ArabLexify: Elevating Early Dyslexia Diagnosis in Arabic-Speaking Children Ages 6-12 by Utilizing Accessible Digital Screening Tool

Sakr, Mohamed (School: Obour STEM School)

Dyslexia, a neurodevelopmental disorder affecting up to 20% of the global population, presents unique challenges for Arabic speakers due to the language's distinctive properties. The scarcity of Arabic-specific dyslexia screening tools contributes to widespread underdiagnosis, hindering the development of affected individuals. This research aimed to develop ArabLexify, a mobile app providing an accessible, early dyslexia screening tool tailored to Arabic-speaking children's needs. ArabLexify was developed through a meticulous four-phase process. Phase 1 involved a comprehensive literature review and expert consultation. Phase 2 focused on designing a test battery with 7 subtests assessing key skills, calibrated to Arabic language curriculum standards for grades 1-6. In Phase 3, the app was developed and beta-tested with 120 children (60 with dyslexia) aged 6-12. Phase 4 conducted a validation study with 1,200 children aged 6-12 (600 with dyslexia) from diverse backgrounds. Advanced statistical analyses, including Item Response Theory, ROC curves, and logistic regression, established ArabLexify's excellent psychometric properties. The app demonstrated high reliability (Cronbach's a > 0.9), construct validity (confirmatory factor analysis: CFI > 0.95, RMSEA < 0.05), and accuracy (area under the ROC curve > 0.9), confirming its effectiveness in identifying dyslexia risk. ArabLexify represents a groundbreaking advancement in Arabic dyslexia screening, offering a scientifically validated, accessible tool that addresses the unique linguistic challenges faced by Arabic-speaking children. Its integration into educational settings promises early identification, ultimately enhancing the academic and psychosocial outcomes for children with dyslexia in the Arab world.

Awards Won:

Second Award of $2,000

American Psychological Association: Complimentary student affiliate memberships

American Psychological Association: Third Award of $500