Supporting Bilingual Children with Developmental Language Disorder Through Gamified Connected Play: A Case Study



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What is DLD and why does it matter?

Developmental Language Disorder

A common neurodevelopmental condition with persistent difficulties in language comprehension and expression.

DLD impacts roughly 1/14 students!

Bishop et al. (2017), CATALISE

DLD often affects…

- **Academic achievement**
- **Social participation**
- **Emotional well-being**

Salient points from the Literature Review

- Developmental Language Disorder (DLD) and bilingual language intervention needs.
- The role of play in child development and therapy.
- Integration of connected technologies in language intervention.
- Gaps in current resources, particularly for Maltese-English bilingual children.
- User-centred design principles in therapeutic tool development.

Background of the Overarching Study

- This study explored how connected technologies can be developed using a user-centred design to enhance bilingual language therapy for children with Developmental Language Disorder (DLD).
- It focused on Olly's Adventures, a board game with a digital companion app, designed to tap into multiple areas of language development for bilingual children aged 5-8.
- The main aim behind this tool was to bridge traditional play-based therapy with interactive digital experiences, increasing engagement and adaptability

Designed with its users



Speech and language pathologists



Engineers



Game developers



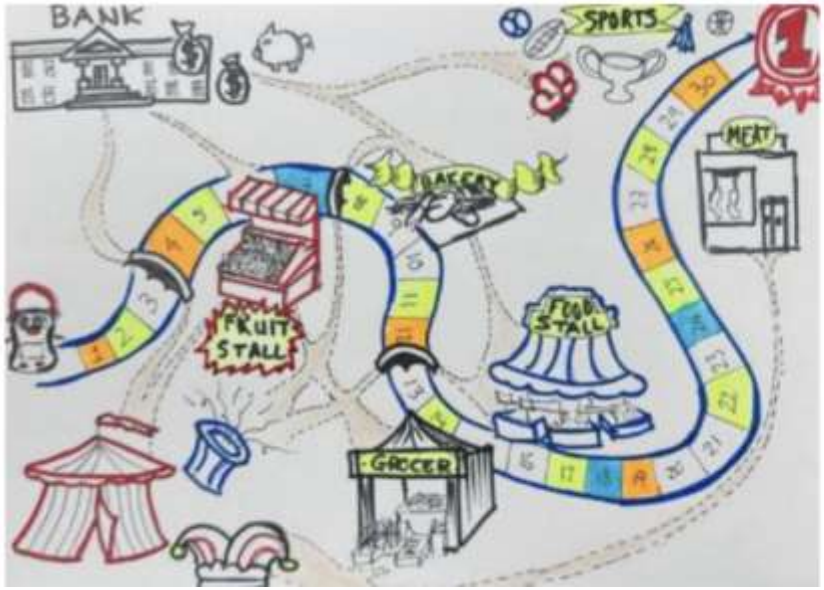
Caregivers and educators

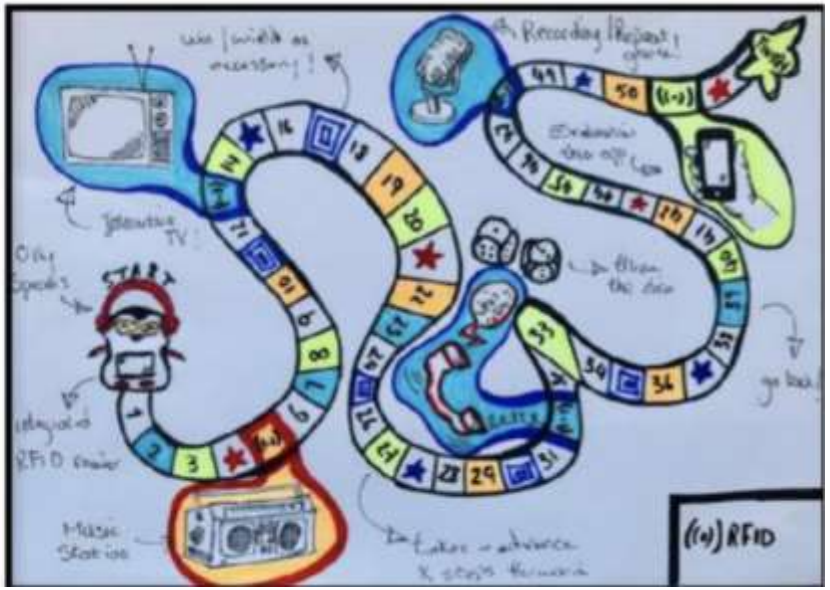


Children

A user-centred, multidisciplinary approach to an engaging phygital tool

Initial Idea





Alpha Prototype



Beta Prototype



Meet Olly's Adventures: The City of Two Languages



Bilingual board game
Maltese-English play

Companion mobile app
The digital side of the game



Players guide their penguins through four locations to the city centre

Language tasks on the cards



Task types

- Categories
- Matching Pairs
- Odd One Out
- Possessive Pronouns
- Describe
- Let's Guess!
- Actions
- Adjectives
- Bonus Points

Each card is bilingual and carries a QR code for the digital side

Targets and participants

Participants

One bilingual 5-year-old Maltese-English speaking child diagnosed with DLD, who used the tool during speech and language therapy sessions with his parent & SLP.

Therapy targets

- Vocabulary development
- Semantic organisation
- Verbal reasoning
- Morphosyntax
- Social communication

RESEARCH QUESTION

To what extent can a gamified connected tool facilitate language elicitation and sustained engagement in a naturalistic therapeutic environment?

How we gathered evidence



Clinical observations
during therapy sessions



Therapist field notes
recorded by the therapist



Gameplay performance
How the child played



Qualitative reflections
on engagement and responsiveness

Focus: Engagement, Participation and Responsiveness to intervention activities

What we found



High motivation

High levels of motivation and active participation throughout the intervention



Turn-taking and collaboration

Physical and digital elements supported collaborative interaction

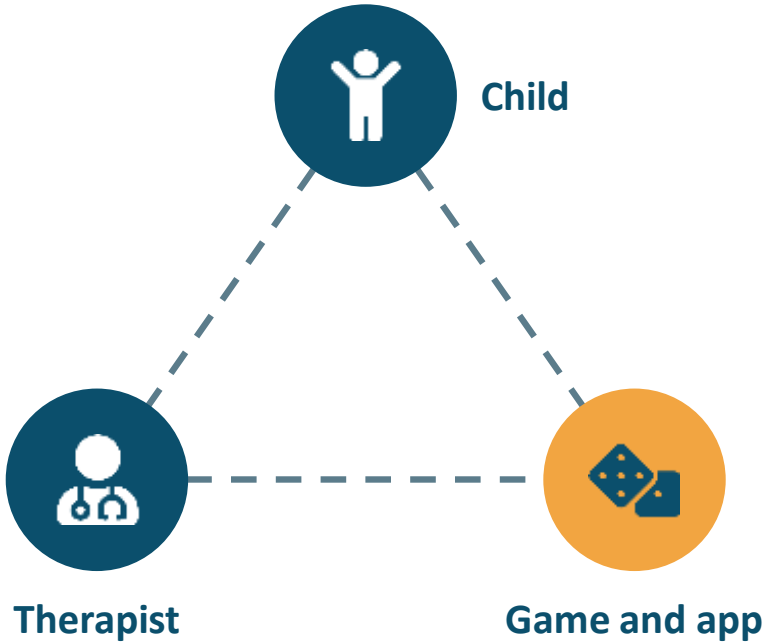


Repeated exposure

Language targets met again and again through play

Observational findings from a single case

Triadic exchanges



The board game format appeared to foster meaningful triadic communicative exchanges

while maintaining the child's interest in the language-learning activities.

Implications and caution



A motivating medium for delivering evidence-based language intervention to bilingual children with DLD



Bridges clinical and educational approaches to language support in multilingual contexts



Preliminary evidence for user-centred connected tools in speech and language therapy

Keep in mind

- Single-case study
- Preliminary evidence
- Needs testing with more children

Take-home messages

1. Gamified play kept a bilingual child with DLD motivated and engaged
2. Physical + digital elements supported turn-taking, collaboration and repeated exposure
3. Designing with all users in mind is a promising approach to developing therapeutic tools!

References [1] Bishop, D. V. M., Snowling, M. J., Thompson, P. A., Greenhalgh, T., & CATALISE Consortium (2017). Phase 2 of CATALISE. Journal of Child Psychology and Psychiatry, 58(10), 1068-1080. [2] Stellini, D., Gatt, D. R., Grech, H., Farrugia, P., & Abela, E. (2025). Designing Gamified Connected Tools for Bilingual Language Therapy and Education. Frontiers in Education, 10.

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