Research of SEN and requirements

Scenario context & Introduction

The aim of this project is to develop a mobile application that communicates with the *QTrobot* to enhance the experience of children visiting a dental office. Dental environments can often be stressful for children, particularly for those with Special Educational Needs (SEN). This document outlines the specific requirements of children with SEN and explains how these needs can be integrated into the application to ensure a positive and supportive user experience.

The application will serve as an interface for users to input personal information such as their name, age, and facial data. Through the app, users will be able to interact directly with the *QTrobot* or engage with a virtual version of the robot. The application will also prompt users with simple, friendly questions to gather preliminary information that the dental practice may require before an appointment; for example, questions about toothbrushing frequency or how the user feels about their teeth.

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Mobile device usage & behaviour

How SEN affects device usage

Many sources state that people with special educational needs (SEN) exhibit greater technology use than neurotypical individuals, however the way in which they engage with technology can vary based on the type of need or disability.

Research suggests that people with SEN use technology more because it can prove to be more accessible and individualised way to learn and communicate.

What behaviour should we consider?

Depending on the type of need, it is important to consider that the user may require different support. The application must accommodate the accessibility which can be done by using common assistive technology:

- Larger icons and text
  - Improves readability
  - Improves ease of navigation
- Text to speech tools
  - Supports reading difficulties
  - Supports communication difficulties
- Simplified navigation
  - Reduces cognitive load
  - Intuitive and simple interactions
- Visual supports
  - Images and animations
  - Supports the understanding
  - High contrast for better readability with eyesight problems
- Reduced sensory input
  - Prevents overstimulation

These considerations ensure that the users can engage with the application comfortably. It will enhance the usability of the application and promote positive experiences in an environment that may otherwise prove to be stressful.

Implications

Interface design

The interface design should account for the aforementioned assistive technology and user-friendly design features.

Communication

Things like images, emojis or icons will have to be incorporated into the page design to help convey a meaning, paired with short simple sentences.

It is important to reassure the child about their concerns and feelings.

Sensory

Avoid overly bright colour schemes, opt for calm colour schemes and gentle, smooth animations.

Engagement

Make the robot and the app very calm, friendly and feel familiar. Positive messages and sounds may be useful.

Personalisation

Due to there being diverse needs for SEN users, there should be options for interaction levels and different levels of guidance that may make it simpler in places.

Suggested Features from experts

Speaking to professionals

I spoke to two qualified professionals in the teaching field and they suggested a few features that they would recommend for children to engage better with the robot and the app:

- The option to play a tune or calming song
- Guided breathing and grounding techniques
- Change of voice tone
- Volume adjustment
- Emotion buttons to communicate emotion
- Gamification of questions / minigames to distract child
- Read stories
- Reassurance after listening to child's worries

Information about the professionals

The two people that gave suggestions on these features each have experience in the field and qualifications to back it.

Person 1 – Has a bachelor's degree in Child & Adolescent Mental Health & Wellbeing and has worked in several schools, now working as a SEN teaching assistant.

Person 2 – Has a bachelor's degree in Primary Education (5-11) QTS and currently works as a primary school teacher.

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