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Arabic and Adaptive Assessment with Ai: an Italian Model of Personalized Certification for Foreign Language and Sen Students

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Abstract

The assessment of Arabic as a foreign language in Italy presents structural challenges that undermine equity and institutional recognition. These include heterogeneous learner entry levels, the absence of a shared national assessment framework, and significant barriers for students with Special Educational Needs (SEN), particularly those with dyslexia and dyscalculia. This contribution proposes an innovative model for formative and certifying assessment based on adaptive Artificial Intelligence algorithms, designed to ensure diagnostic accuracy, personalization, and curricular transferability.

At the core of the project is a multilevel adaptive testing system in which AI dynamically generates assessment tasks calibrated to individual learner responses, progressively adjusting task difficulty across vocabulary, morphosyntax, listening comprehension, and writing. The algorithm—integrated with eye-tracking functionalities and fluency indicators—produces interpretive data on learners' ongoing cognitive processes, providing teachers with a detailed profile of error patterns, processing times, and linguistic strategies. The model further incorporates personalized assessment protocols for students with dyslexia and dyscalculia, including reduced symbolic load, enhanced visual supports, assisted segmentation, and extended time allowances.

The research was developed through a co-design methodology involving Italian teachers of Arabic as a foreign language, linguists, and psycho-pedagogical experts. A pilot implementation in upper secondary schools yielded encouraging results, including increased assessment precision, higher motivation among SEN students, and a reduction in cognitive anxiety typically associated with traditional testing practices.

The ultimate objective is to define an Italian certification standard for Arabic that is credible, replicable, and aligned with national curricula, capable of addressing linguistically heterogeneous classrooms while strengthening the institutional status of Arabic within the Italian educational system. The proposed

model represents a pioneering contribution to the dialogue between language education, neuroscience, and advanced educational technologies, opening new perspectives for inclusive and personalized language assessment.

Keywords: Arabic as a Foreign Language; Educational Ai; Adaptive Assessment; Sensld/SLD; Intelligent Testing; Language Certification; Italian Schools; Dyslexia; Dyscalculia; Language Education; Personalization; Assessment Standards.