Treating Children with Speech Sound Disorders: Development of a Tangible Artefact Prototype

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FIGURE 1

Pyramid with types of users, their role and possible actions within the prototype.

FIGURE 2

Two users during the exploratory test interacting with the artefact.

A prototype of a tangible user interface (TUI) for a fishing game, which is intended to be used by children with Speech Sound Disorders (SSD), speech and language therapists (SLTs), and kindergarten teachers and assistants (KTAs) and parents alike, has been developed and tested.

The aim of this study was to answer the following question: How can TUIs be used as a tool in interventions for children with SSD?

In order to obtain feedback and to ensure that the prototype was being developed according to the needs of the identified target users, an exploratory test was prepared and carried out. During this test, using an ethnographic approach, an observation grid, a semistructured questionnaire, and interviews were used to gather data. A total of 4 different types of stakeholders (sample size of 10) tested the prototype: 2 SLTs, 2 KTAs and 6 children.

The analysis of quantitative and qualitative data revealed that the prototype addresses the existing needs of SLTs and KTAs, and it revealed that 5 out of 6 (83%) children enjoyed the activity. Results also revealed a high replay value, with all children saying they would play more.

Serious games and tangible interaction for learning and problem solving serve SLTs, KTAs and children, as children enjoy playing, and, through a playful approach, learning is facilitated. A clear pattern was observed: Children enjoyed playing, and numerous valid indicators showed that the transposition of the traditional game into the TUI artefact was successful. The game is varied and rich enough to be attractive and fun. There is a clear need and interest in similar objects from SLTs and educators.

The current research phase of the project aims to use TUI at-home, as a form to supplement the post-intervention periods and involves all end users as co-designers.