

# Research and Trends in the Studies of Phonological Knowledge and Reading Development: A Review on Selected Journals

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## ABSTRACT

Developing phonological knowledge of students is believed to be beneficial to reading development. This paper reviews selected eight articles on the issue of phonological knowledge and reading development in both native and English as Second Language (ESL) context. In finding the trends and patterns across all eight articles, the content and context of each study was critically analyzed. The discussion is divided into five sub sections; research settings, data collection methods, samples selection, focus or issue of the current studies, as well as the similarities and differences of the findings. It is found that phonological knowledge (as developed in phonics instruction) is undeniably effective to develop reading skills, even for readers with limited exposure to English. Students who were exposed to phonics instruction were able to read fluently compared to their counterparts. Some of these studies even highlighted that these students acquired reading skills faster compared to the control groups. The findings of the selected studies have also established contributing factors on reading success. Of interest, gender, age and type of phonics instruction are among influential factors to reading development. Despite the impressive findings, this paper also discusses the other components and structure of the selected studies, such as the research design, settings, sample selection as well as focus or issue highlighted in each selected study. It is hoped that this paper will enlighten readers on the trends and patterns of the current literature in the area of phonological knowledge and reading development across language settings

**Keywords:** *phonological knowledge, phonics instructions, phonological awareness, reading development*

## INTRODUCTION

There is a clear relationship between reading acquisition and academic success. Snow, Burns and Griffin (1998) established that poor readers usually remain far behind in academic success and thus, remain poor for the entire schooling years. The perpetual relationship between both elements has fomented perturbations among educators, school administrator and even the government itself. The argument on what teaching approach is effective to develop reading is still going on with the pendulum swinging back and forth with no specific consensus established. Nevertheless, a strong body of research has established that phonemic awareness as a strong predictor to reading success (Adam, 1990; Beck & Juel, 1995; Chall, 1996; Stanovich, 1992). It is believed that phonemic awareness will help readers, especially in ESL (English as Second Language) context, as it will serve as a reading strategy to reading. However, what remains doubtful is how effective phonemic awareness in developing reading skills? Cummins (2008) argued that acquisition of basic decoding skills are inadequate to reading success.

To further investigate on the above argument, the current paper identified two important variables; phonological knowledge and reading development. Eight current articles that fall under these categories were selected and reviewed. The discussion will enlighten readers on the trends and patterns of the selected studies.

### Research purpose

This paper is aimed to enlighten readers on past studies that have been conducted in the area of phonemic awareness and reading development. Eight related articles published in 2008 to 2013 were selected for this study. The

similarities and differences between each study might provide valuable information on the trends of the current studies and help to justify what is needed to an effective reading intervention.

This study is aimed to answer the research questions below:

1. Which research setting had high rate of studies in all selected studies?
2. What was the data collection method commonly used in all selected studies?
3. What was the pattern in the sample selection in all selected studies?
4. What was the common focus or issue in all selected studies?
5. What were the similarities and differences of the finding of all eight studies?

## METHOD

There were eight articles selected from various educational journals published in 2008 to 2013 such as, a) Scientific Studies for Reading, b) School Effectiveness and School Improvement, c) British Journal of Educational Psychology, d) The Journal of Education Research, e) Read Writ, f) Journal of Experimental Child Psychology, and, g) Learning and Individual Differences. In general, the selected articles focus on the effects of phonic knowledge to reading development. Two articles (Carlson, Jenkins, Li & Brownell, 2013; Wagensveld, Segers, Van Alphen & Verhoeven, 2013) specifically analyze the elements in phonic knowledge that contributed to reading development. The other articles specifically focus on the development of the knowledge through a number of phonics instructions. The selection of the articles provides a comprehensible view of how and what is effective to reading development.

These articles were cross analyzed according to their journal details, research questions, method, participants and future suggestions, as well as their findings. The collected data on research settings, research focus, methodology and participants of these studies were further analyzed statistically in answering the research questions. In addition, to answer research question 3, a content analysis was conducted by analyzing their research questions, findings and focus. The percentage and frequency counts of all articles were used in each section to describe the trend or patterns of the current studies. Table 1 summarizes the description of each study on the selection of participants, research design, data collection method, data analysis, research setting, findings and focus or issue discussed.

Table 1: Content analysis of selected eight articles.

Study (Author/Year)	Participants	Research Design	Data Collection	Data Analysis	Research Setting	Findings	Focus or Issue Discussed
Vadasy, P. F., & Sanders, E. A. (2011).	93 students (48 LM in treatment group) and 94 students (48 LM in control group) in first-grade.	Experimental design	Tests  Observation	Descriptive statistics, T-test, Chi-square test	Native and non-native English speakers of first-grade students in United states of America.	Language minority (LM) students benefited from phonics instructions.	Comparing language minority to native readers of English.
Dixon, P., Schagen, I., & Seedhouse, P. (2011).	265 children from 14 schools (intervention group) and 241 children from 6 schools (control group)	Experimental design	Tests	Descriptive statistics, T-test, Regression analysis.	Private unaided schools in rural areas in India.	Students in synthetic phonics group outperformed the control group.	Language differences of native to English and their cognitive abilities in reading.
Shapiro, L. R., & Solity, J. (2008).	251 Year 1 students (treatment group) and 213 Year 1 students (control group).	Experimental design	Tests	Descriptive statistics and regression analysis.	12 primary schools in United Kingdom.	Students who received phonological and phonics training within whole-class teaching acquired reading skills faster than comparison group.	Integration of phonics training in whole-class teaching.
Carlson, E., Jenkins, F., Li, T., & Brownell, M. (2013).	3,104 children (age 3 to 5)	Structural equation model  Interviews (parents)	Test scores.  Demographic data	Descriptive statistics, correlation tests  Thematic coding	670 000 students in a population in United States of America (who received special education services in 2004).	Established a critical relationship between phonemic awareness and decoding, which also leads to comprehension.	The interaction of phonemic awareness, decoding and reading comprehension
Johnston, R. S., McGeown, S., & Watson, J. E. (2012).	Exp. 1: synthetic phonics (109 age-10 children) and analytic phonics (203 age-10 children).  Exp. 2: synthetic phonics (31 children not included in Exp. 1) and analytic phonics (33 children included in	Experimental design.  Observation.	Tests	Descriptive statistics, T-tests.	Primary school in United Kingdom in comparison to students in Scotland.	The children in synthetic phonics group outperformed analytic phonics group in word reading, spelling and comprehension skills.	Gender and type of instructions to reading success.

Study (Author/Year)	Participants	Research Design	Data Collection	Data Analysis	Research Setting	Findings	Focus or Issue Discussed
Exp. 1).							
Lonigan, C. J., Purpura, D. J., Wilson, S. B., Walker, P. M., & Clancy-Menchetti, J. (2013).	365 preschool students (3 to 5 years old)	Experimental design. Observation.	Tests	Descriptive statistics, T-tests.	13 Head Start centers and Title 1 preschools in northern Florida.	The effects of small group interventions were extremely better than traditional learning but there were no synergistic effects of combining interventions.	The components (dialogic reading, phonemic awareness and letter knowledge) for an effective emergent literacy intervention.
Wagensveld, B., Segers, E., Van Alphen, P. & Verhoeven, L. (2013).	26 children of native Dutch. 20 adult students	Experimental designs.	Tests.	Descriptive statistic, T-tests.	Primary and university students in Netherlands.	Global similarity effect was observed across all groups. They similarly made more mistakes in similar sounding pairs compared to unrelated pairs. The intervention group acquired higher phonological awareness at syllable, rhyme and phoneme levels, expressive vocabulary, word reading and spelling, compared to control group.	Globally similar non-rhyming pairs are difficult to judge and its relationship to lexical representations.  The effects of phonological awareness instruction on ESL students in non-English speaking context.
Yeung, S. S., Siegel, L. S., & Chan, C. K. K. (2013).	76 kindergarten students.	Experimental design. Observation.	Tests.	Descriptive statistics, MANCOVA, ANCOVA,	Kindergarten students in Hong Kong.		

**RESULT AND DISCUSSION**

**Research settings**

Interestingly, out of all eight articles, the majority of the studies were conducted in English-speaking countries, where three studies (37.5%) were conducted in United States of America. Also, another two (25%) were done in United Kingdom. On the other hand, three studies were conducted in non-English speaking countries. These studies were conducted to meet the objectives in finding the effects of selected intervention on reading development among ESL (English as Second Language) children in non-English speaking countries.

The cultural diversity is the main reason why most studies were conducted in United States of America. The cultural diversity in this country has developed additional risk factor as children from immigrant background are predicted to have difficulties in reading (Lesaux, 2012). These students were from low-social economic status family and have limited exposure to English. Lesaux (2012) believes that the social-economic status predicted the children's reading abilities. This is proven as the number of struggling non-native readers in America is distressing (August &

Hakuta, 1998; Schneider, Roth & Ennemoser, 2000) and thus, a number of studies (such as above) were conducted in solving this problem.

The other studies in non-English speaking context (Dixon, Schagen & Seedhouse, 2011; Yeung, Siegel & Chan, 2013) were conducted in examining whether the findings in English-speaking context, such as above, are similar to ESL students in non-native learning context. Yeung et al. (2013) claim that mother tongue language of ESL students (in non English-speaking context) might hinder the efficacy of the similar approached tested on ESL readers in English-speaking context. Also, Dixon et al. (2011) feel that cross-language transfer effect might regulate the effects of phonics intervention in reading development. In short, there are two conclusions that can be drawn from these findings; first, studies were done based on the current needs of the education, which is to solve the increasing number of struggling readers, and second, a further investigation (in ESL context) is done to provide additional lenses of the efficacy of phonics instructions in developing reading for ESL students in non-English speaking countries.

Table 2: Summary of research settings of selected eight articles.

Research setting	Frequency	Percentage
United States of America	3	37.5%
India	1	12.5%
United Kingdom	2	25%
Netherlands	1	12.5%
Hong Kong	1	12.5%

#### Data collection methods

From all eight articles, majority used experimental research design. From this number, five (62.5%) of the articles employed a mixture of quantitative and qualitative approach, whereas the other three studies (37.5%) employed quantitative approach. Figure 1 represents an in-depth analysis of methods used in all articles. It is apparent that three articles (37.5%) used only experimental research design. Another four articles (50%) employed a combination of experimental research design and observation, and only one article (12.5%) applied structural equation model with interview analysis.

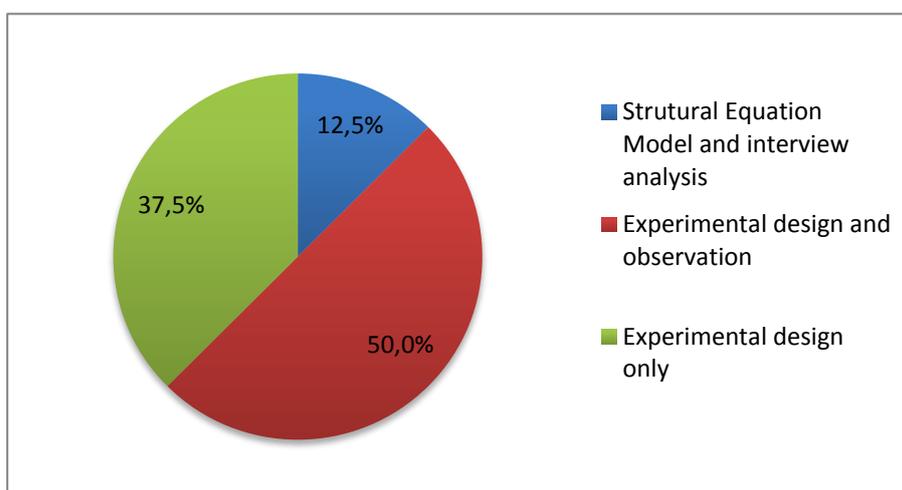


Figure 1. Percentage of methods used in all articles.

Chua (2012) claims that experimental research design provides information on variations of performances of samples in different conditions. From the selected studies, majority of these studies (six studies) aimed to investigate the effects on phonological knowledge and phonemic awareness on reading development (Dixon et al., 2011; Johnston, McGeown & Watson, 2012; Lonigan, Purpura, Wilson, Walker & Clancy-Menchetti, 2013; Shapiro & Solity, 2008; Vadasy & Sanders, 2011; Yeung et al., 2013). Interestingly, the study by Wagensveld, Segers, Van Alphen and Verhoeven (2013) only investigated students' ability in rhyme judgment ability before and after receiving reading experiences in school. The selected students were tested at two different events: at the end of the first grade and second trimester of the third

grade. The achievements were compared to the adult students to further investigate whether reading experiences accurately predicted rhyme judgment ability of students. On the other hand, the study by Carlson, Jenkins, Li and Brownell (2013) employed structural equation modeling, where students' achievements on rhyming, alliteration, segmenting and blending, letter-word identifications, passage comprehension and other language tests were measured thoroughly. At the end of the study proposed a structural equation model in describing the literacy development for those young children with disabilities.

### Sample selection

Across all eight articles, four (50%) used primary school students as their selected samples. These studies (Dixon et al., 2011; Johnston et al., 2012; Shapiro & Solity, 2008; Vadasy & Sanders, 2011) centrally focused on discovering reading development among primary students. From these studies, there are two differences found: a) children's age, and, b) number of samples used. For instance, Shapiro and Solity's (2008) study used younger children (Year 1 students) as their samples. On the other hand, Dixon et al.'s (2011) study recruited the most number of samples (506 primary students) from rural schools in India.

On the contrary, there were three studies (37.5%) used kindergarten students as their samples. Similarly, these studies (Carlson et al., 2013; Lonigan et al., 2013; Yeung et al., 2013) measured children's achievements across language tests in finding the efficacy of selected intervention and developmental patterns in reading. Lastly, only one study (12.5%) used both primary and university students as their samples. Wagensveld et al.'s (2013) selection was appropriate for their focus of the study as they investigated the effects of reading experiences on rhyme judgment abilities. The overall findings are summarized as below:

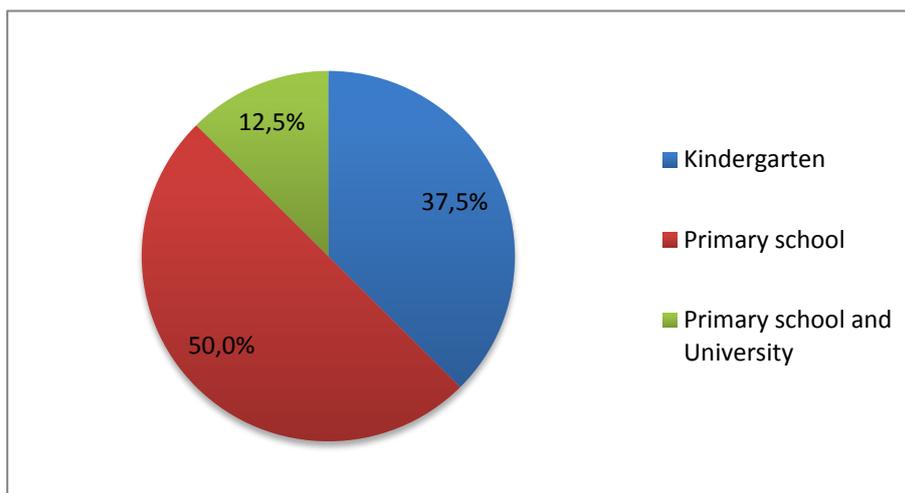


Figure 2. Percentage of types of sample selection in all articles.

### Focus or issues discussed in all studies.

This section describes the focus or issues discussed in all eight articles. Table 3 represents the frequency and percentage of the focus or issues discussed in all eight articles. It should be noted that some studies have more than one focus or issue discussed in their study.

From the findings, the most common focus or issues discussed were the effects of phonics instruction on native (18.2%), on ESL students (18.2%) and for both native and ESL students (18.2%). On a contrary, the other areas only have the frequency of one study (9.1%) for each area.

Table 3: Summary of focus or issue discussed in selected eight articles.

Focus/Issue	Frequency	Percentage
Effects of phonics instruction on native students.	2	18.2%
Effects of phonics instruction on ESL students.	2	18.2%
Effects of phonics instructions on both native and ESL students	2	18.2%
The interactions between elements of reading.	1	9.1%
Comparison between different phonics instructions.	1	9.1%
The exposure to reading to rhyme judgment ability	1	9.1%
Gender factor to reading achievement.	1	9.1%
Age factor to reading achievement.	1	9.1%

Shapiro et al. (2008) and Johnston et al. (2012) similarly conducted their study on native students in United Kingdom (refer research setting part). The only difference is the focus of the study. Johnston et al. (2012) compared both synthetic and analytic phonics instructions in examining the most effective approach to develop reading. Their study also explored gender as an influential factor to students' performances in various language tests.

On the other hand, Dixon et al. (2011) and Yeung et al. (2013) explored almost similar instruction in developing reading skills in ESL context. Clearly, Dixon et al. (2011) employed synthetic phonics and the instruction adapted in Yeung et al. (2013) represented the similar approach. It is stated that the teaching focuses on teaching decoding skills in fixed sequence (Bennet & Ottley, 2000).

Similarly, Vadasy et al. (2011) and Lonigan et al.'s (2013) study also focused on investigating the effects of phonics instruction in developing reading skills. Of importance, both studies placed phonics instructions as supplemental teaching (Vadasy et al., 2011) and as a fragment to an effective reading intervention (Lonigan et al., 2013).

On the other hand, the other studies (Carlson et al., 2013; Wagensveld et al., 2013) focused on exploring other elements such as, age, other reading elements, and, exposure to phonics and reading, in explaining the successive in reading acquisition. In short, even each study pays a clear attention on phonological knowledge and reading development, the exploration was done beyond the efficacy of the phonics intervention. The additional angles incorporated in these studies, enrich their findings and contribution to the body of knowledge.

#### Similarities and differences of the findings in all studies.

A) Students who received phonics instruction have a strong foundation of reading.

The studies in the area of phonics instructions similarly found that this instruction was effective in developing reading skills. These findings can be divided into two sub categories: the effects on native readers, and the effects on ESL readers. In native English reading, Shapiro et al. (2008) found that the inclusion of phonics instruction within whole-class teaching accelerate the acquisition of reading skills of the children in the intervention. The findings also suggested that implementing a short but frequent whole-class phonics teaching was proven to be effective. In addition, a similar research in native reading context by Johnston et al. (2012) found that after receiving synthetic phonics teaching, the children have improved on their word reading, spelling and even comprehension skills. This finding agrees with the Simple View of Reading (Gough & Tunmer, 1986), as the development of comprehension skills were also noted as part of the reading development.

In the context of ESL students, the studies by Dixon et al. (2011) and Yeung et al. (2013) similarly exemplified that phonics instruction was effective. Dixon et al.'s (2011) study employed similar teaching approach tested in Johnston et al.'s (2012) study. Both studies employed synthetic phonics teaching but, the only difference is Johnston et al.'s (2012) study compared this approach to another phonics instruction: analytic phonics. They initially established that students who were taught with synthetic phonics would face difficulties in certain conditions, such as reading irregular spelt words (Dombey, 2006). Surprisingly, Dixon et al. (2011) found that students even in rural parts of India, and with a limited exposure to English, were able to read fluently after receiving the intervention. The success of the intervention might be justified by the use of synthetic phonics that prepared readers with a strong reading strategy. Seidenberg and McClelland (1989) support that even with irregular spelt words, these words still provide information on pronunciation.

In a bigger picture, Yeung et al. (2013) also found that students who received phonics instruction performed excellently in almost all language tests, including phonological awareness, expressive vocabulary, word reading and spelling test. To support, the findings of other studies, such as Lonigan et al. (2013) and Vadasy and Sanders (2011)

agreed that phonics instruction was beneficial to reading development. However, Lonigan et al. (2013) noted that a combination of sub skills of reading, such as dialogic reading to phonological awareness or letter knowledge was found to be similarly effective to reading development.

In short, the above findings exemplified that phonics instructions were found to be effective across language settings. In both native and ESL context, students who received phonics instructions had improved in decoding as well as comprehension skills.

#### B) Reading elements and development.

The discussion from previous section has outlined that there were two studies (Carlson et al., 2013; Wagensveld et al., 2013) explored the reading elements and their contribution to reading success. Carlson et al. (2013) focused on finding the relationship between phonemic awareness, decoding and reading comprehension of students who faced difficulties in reading. The findings established that a strong relationship between phonemic awareness and decoding, which will later lead to reading comprehension. Significantly, it reflects the findings in Johnston et al.'s (2012) study. The Simple View of Reading (Gough & Tunmer, 1986) also reflects this finding, as decoding and comprehension are interrelated to reading success.

On the contrary, Wagensveld et al.'s (2013) study tested the relationship between reading development and rhyme judgment abilities. Of interest, they found that even with higher reading skills and exposure, students still made mistakes in this task. It is also found that global similarity effect occurred across all groups: children and adults.

On the other hand, Carlson et al. (2013) and Johnston et al. (2012) explored a different angle on the effects of phonics instruction to reading. Carlson et al. (2013) noted that age is an influential factor to reading development, whereas Johnston et al. (2012) discovered that gender plays an important role in the reading development. One of the findings in Johnston et al.'s (2012) study exemplified that boys had a better word reading skills compared to girls. The dimensions explored by both studies are valuable to the body of knowledge. As discussed earlier, most of the studies focused on the effects on phonics instructions on reading development only. The findings such as in both studies are rich information to further understand the nature of reading development.

In a nutshell, these unique findings enlighten the areas that we might neglect. The developmental pattern of reading for students with difficulties as exemplified in Carlson et al. (2013) mapped a clear direction what elements should be given a major focus in developing reading skills. Other factors such as age and gender, might also serve as a prominent referent point in understanding the reading development across gender and age. It is hoped that the findings of this paper will also serve as a point of reference for future studies in the similar areas of phonological knowledge and reading development.

## CONCLUSION

This study has extended the current studies in the area of phonological knowledge and reading development by showing their trends and patterns of the study. It is noted that most studies in these two areas were largely conducted in United States of America. It is explained that the cultural diversity in America has lead the exploration of phonics instruction in developing reading skills. Studies on ESL readers in non-English speaking context were conducted in testing the efficacy of the phonics intervention in different language settings.

In data collection method section, it is apparent that experimental study was the prominent research design used across all eight studies. The selection was done to meet the purpose of the research objectives, in measuring efficacy of tested intervention in developing reading skills. Interestingly, only one study employed structural equation model. The findings were beneficial as it outlined the process of literacy development of young children with reading difficulties.

Most of the studies selected primary school children as their samples. It is established earlier that the relationship between reading development and academic success is clear. These studies experimented the selected intervention on primary school students, as they believe that providing them with an effective reading intervention will hinder academic failures in later stage.

Lastly, it is found that there were eight different issues of focuses exemplified in the selected studies. Commonly, these studies explored the effectiveness of phonics instruction on either native, ESL or combination of both students in developing reading. Also, there were additional lenses added in some of the studies, as there were explorations on other reading factors, such as age, gender and type of instructions to reading success. These lead to a further discussion on similarities and differences of the findings in the selected studies. It is established that phonics instruction is effective

in developing reading in both native and ESL context. Also, some of the studies have explored additional factors such as age and gender, to be considered in designing an effective reading intervention for the students.

In conclusion, the discussion of this paper has manifested the common trends and patterns of current studies with additional analysis of its underlying beliefs and reasoning behind each selection of method or approach. It is important to note that the generalizations of these findings are inaccurate to be done in a larger population of studies, as the selected number of articles was small in amount.

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