

THE E-BOOK IN THE SERVICE OF “EMERGING LITERACY” AMONG ARABIC-SPEAKING PRESCHOOL CHILDREN

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Abstract

The Arabic language is difficult to Arabic-speaking children, especially when they enter first grade and start acquiring reading skills. They encounter the *diglossia* phenomenon (in which two dialects or usually closely related languages are used by a single language community) and the existing gap between the spoken and the written language. Using quantitative method, this study explores the impact of the *intervention program* through the employment of an e-book on phonology awareness among Arabic-speaking preschoolers. Findings show that following the activities of the e-book, there was significant progress in the phonological awareness among Arab preschool children even though the Arabic language is diglossic and has a complicated handwriting system. Multimedia programs have been found to be having great potential for promoting *emerging literacy* among preschool children.

Introduction

Arabic language belongs to the family of the Semitic languages. Languages in this group, which are commonly used in many countries in Asia and Africa, show a significant degree of similarity in morphology, phonology and their basic lexicons. Arabic is studied as a first language in all the Arab schools in Israel starting at the kindergarten class till 12th grade and at Arab teacher training institutes. Studies in this area found out that reading acquisition in Arabic is based on skills in the spoken/oral language, exposure to standard language, and emerging literacy among children in early childhood in phonological awareness and vocabulary (Saiegh-Haddad, 2008; Abu Rabia, 2003).

However, the Arabic language is difficult to Arabic-speaking children, especially when they enter the first grade and start acquiring reading skills. They encounter the diglossia phenomenon and the gap that exists between the spoken and the written language. In fact, due to the existence of two shades / standards of the same language, there is lexical, morphological and phonic distance between the language shades. Somech (1980) addressed the diglossia of the Arab world and stated that it has two language worlds: the elite, educated, and highly civilized world, which is expressed through literary Arabic, and the common daily, oral world, which is expressed through spoken Arabic. The data collected on the

reading level in the country in recent years (Ministry of Education, 2006) pointed out a disturbing level of achievement among Arabic-speaking pupils compared to Hebrew-speaking ones. Saiegh-Haddad (2004, 2008) found out that diglossia in Arabic explains the low reading achievement of pupils in the Arab sector. In contrast, Eviatar and Ibrahim (2001) concluded that early exposure to the two forms of language could improve phonological awareness skills.

Emerging Literacy Development in Early Childhood

The term *emerging literacy* refers to the abilities developed in young children that are the foundation for the formal acquisition of reading and writing at schools (Levine et al., 2002). Emerging literacy appears at a very early age and it constitutes the initial step that young children make in their attempt to understand the world of writing, before the beginning of formal learning to read and write (Clay, 1966). Children at age two and a half are able to identify their names in writing and at age three, they are able to distinguish between shapes of writing and other graphic shapes. Later, children learn how to look through a book and follow with their finger during reading a text (Levine et al., 2002)

Language literacy education means awareness of the written language, fostering the child's natural curiosity about it and increasing the space of his/her interest. During early childhood, emerging literacy is defined as a process of growth, which is a function of age development and a supportive and stimulating environment (Korat, Baker, & Snifer, 2003) that provides opportunities to engage in literacy (Vygotsky, 1978). Levine et al. (2002) found out that children who show rich literacy information in kindergarten generally achieve high results in reading and writing acquisition at the beginning of primary school education and in reading comprehension at later grades.

Development of Phonological Awareness in Arabic

Learning to read in Arabic is based on a unique social context called *diglossia*. One of the essential linguistic features of diglossia is considerable linguistic distance between the spoken language of children, which is acquired as a mother tongue, and standard Arabic, which is represented in writing and is acquired mainly in formal teaching of reading.

The orthography of the Arabic language has its own unique characteristics. The direction of Arabic writing is from right to left. The Arabic language has 29 letters, which have 119 forms. Each letter has three or four forms: at the beginning of the word, in the middle of the word, at the end of the word, connected or not connected (Abu-Rabia & Taha, 2006). This aspect of *initial*, *medial*, and *terminal* positions constitute a triple challenge of writing the same letter accurately in all its forms and wherever it occurs.

The Arabic characters (letters) are similar in their shapes, and what makes them different is the number of diacritic marks / dots. Some letters have one, two or three dots above the characters or under them, e.g.: ن, ث, ب, ت (Azaiza, 2000).

The Arabic orthography includes a system that consists of three short vowel marks (**ḥarakāt** (حركات)); two marks / vowels that are written over the character; one mark that is written under the letter; and three long marks (vowels) *alef*, *waw*, *ya'* (أ / و / ي). This system of marks / vowels includes other marks such as: *sukun* (مْ), *shadda* (ّ), *tanween* (مّ / م / ممّ). The Arabic orthography is also characterized by being punctuated / vocalized and non-punctuated / non-vocalized. Non-vocalized writing caused a homographic problem (Abu Rabia & Taha, 2006), which is reflected in words that have different meanings though they are written in the same way and with the same characters. They look identical because they consist of the same letters but they have different pronunciation. For example, the words (علم / alam) which means (flag) and (علم / 'ilm), which means (knowledge / science) represent this aspect. This phenomenon makes reading texts in Arabic a difficult task even for experienced readers (Abu Rabia & Siegel, 1995).

Each character (letter) in Arabic has two names: spoken and standard. The spoken is common in the spoken language, and the standard is common in the standard language. For example, the letter (M / م) is called (**mim**) in the written language and (**im**) in the spoken language / dialect. These facts about Arabic imply that acquisition of Arabic characters / letters requires a special attention and suitable didactic approach. This phenomenon is common throughout the Arabic speaking world (Abu Rabia & Siegel, 1995).

Saiegh-Haddad's studies (2003, 2004) show that the phonological distance between the children's spoken and standard Arabic does not support the acquisition of basic reading processes in Arabic, and presents a difficult challenge for the child who is acquiring basic reading processes. The gap between the two languages is reflected in the morphological, phonological, semantic and syntactic levels. According to various researchers (Ayari, 1996; Abu Rabia, 2000), the two forms of Arabic, spoken and written, can be treated as separate languages that are used in different contexts. Arab children encounter literary Arabic in the first grade of primary school almost as a second language.

One of the central literacy activities that introduce children to the world of language is the child's reading of a book together with adult. Consistent and systematic reading of stories from early childhood contributes considerably to the development of the child, from the social, emotional and the cognitive aspects. Reading stories to children enables them to be exposed to the way of writing the language and its orthography, develops their phonological awareness and develops their future reading ability (Bus, van Ljzendoorn, & Pellegrini, 1995).

The E-book in Language Learning

With the development of information-communication-technologies (ICT) new media have been created to expose the children to digital and e-book software. The e-book is considered to be one of the most important literal experiences that expose the child to the world of writing from an early age (Snow & Ninio, 1986). Usually, the e-book includes a reading of story while highlighting the text,

animation and interactive games, and it has potential to be a multi-sensory intervention, innovative, and has fun for early literacy development (Shamir & Korat, 2007). The reader reads the narrative text. In some stories there is a possibility of using a dictionary, games and animations that are related to the story. Besides, there are some activities that reinforce the child's understanding of the story (Shamir & Korat, 2007). The integrated representation of the visual channel and the audio channel raise the level of exposure to the relations of sound-character that largely affect the development of skills of phonological awareness (Leitner, 1997).

Findings of previous studies regarding the efficiency of the e-book are not uniform. Some of them point out the efficiency of developing *literary emergence* (Shamir & Korat, 2007). Others point out that the e-book diverts the child's attention from the main point of the text and its structure (De Jong & Bus, 2003). According to De Jong & Bus, (2003), the e-book should include a variety of media possibilities and choices. On the other hand, there should be adequacy between these media possibilities and choices and the contents of the book. In addition, it should constitute a supportive source in developing the spoken language and the awareness of the written one. Several studies have found that a certain improvement takes place in the level of literacy emergence and growth in general and the phonological awareness in particular among kindergarten pupils after their use of the e-book (Chera & Wood, 2003; Korat & Shamir, 2008; Korat, 2009, 2010; Wood, Pillinger, & Jackson, 2010).

This study focuses on the impact of the intervention program through the employment of an e-book on phonology awareness among Arabic-speaking preschoolers. The study examines the influence of the different channels of the e-book on the phonological awareness of Arabic-speaking children in compulsory kindergarten classes. The first channel is the reading-channel, where the story is read. The children listen to the contents of the story and become familiar with the vocabulary that is used in the second channel / the game-channel as much as possible. The second channel is aimed to develop the pupils' phonological awareness of the sounds of the language through the use of the words that appear in the story.

The main objective of the study is to investigate whether the use of ICT among Arabic-speaking preschoolers can contribute to the development of the emerging literacy in phonological awareness, and to assist them in acquiring reading skills. Results of the study and its conclusions may benefit both, preschool teachers and young children. Preschool teachers are exposed to new ways of teaching literacy in the digital world through the use of e-books, and young children learn by combining aspects of amusement and pleasure.

Hypotheses

Various researchers (Wood, 2005; Korat & Shamir, 2008; Chera & Wood, 2003) agree that exposure to environmental stimulations such as books, computerized

environment, and hearing stories at pre-school through various means of provision has an effect on the achievements of emerging literacy in general and phonological awareness in particular. Therefore, the main question of the study is:

To what extent can the intervention program through the use of an *e-book* improve the achievements of Arabic-speaking preschoolers in phonological awareness?

This question was tested with reference to four expectations/hypotheses:

1. There will be no significant differences between the achievements of children in both groups-- experimental-group and control-group-- in the preliminary test that examines the level of phonological awareness.
2. Significant differences will be found in the achievement levels of children in the control-group and the experimental-group children in the test that examines phonological awareness at the end of the intervention. Children in the experimental-group will demonstrate higher levels of knowledge in phonological awareness than children in the control-group.
3. Significant differences will be found in phonological awareness among children of the experimental-group before and after the intervention.
4. There will be no significant differences in phonological awareness among children from the control-group before and after intervention.

Methodology

A quantitative approach was taken in the present study in order to test the research hypotheses. Examination of the relationship between the variables of the study contributed to the discussion of the processes that develop through the intervention program and their effects on the topics of the study. It also contributed to the discussion about challenges in addressing development and prediction of future behavior of Arabic-speaking children, when they enter the first grade and start acquiring reading skills (Bernbaum, 1993).

Sample. The sample included 66 preschool Arabic-speaking children aged 5-6 years: 38 boys and 28 girls, being taught in two kindergartens. The children are of normal intelligence and healthy with no problems with language and speech, physical and developmental problems, or mental problems. They grow up in families with a socio-economic level that ranges from moderate to low. The children were divided into two groups, where each group consisted of 33 children:

1. The experimental-group, where the intervention program was implemented. It was composed of 18 boys and 15 girls.
2. The control-group, where the children are taught according to the standard program. It was composed of 20 boys and 13 girls.

The sample is one of convenience (Zamir & Beit-Marom, 2005). Due to constraints of ethical procedures we chose available preschools that were available to the researchers at the right time and right place. While this sample is not representative of the entire population, it allows us to obtain basic data and

trends regarding this study without the constraints and complications of using random sample.

Instrument. The pupils' phonological awareness was tested before and after the intervention by the use of an *achievement test* from the field of phonological awareness. The test consists of nine parts: identification of rhymes; segmentation into syllables; blending of syllables; omission of syllables (first and last syllable); blending of combinations of consonants and vowels; blending of phonemes; identification of opening sounds and closing sounds. The test was taken from a booklet for developing phonological awareness in Arabic for early education pupils (Amer, 2003).

The E-book. The e-book used in the intervention is organized and based on the one developed for phonological awareness research by Shamir and Korat (2007). The e-book was suited to the population of the research. A well-known short story much loved by Arab children was chosen. The title of the story is "Father's Big Umbrella," and the story is written in a special rhyming scheme that allows the development of the phonological field among kindergarten pupils. The book consists of two channels:

1. The Channel of "Read-Story." This channel is built up in a way that makes the pupil listen to the contents of the story and become familiar as much as possible with words that are used in the Game-Channel. The child operates the channel by clicking on the sentence "Read the Story." Immediately, the reader starts reading the story accompanied by animations and sounds.
2. The Channel of "Play with the Words of the Story." The goal of this channel is to develop the children's phonological awareness and acquainting and familiarizing them with the sounds of words in the language through the use of words that have appeared in the story. The child operates the channel by clicking on the sentence "Play with the Words of the Story." Immediately, a page is opened that includes nine games that are related to phonological awareness including: amusing rhymes, guess which sound opens the word, and others. When the child clicks on the name of the game, she/he enters the game and starts playing with the words of the story.

Procedure. The study was conducted in six main stages. These included: (a) choosing a suitable test for the study in the field of phonological awareness; (b) conducting a pre-test on phonological awareness in two kindergartens; (c) activating the *intervention program* by the use of an e-book in the *experiment-kindergarten*, and activating the *regular program* in the *control-kindergarten*; (d) conducting a post-test on phonological awareness in the two kindergartens; (e) organizing and analyzing of the data that are collected in the pre-test and post-test; (f) checking to what extent the intervention program has improved phonological awareness of the children participating.

In order to compare between the achievements of the two research groups, we used the *t-tests* in two independent samples.

Findings and Discussion

The findings of the study are introduced here with reference to the objectives and hypotheses of the study. The objective of the study is the investigation of the contribution of the intervention program through the use of an e-book to the development of phonological awareness in Arabic among Arabic-speaking preschool children. The program focuses on the development of skills in the field of phonological awareness, which are significant to the process of reading and writing acquisition on the children's entrance to the elementary school (Chera & Wood, 2003; McBride-Chang, 2004; Korat, & Shamir, 2008).

The main question and the hypotheses of the study stem from the review of literature and the exploration of previous studies within the context of the topic of this study. These studies found that kindergarten children who practice activities that are related to phonological awareness through the use of a computer program showed improvement in this area (Leitner, 1997; Mioduser, Tur-Kaspa, & Leitner, 2000; Segers & Verhoeven, 2000). Studies that specifically deal with studying the degree of influence of electronic books on phonological awareness reached similar conclusions (Korat & Shamir, 2004; Wood, et al., 2010). Other studies showed that there is significant contribution of the intervention program in the kindergarten age to the development of linguistic literacy in general among Arabic-speaking kindergarten children (Hendi, 2006).

The findings show that the children who belong to the two groups of the study have a similar level of phonological awareness at the beginning of the experiment (hypothesis 1). In the pre-test of phonological awareness, no significant differences were found out between the children's achievements in the experimental-group and the children's achievements in the control-group. In a part of the dimensions that decide the level of phonological awareness, the children in the control-group achieved higher scores. However, because the differences that were found were not clear, they had no statistical significance. In the test that checked the phonological awareness after the intervention, i.e., the use of the e-book, there were clear differences between the achievements of the children in the experimental-group and the achievements of the children in the control-group in the four dimensions of phonological awareness: rhyming, opening vowel sounds, blending of combinations and blending of phonemes (hypothesis 2). There was improvement in the level of phonological awareness of the children in the experimental-group and their achievements were higher than the achievements of the children of the control-group ($t=-3.229, p<0.01, \bar{x}=121.39$). This finding is compatible with the findings of previous studies that found positive correlation between the use of e-books and the improvement of phonological skills (Chera & Wood, 2003; Wood, 2005; Korat & Shamir, 2008; Korat, 2010; Wood et al., 2010).

As a result of using the e-book, there was a significant improvement in the final general grade of the children of the experimental-group in phonological awareness ($t=-4.636, p<0.001, \bar{x}=121.39$). The findings indicated significant differences in the achievements of the children of the experimental-group in all the dimensions of the phonological awareness (hypothesis 3). The most significant improvement took place in the dimension of blending of phonemes ($t=-7.043, p<0.001, \bar{x}=10.97$), blending of combinations ($t=-4.041, p<0.001, \bar{x}=12.36$), and closing vowel sound ($t=-3.313, p<0.01, \bar{x}=16.82$). All the children showed difficulty in blending phonemes in order to create a complete word. It was easier for them to create a word from syllables, and after that from combinations, and finally from phonemes. This finding is compatible with the conclusion of McBride-Chang (2004), which argues that phonological awareness develops among every child in a gradual manner, from the easy to the difficult, in accordance with the development and the ability of each and every child. The average grade of the achievement test in phonological awareness of the experimental-group rose from 99 in the pre-test to 121 in the post-test.

In parallel, there were differences, but not so significant, in the phonological awareness among the children of the control-group (hypothesis 4). Teaching according to the regular teaching program of kindergartens improved the average grades of the children in specific dimensions such as: rhyming, separating syllables, closing vowel sounds, blending segments, and blending phonemes. The general average grade of the control group rose from 102 in the pre-test to 109 in the post-test.

It is possible to attribute this to the fact that the e-book included sound effects and audio narrative that belong to words that appeared in the story. It could also be attributed to the fact that the story included a large number of pairs of rhyming words, training in separating and analyzing words, identification of opening sounds and closing sounds, playing the game of blending syllables and omission of syllables and phonemes. For example, in the dimension of dividing words into syllables, it was found out that the grades before the intervention were higher among the children of the control-group. Most of the children in the two groups found difficulty in dividing words that consist of one syllable like: “كلب/kalb” (dog) and “شمس/shams” (sun). Most of them divided the words into two syllables like: “ka lib” (dog) and “sha mis” (sun). This is related to the phenomenon of diglossia, or in other words: the influence of the phonological differences between the spoken language and the written one. These differences pose a difficult challenge to the child who is acquiring reading skill (Saiegh-Haddad, 2003).

Training in decomposing and dividing words, which was performed as a part of the activities of the e-book, led to significant change among the children of the experimental-group. This is because the children played with the words that the reader read to them in the literary language and due to the fact that there is a difference between spoken syllable structure (CVCVC) and written syllable structure (CVCC) (Saiegh-Haddad, 2003). Through play, the children could

explore the differences between the structures of the words read to them in literary language. They were able to discover for themselves the difference between the structure of the spoken syllable and the written syllable. The findings of the current study are consistent with the findings of previous studies, whose authors have argued that the use of the intervention programs based on e-books contribute more effectively than traditional teaching methods towards raising phonological awareness levels among children (Chera & Wood, 2003; Shamiar & Korat, 2008; Korat, 2009). The activities provided in the e-book, specifically the use of the Game-Channel, contribute to the increased phonological awareness and ability to distinguish between the structures of literary and spoken language among kindergarten children.

Summary

The current study was designed to examine the contribution of an intervention program through the use of a digital educational tool “the e-book” aimed at enriching the emerging literacy of children and specifically to promote phonological awareness in the Arabic language amongst Arabic-speaking preschool children. The e-book was designed to make the reading process easier upon entering the first grade.

Using data from previous studies of similar issues in other languages, the proposed model on which the current study is based assumed that the populations of children who had undergone similar intervention programs where e-books were used displayed an improvement in literacy skills and phonological awareness. A quantitative approach was taken in the present study in order to test the research hypotheses. The research included sixty-six kindergarten children, all of whom were attending one of two Arabic kindergartens in Northern Israel. The children were divided into two groups: an experimental group and a control group.

The research hypotheses were confirmed, and the data show a major contribution of the intervention program to the improvement of the phonological awareness of Arab preschool children, even though the Arabic language is a diglossic language and has a complicated handwriting system. In both research groups, phonological awareness improved due to the formal learning process. However, the children in the experimental group exhibited a more significant change. The findings indicate the great potential which is embodied in multimedia programs designed to advance the emerging literacy among young children. The joint representation of e-book content, which directly addresses the visual and auditory channels, enhances the exposure level of the child to the connection between the letter and the sound that represents it. This, in turn, greatly influences the development of grammatical expertise in general, and the phonological awareness in particular.

Finally, we can argue that the influence of human contact in education, studying, following up, and development of thinking and language skills, should not be ignored. An efficient integration of technology affordances and the human factor

in education should be addressed in the design of blended learning programs as the same as this study has done with the e-book.

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Children's experiences with books and print greatly influence their ability to comprehend what they read.⁹ Reading with adults, looking at books independently, and sharing reading experiences with peers are some of the ways that children experience books. Supporting evidence. Some children enter preschool having had the advantage of an abundance of experiences with books and other written materials, visiting interesting places, engaging in creative problem-solving and play, and participating in thought-provoking conversations and activities that serve to expand their general knowledge and intellectual development. Measuring children's early literacy development is an important part of a comprehensive early childhood program. Children read and reread the book because it's fun and rewarding. They can recall some of the words the teacher reads aloud and figure out others because they remember the sequence and meaning of the story. Read some words. Early Intervention Is Critical Emergent literacy instruction is most beneficial when it begins early in the preschool period because these difficulties are persistent and often affect children's further language and literacy learning throughout the school years. Promoting literacy development, however, is not confined to young children.