

TEK Bachelor's Project Proposal

Information about students

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Information about the project

Project's Title: Phonemy

Company Partner

- No

Project Description

This project aims to create a mobile application that helps kids with articulation and phonological disorders to stay motivated to do their at-home practice exercises assigned by their speech therapists. Approximately 6% of all children experience speech and language difficulties [1]. While most of the kids in the target group do not experience any other significant developmental difficulties, if unresolved, these can lead to long-term problems concerning literacy, socialization, behaviour, and school attainment.

Consulting an expert in therapeutic pedagogy has shown to be effective on its own, but applying consistent home exercises. Studies have shown that supplementing speech therapy with serious-game-based home exercises can lead to measurable improvements in children's speech articulation and vocal stability [2].

The field of speech therapy is rather vast, with some exercises varying extensively on a case-by-case basis. This is why we have chosen to focus on articulation exercises in particular. These exercises help kids build the foundational movements needed for correct pronunciation of letters, syllables and words. As such, they are usually the starting point for handling cases of dyslalia.

Problem Formulation

This application's primary challenge is to help children with speech sound disorders (SSD) and to provide parents with alternative ways (e.g. companion app) to assist them at home.

Low retention at home: While voluntary exercises at home are vital for combating SSDs, it "may not reach an adequate level because of physical or mental fatigue or lack of volition [2]."

Role confusion in Parents: Parents often view the Speech therapist/specialist as the "expert" and undervalue their own role. In addition, parents report physical and mental fatigue when they assume such a role (around 53%), discouraging them from applying consistent home practice and exercises [3].

The "Fossilization" Trap and Dosage Deficit: Relying only on speech therapy creates a "Dosage Deficit" where the rate of correction is too slow to outpace the memorizing of the error. This may result in children staying in therapy for longer times and sometimes aging into Residual Speech Errors (RSE) [2].

Project Objectives

The primary objectives of the Phonemy platform are:

- To design and implement a prototype that supports children aged 4-9 with speech sound disorders in practicing articulation and phonological exercises outside of clinical therapy sessions.
- To increase children's motivation and adherence to at-home speech practice by applying gamification elements aligned with structured speech-therapy exercises, such as rewards, progression, and replayable activities.
- To provide structured and repeatable speech exercises that align with common speech therapy practices for articulation and phonological disorders, without attempting to replace professional clinical treatment.
- To incorporate expert-informed design principles by consulting relevant literature and speech therapy guidelines to ensure that exercises and interaction patterns are appropriate for the target group.
- To carry out an end-to-end software engineering process, including requirements analysis, system design, implementation, and evaluation.

References

1. [Speech and language therapy interventions for children with primary speech and language delay or disorder | Cochrane](#)
2. [Effect of Voice and Articulation Parameters of a Home-Based Serious Game for Speech Therapy in Children With Articulation Disorder: Prospective Single-Arm Clinical Trial](#)
3. [Psychosocial Barriers to Completion of Speech Home Exercise Programs | Perspectives of the ASHA Special Interest Groups](#)