications, e-books, journals etc.), technical manuscripts, etc. Prolog development kit in order to program the desired system and other related software that will be required to perform our research.

1.5 MOTIVATION

Creating a platform for deaf education can be profoundly impactful. It provides equitable access to educational resources, fosters inclusion, and empowers the deaf community to thrive in various aspects of life. By addressing the unique needs and challenges of deaf learners, such a platform contributes to breaking down barriers and promoting equal opportunities for all.

The "Deaf Education Platforms Project" aims to bridge the educational gap for deaf students by developing innovative online platforms. These platforms will prioritize accessibility, incorporating sign language integration, captioning, and visual aids to enhance learning. The project seeks to empower deaf students by providing them with educational resources tailored to their communication needs, fostering a more inclusive and effective learning environment.

CHAPTER 2

LITRETURE SURVEY

[1]"Deaf cognition: Foundations and outcomes" by Marschark and Hauser (2012): provides a deep dive into the cognitive processes unique to individuals who are deaf. The book delves into how these processes shape learning outcomes, educational strategies, and overall cognitive development. By understanding the intricacies of deaf cognition, educators and researchers can tailor interventions and instructional methods to optimize learning experiences for deaf students. This work contributes significantly to the field of deaf education by highlighting the importance of considering cognitive factors in designing inclusive and effective educational programs.

[2] Antia, Reed, and Kreimeyer's (2009) study on "Social outcomes of students who are deaf and hard of hearing in general education classrooms" offers valuable insights into the social dynamics within mainstream educational settings. The research investigates how inclusion impacts the social interactions, peer relationships, and overall well-being of deaf and hard-of-hearing students. Understanding these social outcomes is crucial for educators and policymakers seeking to create inclusive environments that promote social integration and positive peer interactions for all students, regardless of hearing ability.

[3] Mitchell and Karchmer's (2004) examination of "Chasing the mythical ten percent: Parental hearing status of deaf and hard of hearing students in the United States" challenges prevailing assumptions about parental hearing status within the deaf community. The study's findings reveal a diverse range of familial backgrounds among deaf students, highlighting the need for nuanced approaches in educational settings. Educators and policymakers can use this research to better understand the varied experiences and support needs of deaf students, fostering more inclusive and responsive educational practices.

[4] The National Association of the Deaf (NAD) serves as a pivotal resource hub for deaf education, advocacy, and community engagement. Through its extensive range of resources, publications, and initiatives, the NAD plays a crucial role in promoting equity, access, and inclusion in deaf education. Educators, parents, and stakeholders in the deaf community can benefit greatly from the NAD's wealth of information and advocacy efforts,

driving positive change and empowerment for deaf individuals.

[5] Moores' (2001) textbook "Educating the deaf: Psychology, principles, and practices" offers a comprehensive overview of key aspects in deaf education. The book covers psychological foundations, pedagogical principles, and effective teaching practices tailored to meet the diverse needs of deaf learners. Educators, researchers, and practitioners in the field of deaf education can gain valuable insights and practical strategies from Moores' work, enhancing their ability to create inclusive and effective learning environments for deaf students.

[6] Spencer's (2000) collection of essays, "The deaf child in the family and at school," provides a nuanced exploration of the experiences and challenges faced by deaf children within familial and educational contexts. The essays delve into topics such as family dynamics, educational policies, communication strategies, and the impact of societal attitudes on the development and well-being of deaf children. By examining these multifaceted factors, Spencer's work offers valuable insights for parents, educators, and policymakers seeking to support and advocate for deaf children in diverse settings.

[7] Holt's (2016) exploration of "Deaf epistemologies" delves into the ways in which deaf individuals acquire, construct, and validate knowledge. The book explores diverse epistemological frameworks within the deaf community, shedding light on unique learning styles, cognitive processes, and cultural influences. Educators, researchers, and advocates in the field of deaf education can benefit from Holt's insights, fostering a deeper understanding of how to promote effective learning experiences and knowledge acquisition among deaf learners.

[8] Erting and Johnson's (2011) compilation, "The deaf way II reader," offers a rich tapestry of global perspectives on deaf culture, language, identity, and education. The reader includes scholarly articles, personal narratives, and cultural insights from the Second International Conference on Deaf Culture, providing a comprehensive overview of key themes and issues within the deaf community. This compilation serves as a valuable resource for educators, researchers, and individuals interested in gaining a deeper understanding of deaf culture and its diverse expressions worldwide.

[9] Padden and Humphries' (2005) seminal work, "Inside deaf culture," provides an in-depth exploration of deaf cultural norms, values, linguistic practices, and identity formation. The book offers valuable insights into the richness and diversity of deaf culture, challenging misconceptions and fostering greater appreciation for deaf identity and community. Educators, researchers, and advocates in deaf education can draw upon Padden and Humphries' work to promote cultural competence, inclusivity, and respect within educational settings.

[10] Johnson and Liddell's (2011) book on "Unlocking the curriculum" offers a comprehensive framework for achieving access and inclusivity in deaf education. The book outlines principles, strategies, and best practices for designing accessible curricula, instructional methods, and learning environments for deaf learners. Educators, curriculum developers, and policymakers can use this resource to enhance their ability to create meaningful and impactful educational experiences that empower deaf students and promote academic success.

CHAPTER 3

SYSTEM DESIGN

3.1 GENERAL

In this section, we would like to show how the general outline of how all the components end up working when organized and arranged together. It is further represented in the form of a flow chart below.

3.2 SYSTEM ARCHITECTURE DIAGRAM

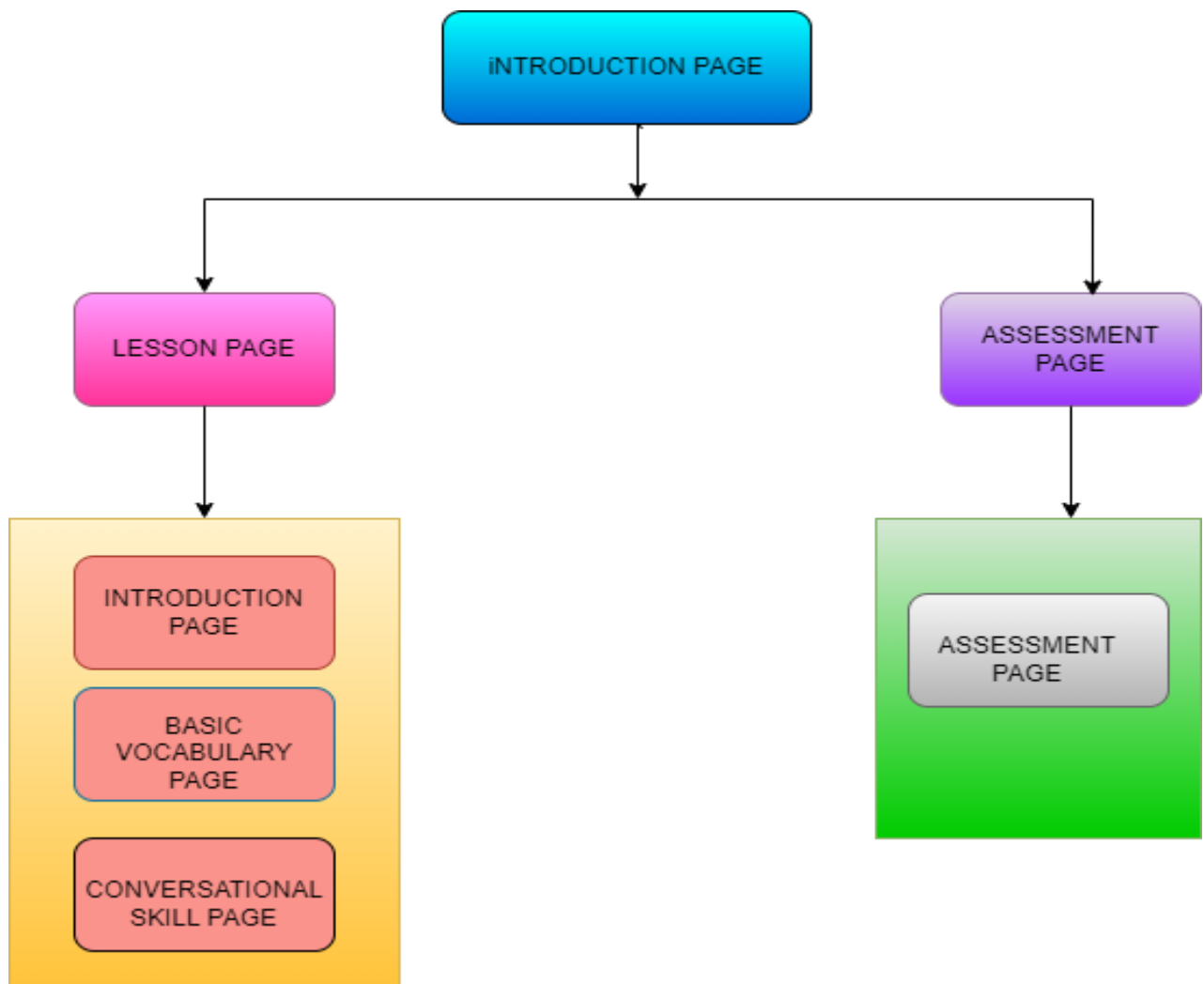


Fig 3.1: System Architecture

3.3 DEVELOPMENTAL ENVIRONMENT

3.3.1 HARDWARE REQUIREMENTS

The hardware requirements may serve as the basis for a contract for the system's implementation. It should therefore be a complete and consistent specification of the entire system. It is generally used by software engineers as the starting point for the system design.

Table 3.1 Hardware Requirements

COMPONENTS	SPECIFICATION
PROCESSOR	Intel Core i5
RAM	8 GB RAM
GPU	NVIDIA GeForce GTX 1650
MONITOR	15" COLOR
HARD DISK	512 GB
PROCESSOR SPEED	MINIMUM 1.1 GHz

3.3.2 SOFTWARE REQUIREMENTS

The software requirements document is the specifications of the system. It should include both a definition and a specification of requirements. It is a set of what the system should rather be doing than focus on how it should be done. The software requirements provide a basis for creating the software requirements specification. It is useful in estimating the cost, planning team activities, performing tasks, tracking the team, and tracking the team's progress throughout the development activity.

HTML CSS JAVASCRIPT, and chrome would all be required.

CHAPTER 4

PROJECT DESCRIPTION

4.1 METHODOLOGY

The development of the Deaf Education Platform involved a comprehensive methodology that began with thorough research and planning to define the project's scope and objectives. This initial phase included a needs assessment to identify the target audience—beginners in sign language—and understand their learning preferences. Clear goals were established, focusing on providing comprehensive lessons that include grammar and conversational skills while ensuring an interactive learning experience. Resource allocation was determined, encompassing human resources such as educators, developers, designers, technological tools, and budget considerations. The next phase involved creating educational content with an emphasis on clarity, accuracy, and engagement. The curriculum was carefully designed to cover essential topics like fingerspelling, numbers, basic greetings, grammar rules, and conversational skills. Collaborating with sign language experts, the team developed accurate and pedagogically sound lessons, supplemented by high-quality illustrative images to aid visual learning.

The technical development of the platform utilized HTML, CSS, and JavaScript. The HTML structure ensured a logical and user-friendly layout, with distinct sections for lessons, vocabulary, grammar, and assessments. CSS was employed to create an aesthetically pleasing and consistent design, focusing on readability, accessibility, and responsive design for compatibility with various devices. JavaScript was implemented to add interactivity, particularly in the assessment module. This module included multiple-choice questions designed to test learners' understanding of sign language grammar and conversational skills, with instant feedback provided through JavaScript. Before the final launch, the platform underwent rigorous testing, including usability testing with a diverse group of users to gather feedback on usability, design, and content clarity. Feedback was analyzed to identify areas for improvement, and necessary adjustments were made to enhance the user experience. This methodology emphasizes a user-centered approach, combining expert content creation with robust technical implementation to create an effective and engaging

resource for learners beginning their journey in sign language.

4.2 MODULE DESCRIPTION

Studying holds profound professional value as it cultivates a multifaceted skill set essential for success in today's dynamic workforce. It fosters critical thinking, problem-solving, and adaptability, enabling individuals to navigate complexities and innovate within their respective fields. Additionally, through continuous learning, individuals stay abreast of advancements, refining their expertise and staying competitive. Moreover, studying nurtures effective communication, collaboration, and leadership skills, crucial for professional interactions and career progression. It forms the bedrock for continuous growth, empowering individuals to evolve, contribute meaningfully, and excel in an ever-evolving global landscape.

4.2.1 HOME MODULE:

The home module enables easy access to the lesson module and the assessment module. The user can navigate to the other modules and can reach out the contact option from this page.

4.2.2 LESSON MODULE:

The Deaf Education Platform offers foundational lessons in sign language, covering basics like fingerspelling, vocabulary, grammar, and conversational skills. Illustrated images aid learning, while interactive assessments provide immediate feedback. Additional resources and community support ensure a comprehensive and engaging educational experience for beginners.

4.2.3 ASSESSMENT MODULE:

The assessment module is designed to test learners' knowledge and understanding of the content covered in previous modules. It includes multiple-choice questions that evaluate comprehension of grammar rules, vocabulary, and conversational skills. The interactive nature of the assessment, powered by JavaScript, provides immediate feedback on answers. Correct responses are reinforced, while incorrect ones are

explained, helping learners understand their mistakes and improve. This module ensures that learners can self-assess their progress and identify areas needing further study.

CHAPTER 5

RESULTS AND DISCUSSIONS

5.1 OUTPUT

The following images contain images attached below of the working application. Example instance of creating a generation

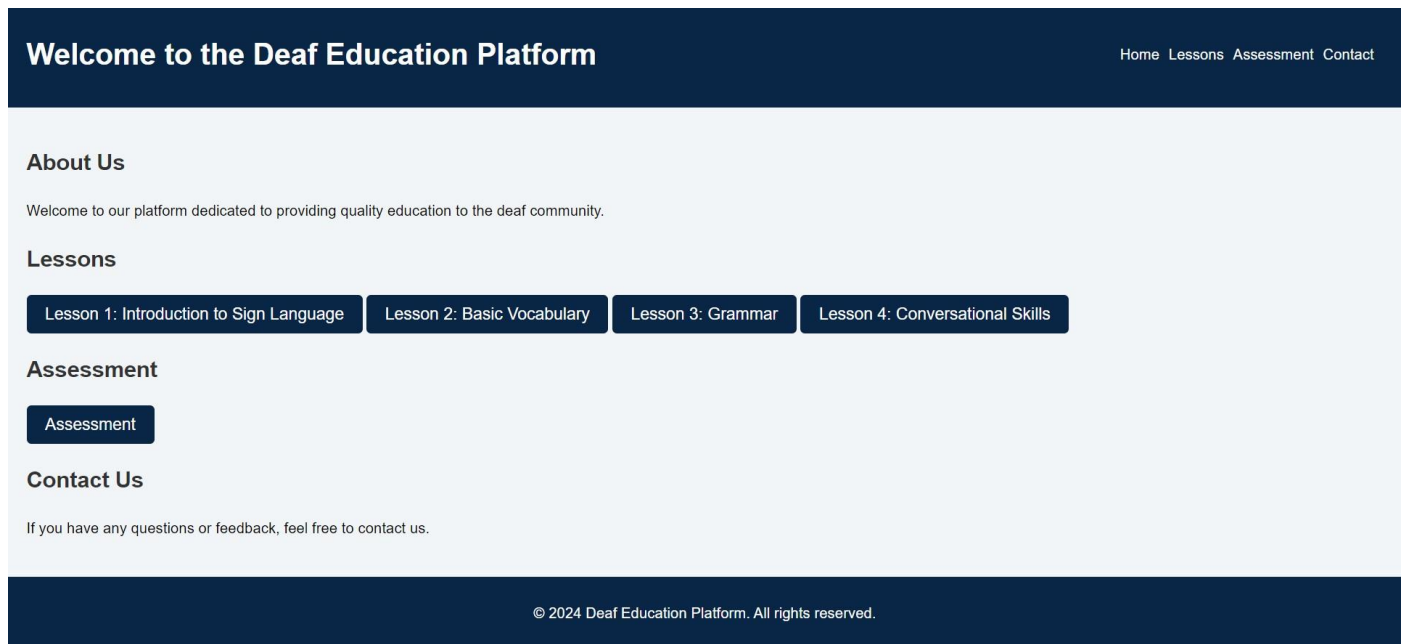


Fig 5.1 Home module

Lessons

Introduction to Sign Language

In this lesson, you will learn the basics of sign language including fingerspelling, numbers, and common phrases.

Topics Covered:

- Fingerspelling the alphabet
- Counting from 1 to 10
- Basic greetings and introductions

Here's an illustration for an introduction to sign language for Alphabets:

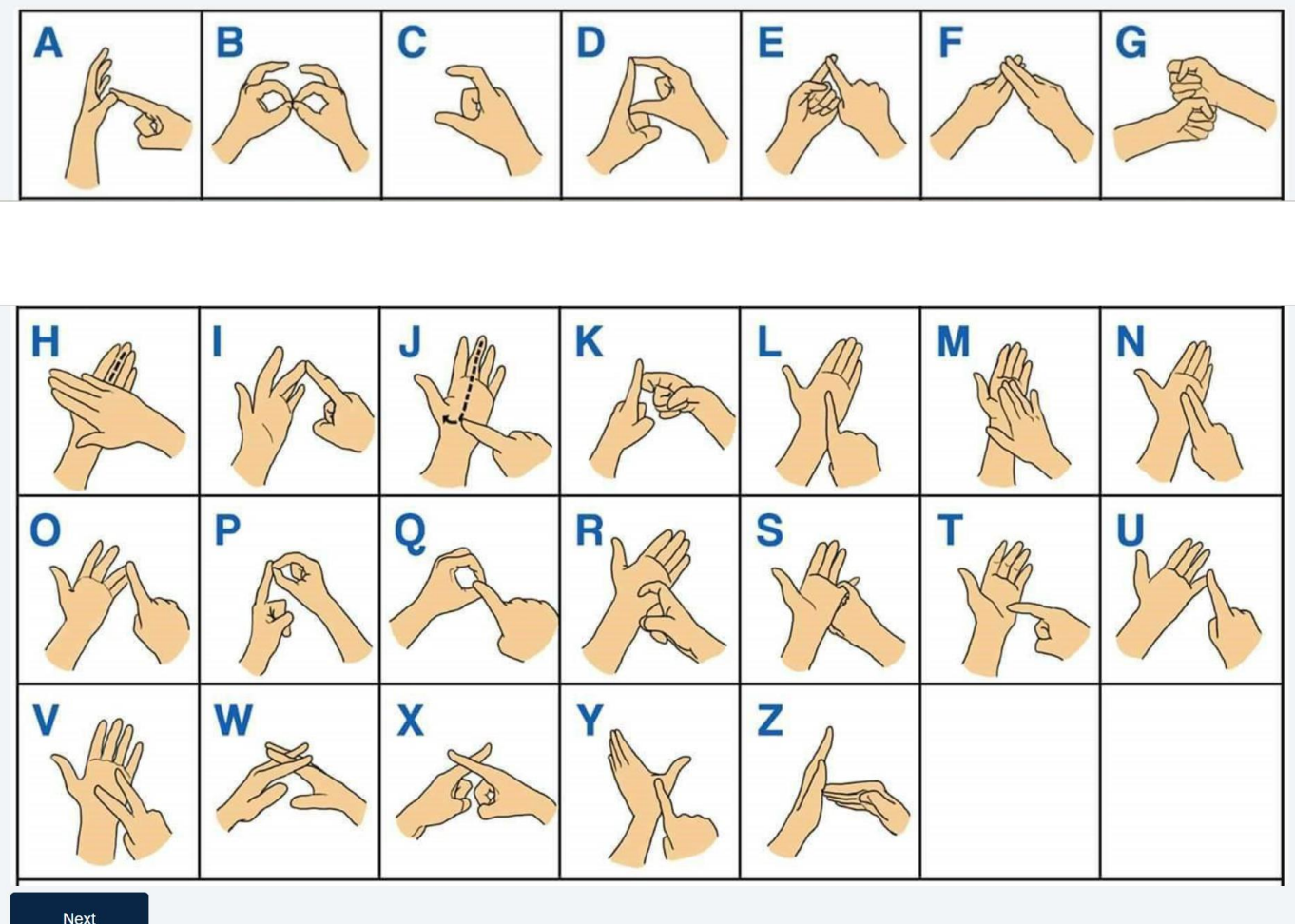


Fig 5.2 Lesson module

Lessons

Assessment

Test your knowledge of sign language with the following questions:

1. What is fingerspelling?

- ☒ Spelling with fingers
- ☐ Counting numbers
- ☐ Basic greetings
- ☐ Non-verbal communication

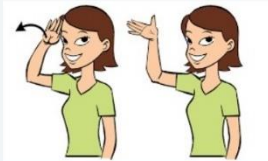
2. What is the sign for "thank you"?



☒ A



☐ B



☐ C

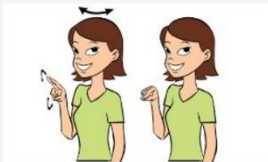


☐ D

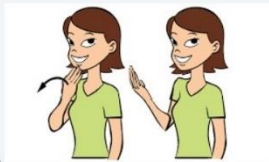
3. What are non-manual markers?

- ☐ Facial expressions, body language, and other non-hand movements
- ☐ Handshapes and movements in sign language
- ☐ Numbers and counting systems
- ☒ Common phrases and greetings

4. What is the sign for "yes"?



☐ A



☒ B

☐ C

☐ D

5. What is the sign for "no"?

☒ A

☐ B

☐ C

☐ D

Submit

☒ A

☐ B

☐ C

☐ D

Submit

Question 1: Correct!

Question 2: Correct!

Question 3: Incorrect.

Question 4: Incorrect.

Question 5: Incorrect.

Fig 5.3 Assessment module

5.2 RESULT

The Deaf Education Platform offers a robust and comprehensive introduction to sign language, targeting both grammar and conversational skills essential for beginners. The lesson covers crucial aspects such as fingerspelling the alphabet, counting from 1 to 10, and basic greetings, making it accessible and practical for new learners. Each topic is supported by clear illustrative images, which help in visual learning and retention. The grammar section delves into the intricacies of sign language structure, including word order, facial expressions, and non-manual markers, providing learners with a solid foundation in understanding and using sign language effectively.

The platform's interactive assessment module stands out, featuring well-crafted multiple-choice questions that test learners' grasp of sign language concepts. Questions focus on practical grammar rules, the correct use of non-manual markers, and conversational skills such as starting and maintaining a conversation in sign language. The integrated JavaScript functionality provides immediate feedback, enabling learners to self-assess and identify areas needing improvement. This feedback mechanism enhances the learning experience by reinforcing correct answers and explaining mistakes. Overall, the Deaf Education Platform is a valuable educational tool, designed to be engaging and user-friendly. It effectively combines instructional content with interactive assessments, ensuring that learners acquire a comprehensive understanding of basic sign language and are well-prepared for real-world communication.

CHAPTER 6

CONCLUSION AND FUTURE ENHANCEMENT

6.1 CONCLUSION

In conclusion, the field of deaf education is enriched by a diverse range of research, resources, and perspectives that collectively contribute to creating inclusive and effective learning environments for deaf students. The literature surveyed encompasses key areas such as cognitive processes, social outcomes, familial dynamics, cultural considerations, and pedagogical strategies, all of which are vital in shaping the landscape of deaf education. Through a deeper understanding of deaf cognition, social integration dynamics, familial backgrounds, cultural nuances, and effective teaching practices, educators and stakeholders can better support the diverse needs and experiences of deaf learners. Platforms like the National Association of the Deaf (NAD) play a crucial role in disseminating knowledge, fostering advocacy, and promoting inclusive practices within educational settings.

As we move forward, it is imperative to continue advancing research, developing innovative resources, and promoting collaboration between researchers, educators, policymakers, and the deaf community. By leveraging insights from literature, incorporating best practices, and embracing a culturally responsive approach, we can collectively enhance deaf education platforms to empower deaf students, celebrate diversity, and foster lifelong learning opportunities for all.

FUTURE ENHANCEMENT

Future enhancements for deaf education platforms include advanced technology integration (AI, VR, AR) for interactive learning, multimodal communication tools for effective collaboration, accessible content creation tools, online communities for mentorship, data analytics for personalized learning, and global collaboration for sharing best practices. These enhancements aim to create inclusive, accessible, and effective learning environments for deaf students, empowering them to excel academically and reach their full potential.

Some of the future enhancements:

Interactive Virtual Tutor

An AI-powered virtual tutor can assist learners by answering questions, providing explanations, and guiding them through lessons. This tutor can engage users in simulated conversations, helping them practice conversational skills in a controlled environment.

Automated Assessments and Feedback

AI can automate the assessment process by instantly grading quizzes and providing detailed feedback. It can also track progress over time, highlighting areas where the learner has improved and areas that need more attention.

Natural Language Processing (NLP) for User Support

AI-powered chatbots using NLP can offer 24/7 support, answering common questions and providing assistance with navigating the platform. This ensures users receive timely help, enhancing their learning experience.

Content Recommendation System

AI algorithms can suggest additional resources such as videos, articles, and practice exercises based on the learner's progress and interests. This keeps the learning experience dynamic and engaging.

Speech-to-Text and Text-to-Speech Integration

For users who are deaf or hard of hearing, AI can convert spoken language to text in real-time, and vice versa, facilitating communication and access to audio content.

APPENDIX

SOURCE CODE:

```
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8">
<meta name="viewport" content="width=device-width, initial-scale=1.0">
<title>Deaf Education Platform</title>
<link rel="stylesheet" href="first.css">
<script>
  document.addEventListener('DOMContentLoaded', function() {
    const form = document.getElementById('assessment-form');

    form.addEventListener('submit', function(event) {
      event.preventDefault();
      const feedbackDiv = document.getElementById('assessment-feedback');
      feedbackDiv.innerHTML = ""; // Clear previous feedback

      // Get selected answers
      const answer1 = document.querySelector('input[name="question1"]:checked');
      const answer2 = document.querySelector('input[name="question2"]:checked');
      const answer3 = document.querySelector('input[name="question3"]:checked');
      const answer4 = document.querySelector('input[name="question4"]:checked');
      const answer5 = document.querySelector('input[name="question5"]:checked');
      // Check answers and provide feedback
      if (answer1 && answer1.value === 'a') {
        feedbackDiv.innerHTML += '<p>Question 1: Correct!</p>';
      } else {
        feedbackDiv.innerHTML += '<p>Question 1: Incorrect.</p>';
      }

      if (answer2 && answer2.value === 'a') {
        feedbackDiv.innerHTML += '<p>Question 2: Correct!</p>';
      } else {
        feedbackDiv.innerHTML += '<p>Question 2: Incorrect.</p>';
      }
    });
  });
</script>
```

```

    if (answer3 && answer3.value === 'a') {
        feedbackDiv.innerHTML += '<p>Question 3: Correct!</p>';
    } else {
        feedbackDiv.innerHTML += '<p>Question 3: Incorrect.</p>';
    }
    if (answer4 && answer4.value === 'a') {
        feedbackDiv.innerHTML += '<p>Question 4: Correct!</p>';
    } else {
        feedbackDiv.innerHTML += '<p>Question 4: Incorrect.</p>';
    }
    if (answer5&& answer5.value === 'a') {
        feedbackDiv.innerHTML += '<p>Question 5: Correct!</p>';
    } else {
        feedbackDiv.innerHTML += '<p>Question 5: Incorrect.</p>';
    }
    // Scroll to the feedback section
    feedbackDiv.scrollToView({ behavior: 'smooth' });
});
});
</script>

```

```

</head>
<body>
<header>
    <h1>Welcome to the Deaf Education Platform</h1>
    <nav>
        <ul>
            <li><a href="first.html">Home</a></li>
            <li><a href="intro.html">Lessons</a></li>
            <li><a href="assessment.html">Assessment</a></li>

        </ul>
    
```

```

</nav>
</header>
<main>
  <section id="lessons">
    <h2>Lessons</h2>
    <section id="intro-sign-language" class="lesson">
      <!-- Your existing content for the "Introduction to Sign Language" lesson -->
    </section>

    <section id="assessment" class="assessment-module">
      <h3>Assessment</h3>
      <p>Test your knowledge of sign language with the following questions:</p>
      <form id="assessment-form">
        <ol>
          <li>
            <p>What is fingerspelling?</p>
            <label for="question1a"><input type="radio" id="question1a"
name="question1" value="a" required> Spelling with fingers</label><br>
            <label for="question1b"><input type="radio" id="question1b"
name="question1" value="b"> Counting numbers</label><br>
            <label for="question1c"><input type="radio" id="question1c"
name="question1" value="c"> Basic greetings</label><br>
            <label for="question1d"><input type="radio" id="question1d"
name="question1" value="d"> Non-verbal communication</label><br>
          </li>
          <li>
            <p>What is the sign for "thank you"?</p>
            
            <label for="question2a"><input type="radio" id="question2a"
name="question2" value="a" required> A</label>
            
            <label for="question2b"><input type="radio" id="question2b"
name="question2" value="b"> B</label><br>
            
            <label for="question2b"><input type="radio" id="question2c"
name="question2" value="b"> C</label>
            

☐ D</label><br>

</li>

<li>

<p>What are non-manual markers?</p>

☐ Facial expressions, body language, and other non-hand movements</label><br>

☐ Handshapes and movements in sign language</label><br>

☐ Numbers and counting systems</label><br>

☐ Common phrases and greetings</label><br>

</li>

<li>

<p>What is the sign for "yes"?</p>



☐ A</label>



☐ B</label><br>



☐ C</label>



☐ D</label><br>

</li>

<li>

<p>What is the sign for "no"?</p>



```

 <label for="question2a"><input type="radio" id="question2a"
name="question2" value="a" required> A</label>

 <label for="question2b"><input type="radio" id="question2b"
name="question2" value="b"> B</label>

 <label for="question2b"><input type="radio" id="question2c"
name="question2" value="b"> C</label>

 <label for="question2b"><input type="radio" id="question2d"
name="question2" value="b"> D</label>

 <button type="submit">Submit</button>
</form>
<div id="assessment-feedback"></div>
</section>
</section>
</main>
<footer>
 <p>© 2024 Deaf Education Platform. All rights reserved.</p>
</footer>
</body>
</html>

```

## REFERENCES

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