

Project Guide: TTS & STT Tools for Accessibility in Education

1. Title

Enhancing Accessibility in Education through Text-to-Speech (TTS) and Speech-to-Text (STT) Tools

2. Problem Statement

Education today must cater to diverse learning needs, including students with visual impairments, dyslexia, motor disabilities, and language barriers. Traditional text-based materials often limit participation and engagement for such learners.

Students with reading and writing challenges may struggle with:

- Accessing complex written content.
- Expressing thoughts through traditional writing.
- Keeping up with lectures or note-taking.

This creates a gap in **equitable access** and **inclusive participation** in classrooms.

3. Proposed Solution

To bridge this gap, the project proposes the integration of **TTS (Text-to-Speech)** and **STT (Speech-to-Text)** tools into classrooms.

- **TTS Tools** will read aloud digital or printed text, enabling students with dyslexia or visual impairments to comprehend learning materials.
- **STT Tools** will allow learners with motor impairments or dysgraphia to dictate their thoughts, converting speech into accurate written text.

Together, these tools create a more **inclusive, accessible, and learner-friendly** environment that ensures every student can actively participate in education.

4. Tools/Technology Used

- **TTS Tools:** NaturalReader, Read&Write (Texthelp), Kurzweil 3000, Speechify, Google Text-to-Speech.
- **STT Tools:** Microsoft Dictate (365), Dragon NaturallySpeaking, Otter.ai, Amberscript, Speechtexter.
- **Platforms:** Windows, macOS, iOS, Android (with built-in accessibility features like VoiceOver, Live Captions, and TalkBack).
- **AI Enhancements:** Canva AI for designing accessible study guides, Voiceitt AI for personalized speech recognition.

5. Step-by-Step Plan

1. **Research & Selection**

- Identify suitable TTS and STT tools for school/college environments.
- Evaluate based on cost, accuracy, and ease of use.
- 2. **Pilot Implementation**
 - Introduce selected tools in one classroom.
 - Train teachers and students to use them effectively.
- 3. **Lesson Integration**
 - Create accessible lesson materials with TTS-enabled reading.
 - Use STT tools for assignments, note-taking, and classroom participation.
- 4. **Monitoring & Feedback**
 - Collect student and teacher feedback on tool effectiveness.
 - Measure improvements in comprehension, engagement, and accessibility.
- 5. **Scaling & Sharing**
 - Expand implementation across more subjects and grade levels.
 - Share best practices with the wider school community.

6. Learning Outcomes

By completing this project, participants will:

- Understand the role of assistive technologies in inclusive education.
- Develop skills in integrating TTS and STT tools for teaching and learning.
- Improve accessibility of lesson materials for students with diverse needs.
- Foster empathy and awareness towards learners with disabilities.
- Align classroom practices with 21st-century digital and inclusive learning goals.

7. Link to Hackathon Theme / SDGs

- **Hackathon Theme: AI & Digital Tools for Inclusive Education** – This project demonstrates practical use of AI-powered speech technologies for accessibility.
- **Relevant Sustainable Development Goals (SDGs):**
 - **SDG 4: Quality Education** – Ensures inclusive and equitable quality education for all.
 - **SDG 10: Reduced Inequalities** – Promotes equal opportunities for learners with disabilities.
 - **SDG 9: Industry, Innovation & Infrastructure** – Leverages innovative technologies to build resilient education systems.

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video link - https://youtu.be/_XxacTxedDI