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Promoting phonological awareness skills of Egyptian kindergarteners through dialogic reading

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The present study examines the effect of dialogic reading (DR) on the promotion of Arabic phonological awareness skills (including syllable awareness, rhyme awareness, and phoneme awareness) of Egyptian kindergarteners. The participants were 67 children enrolled in the second level of kindergarten (ages 5–6), assigned to an experimental group ($n = 35$) or a control group ($n = 32$). *Kindergarten Inventory of Phonological Awareness* was developed by the author in the light of relevant previous studies. Pre-tests and post-tests were administered to the participants in the two groups. In between the two tests, the experimental group engaged in DR activities designed to improve their phonological awareness skills, using an alphabet storybook, designed and developed by the author, presented to the whole class via PowerPoint, while the control group participated in regular classroom activities. The findings suggest that children in the experimental group had higher phonological awareness levels in the post-tests than those in the control group. The specific design of the DR activities may be responsible for these changes.

Keywords: phonological awareness; dialogic reading; Egyptian kindergarteners

Introduction

Promoting the awareness of language sounds or phonological awareness is one of the goals of Arabic language arts curriculum according to the *National Standards Document for Kindergarten in Egypt* (Ministry of Education, 2008). However, there has been little attention paid to include phonological awareness of Arabic language in literacy activities. There is a lack of information on how to plan and implement activities using interactive techniques of shared reading, such as dialogic reading (DR), that could help promote children's phonological awareness skills. The review of Egyptian studies that have examined promoting phonological awareness of kindergarteners (Farahat, 2011; Labib, 2010; Osman, 2009) and that have examined the effects of specific book-reading techniques on their learning (Abdel Kareem, 2004; Abou-Elyazeed, 2003) shows a lack of Egyptian research into teaching Arabic phonological awareness using DR. In addition, studies that have examined the effect of interactive shared reading or DR on the promotion of phonological awareness in preschool and kindergarten classrooms have been carried out in western countries with native speakers of western languages. None of these previous studies have used alphabet storybooks

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(a combination of children's storybooks and alphabet books) as reading materials that may represent valuable DR materials for promoting phonological awareness, by providing meaningful stories that elicit talk about letters and sounds and allowing the use of sound-focused prompts during the reading of storybooks. Presenting these reading materials via PowerPoint has many features to facilitate promoting phonological awareness skills of young children (Parette, Hourcade, Boeckmann, & Blum, 2008). Therefore, the purpose of the present study was to examine the possibility of promoting Arabic phonological awareness through DR techniques embedded in whole-class literacy activities for kindergarten children, using an alphabet storybook as the reading material presented via PowerPoint. This type of teaching could help Egyptian kindergarten teachers overcome the problem of the large number of children in kindergarten classrooms, allow the whole-class interactions, and extend children participation.

Phonological awareness

Phonological awareness refers to 'the ability to detect or manipulate the sound structure of oral language' (Lonigan, 2006, p. 78). The general sequence of phonological awareness development, as identified by the research findings (Anthony & Francis, 2005; Anthony, Lonigan, Driscoll, Phillips, & Burgess, 2003), emphasised that, first, children can detect or manipulate syllables before they can detect or manipulate onsets and rimes (rhymes) and they can detect or manipulate onsets and rimes before they can detect or manipulate individual phonemes. Second, children can detect similar-sounding and dissimilar-sounding words before they can manipulate sounds within words, and children can generally blend phonological information before they can segment phonological information of the same linguistic complexity. Finally, children refine phonological awareness skills that they have already acquired while they are learning new phonological awareness skills.

The research findings emphasised the relationship between young children's phonological awareness and success in reading and spelling (Cardoso-Martins, Mesquita, & Ehri, 2011; Catts & Little, 2005; Chow, McBride-Chang, & Burgess, 2005; Giambo & Mckinney, 2004; Kim, Petscher, Foorman, & Zhou, 2010; Sliva & Martins, 2003). The research findings also emphasised the value of children's level of phonological awareness at the end of kindergarten as one of the strongest predictors of future reading success in the early grades (Hogan, Catts, & Little, 2005; Kjeldsen, Niemib, & Olofsson, 2003; Poe, Burchinal, & Roberts, 2004; Roth, Speece, & Cooper, 2002).

The National Standards Document for Kindergarten in Egypt has identified phonological awareness indicators in learning outcomes and curriculum content domains emphasising three types of phonological awareness skills including syllable awareness, rhyme awareness, and phoneme awareness (Table 1) (Ministry of Education, 2008).

Dialogic reading

DR is an interactive shared-reading technique developed in the late 1980s by Whitehurst and colleagues (Whitehurst et al., 1988). There are three key principles guiding the DR, including (a) encouraging the child to participate by using prompts, (b) providing feedback to the child, and (c) adapting the reading style of the adult to the child's linguistic abilities (Whitehurst et al., 1988, 1994). DR techniques are represented by

Table 1. Phonological awareness indicators in learning outcomes and curriculum content domains in the national standards document for kindergarten in Egypt.

Basic domain	Subset domain	Standards	Phonological awareness indicators
Learning outcomes	Domain 4: language and communication	The growth of child readiness to learn language arts (listening, speaking, reading, and writing)	Demonstrate awareness of language sounds
Curriculum content	Arabic language arts domain 2: oral communication	Standard 1: the awareness of language sounds and pronunciation	Distinguish letter sounds in words that contain three sounds such as كلب (dog), قلم (pen), جرس (bell) *(phoneme awareness)* Determine syllables in two-syllable words, such as بابا (dad), ماما (mom), باب (door), شباك (window), and in three-syllable words, such as صابونة (soap), ليمونة (lemon) *(syllable awareness)* Distinguish letter sounds that have similar exits such as (د، ض), (ت، ط), (ث، س، ص) *(phoneme awareness)* Recognise rhyming words; words with similar endings such as قطة (cat) – بطة (duck), فأس (axe) – كأس (cup) *(rhyme awareness)*

two acronyms CROWD and PEER. CROWD refers to the five types of prompts or questions asked by adults when engaging in DR with young children, including (a) Completion prompts including fill-in-the-blank questions, (b) Recall prompts including questions that require the child to remember aspects of the book, (c) Open-ended prompts including statements that encourage the child to respond to the book in his or her own words, (d) Wh-prompts including what, where, and why questions, and (e) Distancing prompts including questions that require the child to relate the content of the book to aspects of life outside of the book. PEER refers to the following: (a) Prompt the child to label the objects in the book and talk about the story, (b) Evaluate the child's responses, (c) Expand the child's verbalisation by repeating what the child has said and adding information to it, and (d) encourage the child to Repeat the expanded utterances (Zevenbergen & Whitehurst, 2003). Vygotsky's concept of zone of proximal development (ZPD) helps explain why DR is such an effective technique; Vygotsky believed that children learn best when adults (or more skilled peers) expose them to ideas that are just a bit beyond where they are in their own development; therefore, when an adult is successful at keeping the dialogue and questioning during

DR within the child's ZPD, the interactions build upon the child's existing skills and move the child to the next level of understanding (Levine & Munsch, 2011).

DR is one of the most important shared-reading techniques for teaching language in early childhood. The International Reading Association and the National Association for the Education of Young Children (1998) emphasised, in their joint position statement on early literacy, the value of providing children generous access to storybooks and engaging them in high-quality interactive reading. The developing early literacy report of the National Early Literacy Panel (2008) emphasised that shared-reading interventions with an interactive reading component such as DR produced larger effects on children's oral language outcomes than non-interactive interventions. The research findings emphasised that using DR in preschool and kindergarten classrooms has significant positive effects on several aspects of children's language learning, such as meaning construction (Gregory & Cahill, 2011), narrative skills (Lever & Sénéchal, 2011; Zevenbergen, Whitehurst, & Zevenbergen, 2003), oral language and print knowledge (Mol, Bus, & de Jong, 2009), and expressive and receptive vocabulary (Hargrave & Senechal, 2000; Mincic, 2009; Mol et al., 2009; Opel, Ameer, & Aboud, 2009; Udaka, 2009; Wasik & Bond, 2001).

DR, as an interactive shared-reading technique, can play a role in promoting phonological awareness skills of kindergarten children (Gill, 2006; Trehearne, 2003). Storybooks are one of the most valuable DR materials for promoting phonological awareness of young children. They have at least two advantages: first, they will make the phonological awareness activities more meaningful and connect them more clearly to the print. Second, they will motivate children and teachers, resulting in increased levels of practice (Allor & McCathren, 2003). The research findings emphasised the positive effects of interactive shared-reading techniques on children's phonological awareness in preschool and kindergarten classrooms, using storybooks as reading materials. Lefebvre, Trudeau, and Sutton (2011) examined the effect of shared storybook-reading (SSR) intervention using DR strategies on phonological awareness skills (including rhyme judgement, initial consonant comparison, syllable segmentation, and syllable deletion) of low-income French-speaking preschoolers. The result showed that the experimental group outperformed the control group on phonological awareness scores. Ziolkowski and Goldstein (2008) examined the efficacy of an explicit English phonological awareness intervention embedded within repeated SSR with preschool children from low-income backgrounds with language delays. The result showed that the intervention improved children's rhyme awareness (rhyme production and rhyme identification) and enhanced children's alliteration and initial sound fluency skills. Ukrainetz, Cooney, Dyer, Kysar, and Harris (2000) examined teaching English phonemic awareness by embedding sound talk within meaningful small group literacy experiences of SSR and writing for five-year-old and six-year-old children. The results showed that treatment-specific improvement was evident in three phonemic awareness skills: first sound identification, last sound identification, and sound segmentation.

Alphabet books are another valuable DR material that can help in promoting phonological awareness of young children. Alphabet book represents the reading material that enables 'teachers and children talk about sounds, in addition to letters, as they look at and read it' (Yopp & Yopp, 2009, p. 71). Cardoso-Martins et al. (2011) suggested that preschool children benefit from letter name knowledge and phonological awareness in learning letter–sound relations. Piasta, Purpura, and Wagner (2010) suggested that the instructional approach that combined letter name and sound instruction helps promote letter sound acquisition of preschool children.

Therefore, the combination of storybooks and alphabet books in alphabet storybook form may represent another valuable DR material for promoting phonological awareness, by providing meaningful stories that elicit talk about letters and sounds and allowing the use of sound-focused prompts during the reading of storybooks. Presenting such reading materials via PowerPoint may provide more prompting for phonological awareness skills. 'PowerPoint has many features to facilitate the acquisition of these skills, including the ability of the teacher to modify features such as (a) colour, (b) pictures, (c) sounds, (d) animation, (e) slide design, and (f) slide transition' (Parette et al., 2008, p. 234).

Hypothesis

The purpose of the present study was to examine the effect of DR on the promotion of Arabic phonological awareness skills of kindergarteners. The author hypothesised that DR would increase phonological awareness skills of kindergarten children. As applied to this study, the independent variable, DR activities, would positively influence the dependent variable, phonological awareness. Specifically, the author expected that children who engage in DR activities would improve in their phonological awareness skills.

Method

Participants

The participants were 67 five-year-olds and six-year-olds, enrolled in the second level of kindergarten (KG2), in two private elementary schools, in Ismailia city. Two KG2 classrooms, one classroom in each school, represented the control and experimental groups of this study. The control group of this study included 32 children. On average, the children were 65.34 months of age (SD = 1.43), with an age range from 64.12 to 69.15 months. The experimental group of this study included 35 children. On average, the children were 65.86 months of age (SD = 1.76), with an age range from 64.15 to 70.22 months. The equivalence between the participants of the two groups, in age, level of intelligence, and socioeconomic status, was verified statistically using t-test for independent samples, via SPSS (version 12.0 for Windows).

Measures

Kindergarten inventory of phonological awareness

The author developed an Arabic phonological awareness inventory in the light of relevant previous studies. It was an individually administered inventory that included 54 practice items classified into nine groups or items, with each group having six items. Groups 1 and 2 assessed syllable awareness skills, groups 3 and 4 assessed rhyme awareness skills, and groups 5–9 assessed phoneme awareness. The nine groups of practice items included the following: (1) syllable-blending items; the children were verbally presented with six words, each word was broken into parts, and were asked to put the parts of each word together and say the whole word; (2) syllable segmentation items; the children were verbally presented with six words and were asked to break each word into parts; (3) rhyme identification/recognising items; the children were presented with six pairs of pictures named by the examiner and were asked to tell if any two words sound alike or not; (4) rhyme production items; the children were verbally presented

with six words and were asked to tell a word with a sound similar to that of each presented word (the answers may be real or nonsense words); (5) phoneme identification items; the children were verbally presented with six groups of three words and were asked to tell the sound that is the same in each of the three words; (6) phoneme isolation (initial) items; the children were presented with six pictures named by the examiner and were asked to tell the sound that they heard at the beginning of each word; (7) phoneme isolation (final) items; in each item, the children were presented with a picture named by the examiner and were asked to tell the sound that they heard at the end of the word; (8) phoneme-blending items; in each item, the children were verbally presented with six words, each word was spoken as separate phonemes, and were asked to identify the word; and (9) phoneme-segmenting items; the children were presented with six pictures named by the examiner and were asked to tell the sounds that they heard in each word. The children's response to each item in the inventory was recorded as either correct (1 point) or incorrect (0 point).

The validity of the inventory was determined by content-related validity. In general, the content-related evidence demonstrates the degree to which the items on the inventory are representative of a domain. To establish the content validity for the inventory of this study, a panel of child education and Arabic language-teaching professors reviewed each item to ensure the construction of an instrument that reflected the domains of interest. Suggestions for modifications on some of the items were provided by the panel. These included rephrasing items. After carrying out the necessary modifications, the panel reported that the inventory was appropriate for this study.

The inventory was piloted with a group of 20 kindergarteners, other than those included in this study to ensure reliability. Two statistical methods were used to determine reliability via SPSS (version 12.0 for Windows): one was an internal consistency approach by calculating the value of alpha reliability co-efficient. The results were $a = 0.719$ for the inventory's total scores. The other was a test–retest method with a three-week gap. A co-efficient of the stability of the inventory was calculated using the Spearman correlation co-efficient formula. Items in the inventory had positive correlations $r = 0.76$, indicating the reliability of the inventory.

Later, the inventory was administered to the children in the original study representing the two groups, experimental and control, once at the beginning of phonological awareness instruction, as pre-tests, and then re-administered at the end of the instruction, as post-tests.

Procedure

The DR material used in this study was designed and developed by the author. It was an Arabic alphabet storybook developed via PowerPoint and included 28 picture stories, one story for each letter. Each alphabet story included a main event described as a whole story in three to four short sentences, with animation and sound. The stories had various vocabulary words that included the sound and letter in different word positions as well as rhyming words. The alphabet storybook was reviewed by the same panel that reviewed the inventory in addition to educational technology professors. DR activities were developed using DR techniques CROWD and PEER (described earlier) for enhancing phonological awareness skills. The alphabet stories were distributed across activities in the light of phonological awareness skills. The number of dialogic activities reached 28 and reviewed by the same panel that reviewed the inventory.

Before implementing the original study, the experimental group teacher was trained to make her get a better understanding of DR and phonological awareness. The experimental and control group teachers were trained to administer *Kindergarten Inventory of Phonological Awareness*.

The pre-tests were administered before implementing DR activities. All the children in the two groups were tested individually and the assessment was administered in a quiet room at school. For the experimental group, dialogic storybook readings took place as a whole group activity using alphabet storybook presentation, whereas the follow-up activities consisted of smaller groups of four to five children. Activities occurred prior to or following the story to provide the children with background information and additional experiences. The teacher was responsible for reading the story and implementing the follow-up DR activities. The control group continued with their regular classroom activities. When the DR activities came to an end, the post-tests were administered to the participants in the two groups. Finally, all the data were gathered and analysed.

Results

This study examined whether phonological awareness instruction, utilising DR techniques, embedded in whole-class literacy activities, resulted in gains in three types of phonological awareness skills (including syllable awareness, rhyme awareness, and phoneme/phonemic awareness) compared with the control condition; statistical analyses were performed using independent-samples *t*-test, via SPSS (version 12.0 for Windows). Effect sizes were hand-calculated using the eta-squared statistic formula $\eta^2 = t^2/t^2 + (N_1 + N_2 - 2)$ (Pallant, 2005); Cohen's (1988) benchmarks for η^2 were used to determine the effect size (0.01 is considered a small effect size, 0.06 a medium effect size, and 0.14 a large effect size).

Syllable awareness performance

As can be seen from Table 2, children's mean scores in the syllable awareness pre-test (including syllable-blending, syllable-segmenting, and whole syllable awareness skills) were about 11%, 7%, and 9%, respectively, in both the groups; independent-samples *t*-test revealed no significant differences between the two groups. In the post-test, the experimental group means increased to approximately about 77%, 67%, and 72%, respectively, whereas the control group means were approximately 34%, 30%, and 32%, respectively; independent-samples *t*-test revealed significant differences between the two groups in syllable awareness skills ($t(65) = 18.58$, $p < 0.01$, $t(65) = 13.43$, $p < 0.01$, and $t(65) = 19.96$, $p < 0.01$, respectively) in favour of the experimental group. The estimated effect sizes (η^2s) were large (0.84, 0.74, and 0.86, respectively).

Rhyme awareness performance

As can be seen from Table 2, children's mean scores in the rhyme awareness pre-test (including rhyme identification, rhyme production, and whole rhyme awareness skills) were about 10%, 5%, and 8%, respectively, in both the groups; independent-samples *t*-test revealed no significant differences between the two groups. In the post-test, the experimental group means increased to approximately about 79%, 73%, and 76%,

respectively, whereas the control group means were approximately 34%, 32%, and 33%, respectively; independent-samples *t*-test revealed significant differences between the two groups in rhyme awareness skills ($t(65) = 20.04$, $p < 0.01$, $t(65) = 17.91$, $p < 0.01$, and $t(65) = 22.66$, $p < 0.01$, respectively) in favour of the experimental group. The estimated effect sizes (η^2s) were large (0.86, 0.83, and 0.89, respectively).

Phoneme awareness performance

As can be seen from Table 2, children's mean scores in the phoneme awareness pre-test (including phoneme identification, phoneme isolation 'initial', phoneme isolation 'final', phoneme-blending, phoneme-segmenting, and whole phoneme awareness skills) were about 8%, 19%, 4%, 6%, 5%, and 8%, respectively, in both the groups; independent-samples *t*-test revealed no significant differences between the two groups. In the post-test, the experimental group means increased to approximately about 83%, 86%, 80%, 73%, 63%, and 77%, respectively, whereas the control group means were approximately 45%, 55%, 37%, 39%, 24%, and 40%, respectively; independent-samples *t*-test revealed significant differences between the two groups in phoneme awareness skills ($t(65) = 13.72$, $p < 0.01$, $t(65) = 12.54$, $p < 0.01$, $t(65) = 17.74$, $p < 0.01$, $t(65) = 17.61$, $p < 0.01$, $t(65) = 17.64$, $p < 0.01$, and $t(65) = 34.90$, $p < 0.01$, respectively) in favour of the experimental group. The estimated effect sizes (η^2s) were large (0.74, 0.71, 0.83, 0.83, 0.83, and 0.95, respectively).

Whole phonological awareness performance

As can be seen from Table 2, children's mean score in the whole phonological awareness pre-test was about 8% in both the groups; independent-samples *t*-test revealed no significant differences between the two groups. In the post-test, the experimental group mean increased to approximately about 76%, whereas the control group mean was approximately 37%; independent-samples *t*-test revealed significant differences between the two groups in whole phonological awareness skills ($t(65) = 38.88$, $p < 0.01$) in favour of the experimental group. The estimated effect size (η^2) was large (0.96).

Discussion

The purpose of this study was to examine the effect of DR on the promotion of phonological awareness skills of kindergarteners. Consistent with previous research (Lefebvre et al., 2011; Ukrainetz et al., 2000; Ziolkowski & Goldstein, 2008), the findings of this study indicate that DR is successful in increasing phonological awareness skills. However, the present study has certain advantages when compared with previous research because it focuses on teaching Arabic phonological awareness through whole-class DR activities, using an alphabet storybook as a DR material presented to the whole class via PowerPoint. With a sample of Egyptian kindergarteners, five-year-old and six-year-old children, the present study examined the effect of this interactive shared-reading technique on the promotion of three types of phonological awareness including (a) syllable awareness (including syllable blending and syllable segmenting), (b) rhyme awareness (including rhyme identification and rhyme production), and (c)

Table 2. Pre-test and post-test phonological awareness performances for experimental $n = 35$ and control groups $n = 32$.

	Pre-test					Post-test				
	Experimental group		Control group			Experimental group		Control group		
Phonological awareness skills	*M*	SD	*M*	SD	*t*(65)	*M*	SD	*M*	SD	*t*(65)
Syllable blending	0.66	0.68	0.63	0.70	0.189	4.60	0.50	2.06	0.62	18.58**
Syllable segmenting	0.43	0.50	0.40	0.49	0.182	4.03	0.75	1.78	0.61	13.43**
Whole syllable awareness	1.09	0.91	1.03	1.12	0.218	8.63	0.81	3.84	1.14	19.96**
Rhyme identification	0.60	0.69	0.59	0.61	0.039	4.71	0.46	2.06	0.62	20.04**
Rhyme production	0.31	0.47	0.28	0.45	0.291	4.37	0.55	1.94	0.56	17.91**
Whole rhyme awareness	0.91	1.09	0.87	0.97	0.155	9.08	0.66	4.00	1.14	22.66**
Phoneme identification	0.49	0.51	0.47	0.51	0.137	5.00	0.73	2.69	0.65	13.72**
Phoneme isolation (initial)	1.14	0.55	1.09	0.39	0.418	5.14	0.69	3.31	0.47	12.54**
Phoneme isolation (final)	0.23	0.43	0.22	0.42	0.095	4.77	0.64	2.19	0.54	17.74**
Phoneme blending	0.37	0.49	0.34	0.48	0.233	4.40	0.50	2.31	0.47	17.61**
Phoneme segmenting	0.31	0.47	0.28	0.46	0.291	3.80	0.58	1.44	0.50	17.64**
Whole phoneme awareness	2.54	1.74	2.41	2.13	0.328	23.11	1.51	11.94	1.05	34.90**
Whole phonological awareness skills	4.54	2.60	4.31	2.66	0.358	40.82	1.69	19.78	2.67	38.88**

**$p < 0.01$.

phoneme awareness (including phoneme identification and phoneme isolation 'initial', phoneme isolation 'final', phoneme blending, and phoneme segmenting).

The results of this study showed that children in the experimental group made significantly greater gains regarding phonological awareness skills than the children in the control group. The author considers these positive results to be due to the specific design of the DR activities, which allowed the children to participate actively in the activities preceding, during, and after the reading session. They were provided with opportunities to ask questions related to the story content as well as the classroom environment. Their comments, questions, and responses were expanded by the teacher. Prompts assisted the children in elaborating their responses. The alphabet storybook presentation provided meaningful texts and allowed discussing units of sound in speech (syllables, rhymes, and phonemes) within conversations embedded in reading. It enabled the children to learn letter–sound relations (Cardoso-Martins et al., 2011; Piasta et al., 2010), prompted their active engagement, and helped draw their attention to each word and its sound structure as it was read. The follow-up activities provided more training phonological awareness skills. They included various games that stimulated language play and prompted children's attempts to manipulate the sounds of their language in enjoyable contexts (Yopp & Yopp, 2009). Using concrete representations, such as chips and blocks, to represent sound units was another important prompt that assisted the children in elaborating their responses. It helped ease the memory load, enabled better task performance, allowed for the children to demonstrate gradual skill mastery (Phillips, Clancy-Menchetti, & Lonigan, 2008), and helped make mental manipulations of sounds easier for some children (Yopp & Yopp, 2009). In addition, positive peer interactions during collaborative group work enabled peer–peer scaffolding (Ukrainetz et al., 2000) and allowed some children to participate as tutors (Udaka, 2009).

Based on the results of this study, the author makes some recommendations. First, the effort required to include such DR activities in kindergarten programmes should be carefully considered by those responsible. Second, *Kindergarten Inventory of Phonological Awareness*, which yielded good internal consistency and allowed for the examination of three types of Arabic phonological awareness skills and their sub-skills, can be used as a tool for assessing children's progress. Third, kindergartens should be provided with well-developed DR materials presented via PowerPoint, which could help prompt their active engagement during reading activities. Fourth, pre-service and in-service kindergarten teachers should be trained as to how DR can be used effectively in classroom settings. Finally, parents should be trained to implement effective DR activities at home.

Despite the significant strengths of the present study, certain study limitations should be noted. First, the sample used in the present study was relatively small and was composed of children in the second level of kindergarten (ages 5–6). Second, this study was implemented in a private elementary school, in one city in Egypt. Third, this study was limited in its duration as it was implemented over a period of eight weeks at the beginning of the academic school year. Therefore, the generalisability of the findings may be limited.

Additional research is needed to give more implications for teaching Arabic phonological awareness as well as using DR in kindergarten classrooms. Future research should attempt to replicate the findings of this study in other samples to guarantee the generalisability of the findings. Research on using DR to achieve the goals of Arabic language teaching in the light of national standards, using larger and more

heterogeneous samples of KG1 and KG2 children, is needed. Future research should also attempt to examine the effects of Arabic phonological awareness instruction on the promotion of different aspects of language learning. Studies that examine the effects of DR using PowerPoint presentations on the promotion of different aspects of language learning are needed. In addition, future research should attempt to examine the effects of DR on the promotion of Arabic phonological awareness of special-needs kindergarteners such as autistic, educable mentally retarded, and learning disabled children.

In summary, DR activities appear to have positive effects on Arabic phonological awareness of kindergarteners. Specifically, whole-class DR activities positively influenced three types of Arabic phonological awareness of Egyptian kindergarteners (including syllable awareness, rhyme awareness, and phoneme awareness). These findings suggest that DR is an effective method for teaching phonological awareness in kindergarten classrooms.

Notes on contributors

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