Developing an Arabic Reading Screening Test for ages 5-9 years

"Arabic Reading Screening Test" (ARST)

A Thesis Submitted for Partial Fulfillment of the Doctoral Degree in Phoniatrics

By

Dina Mohamed Fouad Khaled

M.B., B.CH, M.Sc. (Phoniatrics) Assistant Lecturer of Phoniatrics. Institute of Postgraduate Childhood Studies. Ain Shams University.

Under Supervision of

Prof. Dr. Safaa Refaat El-Sady

Professor of Phoniatrics

Faculty of Medicine, Ain Shams University

Prof. Dr. Samia El-Sayed Bassiouny

Professor of Phoniatrics

Faculty of Medicine, Ain Shams University

Prof. Dr. Ghada Farag El Dorry

Professor of Pediatrics

Institute of Post-graduate Childhood Studies,

Ain Shams University

Prof. Dr. Mona Abdel Fattah Hegazi

Professor of Phoniatrics

Faculty of Medicine, Ain Shams University

Prof. Dr.Nirvana Gamal El Deen Hafez

Professor of Phoniatrics

Faculty of Medicine, Ain Shams University

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بِسْمِ ٱللَّهِ ٱلرَّحْمَـٰنِ ٱلرَّحِيمِ

ٱقْرَأْ بِٱسْمِ رَبِّكَ ٱلَّـذِى خَلَقَ ﴿١﴾ خَلَقَ ٱلْإِنسَـٰنَ مِنْ عَلَقٍ ﴿٢﴾
ٱقْرَأْ وَرَبُّكَ ٱلْأَكْرَمُ ﴿٣﴾ ٱلَّذِى عَلَّمَ بِٱلْقَلَـمِ ﴿٤﴾ عَلَّمَ ٱلْإِنسَـٰنَ مَا
لَـمْ يَعْلَمْ ﴿٥﴾ كَلَّآ إِنَّ ٱلْإِنسَـٰنَ لَيَـطْغَىٰٓ ﴿٦﴾ أَن رَّءَاهُ ٱسْتَغْنَىٰٓ ﴿٧﴾
إِنَّ إِلَـىٰ رَبِّكَ ٱلـرُّجْعَىٰٓ ﴿٨﴾ أَرَءَيْتَ ٱلَّـذِى يَنْهَـىٰ ﴿٩﴾ عَبْدًا إِذَا
صَلَّىٰٓ ﴿١٠﴾ أَرَءَيْتَ إِن كَـانَ عَلَى ٱلْهُدَىٰٓ ﴿١١﴾ أَوْ أَمَرَ بِٱلتَّقْوَىٰٓ ﴿١٢﴾
أَرَءَيْتَ إِن كَـذَّبَ وَتَوَلَّـىٰٓ ﴿١٣﴾ أَلَمْ يَعْلَم بِـأَنَّ ٱللَّهَ يَرَىٰ ﴿١٤﴾ كَلَّا
لَئِن لَّـمْ يَنتَهِ لَنَسْفَعًۢا بِٱلـنَّاصِيَـةِ ﴿١٥﴾ نَاصِيَـةٍ كَـٰذِبَةٍ خَـاطِئَةٍ ﴿١٦﴾
فَـلْيَدْعُ نَـادِيَهُۥ ﴿١٧﴾ سَنَـدْعُ ٱلزَّبَـانِيَـةَ ﴿١٨﴾ كَلَّا لَا تُطِعْهُ وَٱسْجُدْ
وَٱقْتَرِب ۩ ﴿١٩﴾

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Dina Mohamed Kahled

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List of Abbreviations

- ARST: Arabic Reading Screening Test
- PA: Phonological awareness
- FMRI: Functional magnetic resonance imaging
- BOLD: blood-oxygen –level-dependent
- VWFA: Visual word-form area
- DTI: Diffusion tensor imaging
- FA: Fractional anisotropy
- SLF: Superior longitudinal fasiculus
- ABR: Auditory Brainstem response
- DSM IV TR: Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition Revised Text
- PASS: Planning, Attention, Simultaneous, and Successive
- EGRA: Early Grade Reading Assessment Test
- GDRT-2: Gray Diagnostic Reading Tests, 2nd ed.
- GORT-5: Gray Oral Reading Test: Fifth Edition
- PIAT-R: The Peabody Individual Achievement Test-Revised
- EdData II: Education Data for Decision Making
- ORQ: Oral Reading Quotient.
- WRMRT: Woodcock Reading Mastery Revised
- ANOVA: Analysis of variance
- LSD: Least significant difference test: LSD
- RTI: Research Triangle Institute
- KG2: Kindergarten 2

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Introduction

Reading is the gate to other knowledge. No other skill taught in school and learned by school children is more important than reading (**Funnell, 2000).**

Literacy is defined as competence in reading and writing, with full recognition that such competence ordinarily rests upon an extensive experience base in the use of spoken language. Popular conceptions of literacy often include arithmetic competence, or numeracy **(Harris and Hodges, 1995).**

Reading is considered a part of literacy which is using printed information to function in society, to achieve one's goal and to develop one's knowledge and potential **(Kirsch et al., 1993).** Literacy has narrow definitions, broader definitions and extended definitions. An extended definitions, for example, entails the achievement of a broad range of skills embedded in cultural and technological contexts, as a person who can recite religious texts from memory without being able to read them **(Wagner and Torgesen, 1986).**

Broader definition of literacy acquisition as reading acquisition would emphasize comprehension, writing, literature and all literacy activities, while narrow definition refers to learning to read rather than to particular literacy function. It focus on decoding **(Wagner, 1986).**

(Figure (1))

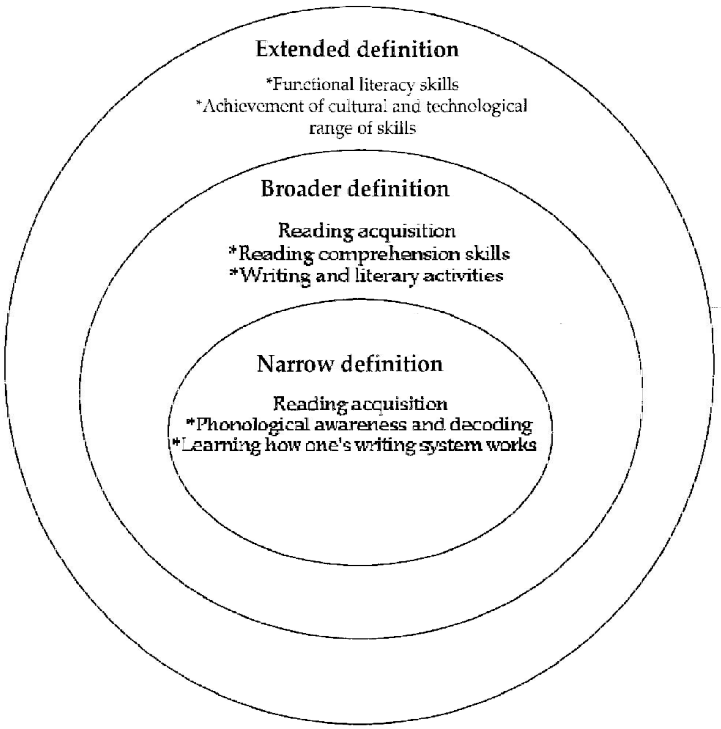

Figure (1) shows graphical representation of the definitions of literacy. The narrow definition is entailed within the broader definitions (Wagner, 1986).

Learning to read is perhaps the most universally recognized outcome of formal education. Before entering school, many young children report that learning to read is what they expect to accomplish when they go to school. Reading fulfills a number of purposes for children and adults, including acquiring knowledge about the world and issues of interest, communicating with others on paper and electronically, and as an enjoyable leisure activity. Children learn to read while adults read to learn. In industrial societies, it is nearly impossible to compete and thrive separate from being able to read and write and perform those skills well **(Wolery, 1999)**

Difficulty of reading is the most common complaint in learning disability children. **Shaywitz (1998)** defined learning disability as a neurobehavioral developmental disorder manifested by significant difficulties in the acquisition and use of efficient reading ('dyslexia'), writing ('dysgraphia') and/ or mathematical ('dyscalculia') abilities despite conventional instruction, intact senses, normal intelligence, proper motivation and adequate sociocultural opportunity.

Dyslexia (or specific reading disability) is the most common and most carefully studied of the learning

disability, affecting 80% of all those identified as learning-disabled. Developmental dyslexia is traditionally defined as a discrepancy between reading ability and intelligence in children receiving adequate reading tuition. Since the definition is entirely behavioral, it leaves open the causes for reading failure. It is now well established that dyslexia is a neurological disorder with a genetic origin **(Ramus, 2003).**

Estimates of prevalence in the United States range from 5 to 10% in clinic while in school-identified samples, it reaches up to 17.5% in unselected population-based samples **(Berninger et al., 2000)**. In some studies, dyslexic boys were found to outnumber dyslexic girls by a ratio of 2:1 to 5:1 **(Katusic et al., 2001).** Other studies showed equal prevalence in both sexes **(Beitchman and Young, 1997 and Berninger et al., 2000).** Children with dyslexia who are undiagnosed or untreated are at high risk for academic underachievement, non-completion of high school or college, social-emotional problems associated with chronic school failure, and underemployment as adults **(Shaywitz et al., 1994)**.

Although reading development is influenced by numerous factors, phonological awareness, phonics (letter-

sound relationship), fluency, vocabulary and text comprehension, scientific and educational research has documented the fact that phonological awareness is the key to the process of learning to read and is a reliable predictor of later reading skill.

The highest level of phonological awareness (PA) is phonemic awareness. Phonemic awareness is the ability to identify and manipulate word at the sound level **(Barker et al., 2014).**

The two best predictors of early reading success are phoneme/grapheme correspondence and phonemic awareness. Phonemic awareness is strongly related to the ability to read an alphabet **(Adams,1990). Holm and Dodd, (1996)** had illustrated that phonemic awareness is dependent on alphabetic literacy acquisition and does not occur spontaneously. Therefore, phonemic awareness is not a natural cognitive achievement and requires explicit experience to develop. While phonological awareness affects early reading ability, the ability to read also increases phonological awareness **(Smith et al., 1995).** Many children with learning disability have deficiencies in their ability to process phonological information. Thus, they do not readily learn how to relate letters of the

alphabet to the sounds of language. For all students, the processes of phonological awareness, including phonemic awareness, must be explicitly taught **(Lyon, 1995).**

Little (1999) classified learning disabilities into three main subtypes:

1- Language-based learning disabilities (90%): include reading, spelling, writing and mathematics problems (when occurring in conjunction with reading).
2- Non-verbal learning disability (10%): This includes a problem with mathematical reasoning. It is due to right hemisphere dysfunction.
3- Learning disability affecting the executive function.

Going in deep insight into language-based learning disabilities

Supple (2000) categorized it into:

(1) Lower order process disorders: including phonological awareness deficits and sound production deficits.