

# The Role of Phonemic Awareness in Developing Literacy Skills of Kindergarten and First Grade Students: An Experimental Study

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**Abstract:** Number of researches has demonstrated the beneficial effects of phonemic awareness instructions on reading for English native speaking children. Recently, research has shown that phonological awareness instruction promotes growth in reading among young children from diverse linguistic backgrounds also. In this paper, the researcher has tried to observe the impact of phonemic awareness like phoneme isolation, phoneme blending, phoneme segmenting and phoneme substitution on literacy skills of kindergarten and class I students. Empirical testing is done and the results have shown the significant effect.

**Keywords:** Phoneme, Phonemic awareness, reading skills, experimental study.

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## I. INTRODUCTION

Phonemic awareness, the conscious ability to identify and manipulate speech sounds mentally, is a very important literacy skill that children have to acquire in early years (e.g., Whitehurst & Lonigan, 1998). It has been demonstrated repeatedly as a good predictor of later reading outcomes (Blachman, 1997; Muter & Snowling, 1998; Wagner, Torgesen, & Rashotte, 1994). Similarly, children who lag behind in developing phonological awareness skills are likely to be at-risk for reading difficulties (Bradley & Bryant, 1983; Torgesen, Wagner, & Rashotte, 1997). Do these findings for monolingual English speakers generalize to ESL children who have a first language (L1) significantly different from English? It is important to explore the answers to this question because underdeveloped English language and literacy skills in ESL learners may undermine school achievement (August & Hakuta, 1997).

A large volume of research has demonstrated the beneficial effects of phonological awareness instruction on reading for English native speaking children (e.g., Bus & van IJzendoorn, 1999; Ehri et al., 2001; Snow, Burns, & Griffin, 1999). Recently, research has shown that phonological awareness instruction promotes growth in reading among young children from diverse linguistic backgrounds with English as a second language (L2) (Ganschow & Sparks, 1995; Lesaux & Siegel, 2003).

A number of standardized programs have been created to develop and strengthen young children's phonological awareness and early reading skills based upon phonological awareness research (NRP, 2000; Santi, Menchetti, & Edwards, 2004). From the review of literature on these programs, it appears that most phonological awareness program target young children in preschool through the primary grades as researchers have shown that the development of such skills at an early age is critical in promoting early literacy (Gillon, 2004; National Reading Council NRC, 1999; Snow et al., 1998). Further, the majority of the program reviewed as part of this project attempt to generalize phonological awareness to print through the integration of letters and instruction in letter sound correspondence.

However, the programs differ with regards to the variety of included phonological awareness tasks, the sequence of included components, the instructional format and duration of the program. While most PA programs are described as being based on research in the field, few studies evaluating the effectiveness of these programs were found in an comprehensive literature search. As many of these programs are used extensively in the school setting, it seems important to empirically validate the effectiveness of these programs to assist educators when making decision about how best to promote student success when learning to read.

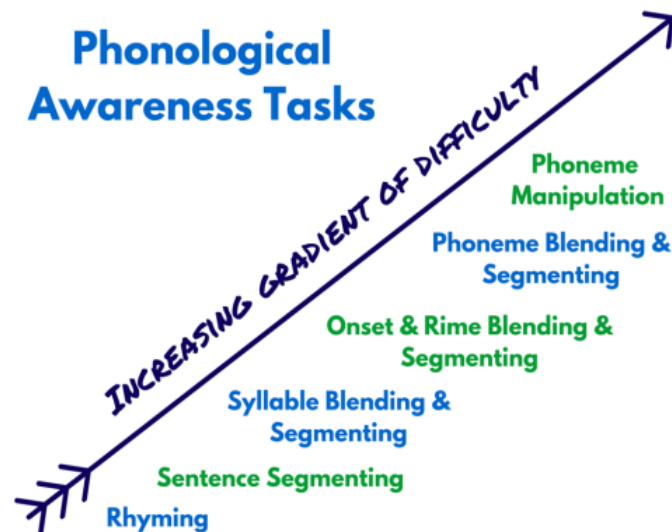


Fig. 1. Phonological Awareness Tasks (Chad & Dickson, 1999)

Young children are demonstrating phonological awareness when they begin to develop an awareness of the various sound units of speech as separate from their meaning (Gillon, 2004; Mc Bridge –Chang, 2004; Snow et. al., 1998). Phonological awareness is often described as encompassing a continuum of skills, ranging from such basic school as rhyming and alliteration to more complex skills such as identifying and manipulating phonemes, which are the individual sound units of word (Heroman & Jones, 2004; Snow et al., 1998). Phonological awareness has been found to have a significant and causal relationship with both early and future reading success (Gillon, 2004).

Educational research covers an enormous field of issues and attempts to answer a diverse range of questions. There are many ways to approach a research question and to systematically gather information. Choosing the most appropriate research design for a particular study requires careful consideration of the research question, the participants and the setting (Drew, Hardman, & Hosp, 2008).

## II. RESEARCH METHODOLOGY

The overall design of this study is an action research design. In an action research design, the principle of pedagogical action research is clear to improve some aspects of the student learning through clear and precise research in planning, taking action, monitoring and reflecting on the data that is gathered (Norton, 2009). This study is being done to discover if there is a significant relationship between lack of phonic awareness and fluency and the interrelationship between reading and spelling ability.

An experimental pre-test/post-test control group design is chosen for this study to test the hypothesis that four year olds can benefit from an intervention that promotes phonological processing skills and letter-knowledge. The purpose of this design is to collect empirical data in order to gauge the effectiveness of the intervention and allow outcomes of the control and intervention group to be compared. This research design is commonly used in educational research that is attempting to test the efficacy of a particular intervention (Justice, et al., 2003; McIntosh, et al., 2007; Nancollis, et al., 2005; Piasta, 2010a).

### Sample:

In India, the choice of Early Childhood Education (ECE) is extensive, however, for this study participants are recruited

from a private school. The original sample of participants is drawn from the same private school in Ujjain city of Madhya Pradesh state.

**Selection process:**

The following criteria are applied for selection of participants: They are children:

- 1) Aged between 4-1/2 years and 6 years. Children could not be older than 6 years as they would enter school before the intervention and post- testing had been completed. The only exception is for children who are not starting school on their birthday due to the date being so close to the end of term.
- 2) Who are NOT native English Speakers?
- 3) For whom parental consent has been given
- 4) Who are able to recognize all the alphabets?

106 students at the six kindergartens met the criteria. Of the 106 children, 4 children chose to withdraw from the assessment before completion, one child was found not to meet the minimum attendance criteria and one was too young, leaving a total of 100 children.

For the present study 50 students are selected from class KG II and 50 students are selected from class I of a private school of Ujjain. Students of both the classes are given the test sheet before imparting the phonics training and the scores are recorded. Thereafter, the phonics training has been given using the specially designed worksheets and phonemic skills training.

Duration of treatment is three months (90 periods) and after that again the test sheets are given and the scores are recorded. The candidates appear for a test which is designed from their course book only.

**Research Variables:**

1. Independent variables: Research variable in the present study refers to the phonemic awareness.
2. Dependent variable: Dependent variables in the present study consist of scores obtained test sheets before and after administering the phonics training.

**Time Frame:**

The candidates are given a treatment for 3 months or 90 periods or sessions of one and half (1- ½) hrs duration.

**Research Instrument:**

The research instrument includes a set of worksheets of 80-100 pages each.

1. One set of worksheets is exclusively for phonetics and rhyming words and their meaning with pictures.
2. A test is proposed to be constructed from the self-designed learning kit only to test the reading readiness and spelling formation.

In addition, a survey questionnaire is administered to check the socio-economic status, age and qualification of the parents.

**Data collection:**

The present study is an experimental research. The following research activities are performed in the data collection procedure:

1. Selecting the research subjects randomly.
2. Giving treatment to the selected subjects.
3. Giving a reading readiness test.
4. Comparing the scores before and after the treatment using t- test.

This study utilizes exploratory method of the quantitative approach. In accordance with the methods, data are gathered for the study.

### **Instructions for Administrating the Test:**

Effective phonemic awareness instruction teaches children to notice, think about, and work with (manipulate) sounds in spoken language. Teachers use many activities to build phonemic awareness, including:

#### ***Phoneme sounds:***

The participants are instructed about the sounds associated with the alphabets. They are taught about how to decode the letters using letter-sound. The participants are then presented with the letter and 3 diagraph (sh, ch, th) in a random order are asked to read the sound of the letters.

A basic lesson for introducing letter-sound correspondences once students have learned letter names and forms:

Hold up a letter card and tell students the sound. Say, "This letter is A. The sound for A is /a/."

Ask students to tell you the name and then the sound. Be sure they know the difference between the two.

Ask students to write the letter as they say the sound.

#### ***Beginning sound awareness (Initial phoneme identification):***

In this task participants are taught to decode first the initial or beginning sound of the word. It was explained to the participants to first listen and identify the beginning sound. For example, beginning sound in man is 'm'. For the same practice was done for 2 days with many words like man, fan, can, ran, tan etc.

#### ***Blending 2 or 3 consonants present in the beginning of words:***

Participants are taught and practiced how to blend 2 or 3 consonants present in the beginning of words. For example, bl (black), br (bran), cl (clap), Cr (crap), dr (drag), dw (dwarf), fl (flat), fr (frog), gl (glad), gr (grab), pl (plan), pr (pram), sc (scam), sk (skin), sl (slap), sm (smart), sn (snow), sp (span), st (stop), sw (swam), tr (trap), tw (twin), scr (scrap), str (strap), spr (spray). This is done for 3 days, 1 hour session.

After this following steps are introduced to the participants

#### ***Phoneme isolation:***

Children are trained to recognize individual sounds in a word.

Teacher: What is the first sound in van?

Children: The first sound in van is /v/.

Then they are asked to identify the last sound

And after that identify the middle sound and count each sounds.

#### ***Phoneme identity:***

Children recognize the same sounds in different words.

Teacher: What sound is the same in fix, fall, and fun?

Children: The first sound, /f/, is the same.

#### ***Phoneme categorization:***

Children recognize the word in a set of three or four words that has the "odd" sound.

Teacher: Which word doesn't belong? bus, bun, rug. Children: Rug does not belong. It doesn't begin with /b/.

#### ***Phoneme blending:***

Children listen to a sequence of separately spoken phonemes, and then combine the phonemes to form a word. Then they write and read the word.

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Teacher: What word is /b/ /i/ /g/?

Children: /b/ /i/ /g/ is big.

Teacher: Now let's write the sounds in big: /b/, write b; /i/, write i; /g/, write g.

Teacher: (Writes big on the board.) Now we're going to read the word big.

***Phoneme segmentation:***

Children break a word into its separate sounds, saying each sound as they tap out or count it. Then they write and read the word.

Teacher: How many sounds are in grab?

Children: /g/ /r/ /a/ /b/. Four sounds.

Teacher: Now let's write the sounds in grab: /g/, write g; /r/, write r; /a/, write a; /b/, write b.

Teacher: (Writes grab on the board.) Now we're going to read the word grab.

***Phoneme deletion:***

Children recognize the word that remains when a phoneme is removed from another word.

Teacher: What is smile without the /s/?

Children: Smile without the /s/ is mile.

***Phoneme addition:***

Children make a new word by adding a phoneme to an existing word.

Teacher: What word do you have if you add /s/ to the beginning of park?

Children: Spark.

***Phoneme substitution:***

Children substitute one phoneme for another to make a new word.

Teacher: The word is bug. Change /g/ to /n/. What's the new word?

Children: Bun.

***Onset and rime blending:***

(Onset is the initial sound and rime is the ending vowel and consonant sound CVC). This onset rime was introduced to the participants by introducing families stepwise with vowel a like ab,ad, ag,an, am, ap, at....

### III. RESULTS

The results shown here are the outcomes of empirical testing of the data taken in the form of scoring sheets. The data gathered are compared before the administration of the phonics training and after they received it.

***The Demographics:***

Out of 106 students selected, 100 are able to go through the entire study duration. Out of these 100 students, 50 are from KG-1 and 50 from Class I, to have class-wise uniformity.

**TABLE: I - Demographics Summary**

		Frequency	Percent	Cumulative
Valid	KG-1(0)	50	50	50
	Class I (1)	50	50	100
	Total	100	100	

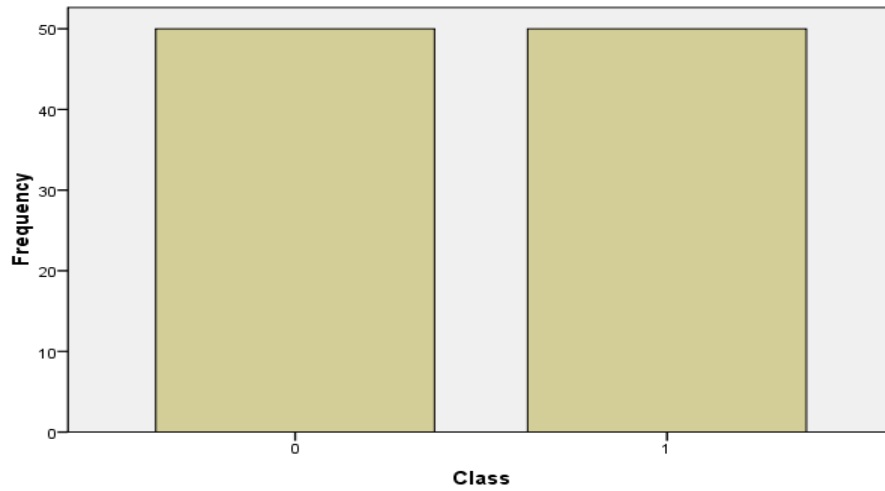


Fig. 2: Demographics Profile

Out of total 100 students 55 are girls (25 in KG-1 and 30 in Class I) and the rest are boys (25 in KG-1 and 20 in Class I).

Table: II - Gender Distribution

		Frequency	Percent	Cumulative
Valid	Female (0)	55	55	55
	Male (1)	45	45	100
	Total	100	100	

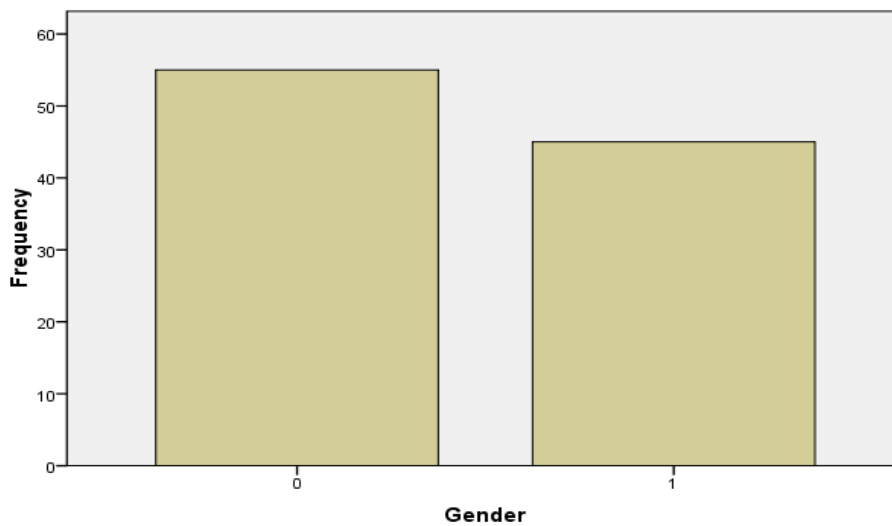


Fig. 3: Gender Distribution

**Phonological Awareness Intervention Program Results:**

Pre-test and post-test results are calculated for phoneme isolation, phoneme substitution, phoneme blending and phoneme segmenting.

**Phoneme Isolation:**

The test sheet has 20 questions of 1 mark each. The frequencies of test score before and after the training are shown in tables III and IV and figures 4 and 5.

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**Table : III - Phoneme Isolation: Frequency of Test Scores (Before the Training)**

		Frequency	Percent	Cumulative
Valid Score	3	1	1	1
	3.2	3	3	4
	3.4	2	2	6
	3.6	3	3	9
	3.8	1	1	10
	4	8	8	18
	4.2	4	4	22
	4.4	11	11	33
	4.6	3	3	36
	4.8	9	9	45
	5	5	5	50
	5.2	11	11	61
	5.4	2	2	63
	5.6	2	2	65
	5.8	1	1	66
	6	9	9	75
	6.2	3	3	78
	6.4	5	5	83
	6.6	1	1	84
	6.8	3	3	87
	7	1	1	88
	7.2	5	5	93
	7.6	3	3	96
	7.8	2	2	98
	8	1	1	99
	8.4	1	1	100
Total	100	100		

**Table : IV - Phoneme Isolation: Frequency of Test Scores (After the Training)**

		Frequency	Percent	Cumulative
Valid Score	11.8	1	1	1
	12.2	1	1	2
	12.4	1	1	3
	12.6	1	1	4
	13	1	1	5
	13.2	1	1	6
	13.4	5	5	11
	13.6	1	1	12
	13.8	5	5	17
	14	4	4	21
	14.2	2	2	23
	14.4	3	3	26
	14.6	7	7	33
	14.8	10	10	43
	15	5	5	48

15.2	6	6	54
15.4	7	7	61
15.6	4	4	65
15.8	7	7	72
16	6	6	78
16.2	2	2	80
16.4	3	3	83
16.6	5	5	88
16.8	2	2	90
17	2	2	92
17.2	2	2	94
17.4	1	1	95
17.8	2	2	97
18	1	1	98
18.4	1	1	99
18.6	1	1	100
Total	100	100	

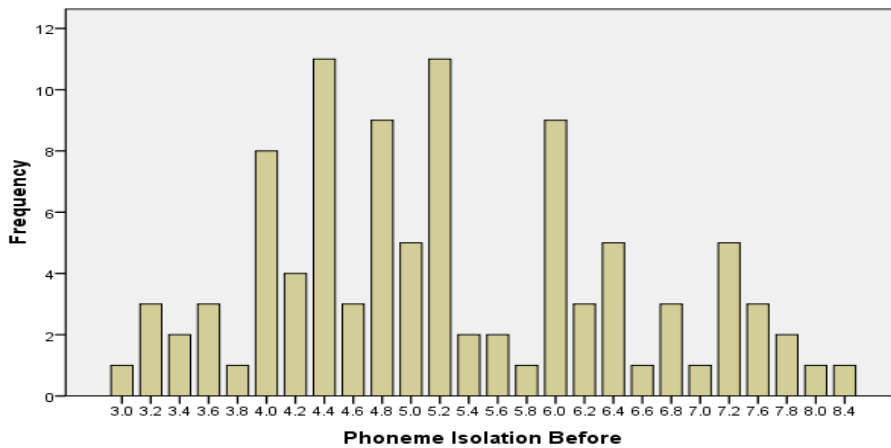


Fig. 4: Phoneme Isolation (Before)

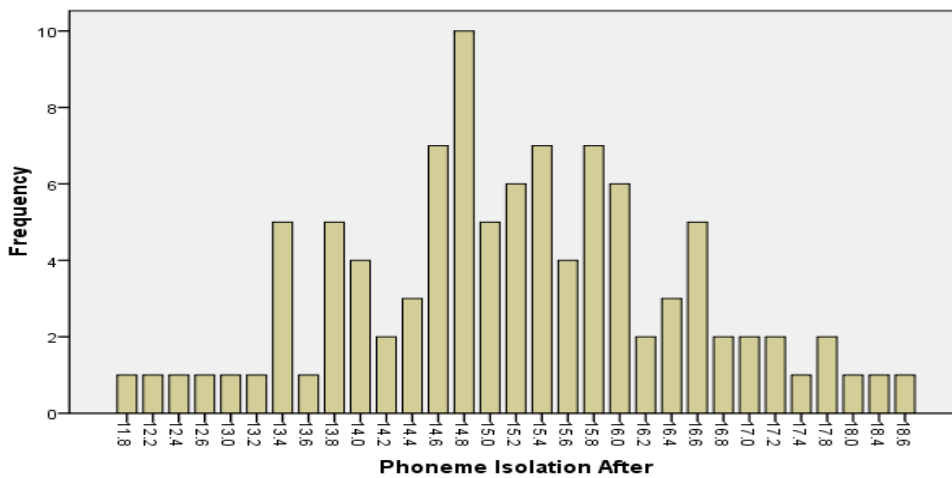


Fig. 5: Phoneme Isolation (After)

Similar results are obtained for phoneme segmentation, phoneme blending and phoneme substitution.



#### IV. CONCLUSION

The study is to evaluate the effectiveness of phonological skills using self-designed learning kit on spelling formation and reading readiness. The study examines that the phonological awareness programme has ameliorated participants' scores on reading readiness and spelling formation.

Overall outcome exhibit a drastic improvement in post test scores of spelling formation and reading readiness. Significant improvement is seen in the post test scores of all the four task that is phoneme identity, phoneme segmenting, phoneme blending and phoneme substitution but the prominent gains for all the students is found in phoneme blending. Intervention of phonological skills also helps the participants to decode the unknown words introduced to them.

Phoneme isolation pretest scores indicate that the participants are oblivious to the letter sound knowledge therefore phoneme isolation pretest scores of vowel 'o' is nil. The scores considerably increased as we progress to vowels 'e', 'i', 'o', 'u', and the betterment trend is observed as the intervention progressed from vowel to vowel.

In pretest, the least average score is 3 which is tremendously increased to 11.8 in the post test scores. The difference in the least scores of pre and post test indicates that the intervention results significant improvement in the participants. The participants, who are in the range of average scores between 4-6 in pretest scores, have shifted to score range between 14-16 in post test scores suggesting effectiveness of intervention.

Analysis of the pre-intervention and post-intervention data indicates that explicit instruction in phonemic awareness combined with guided reading and word work has positively impacted the reading levels at post-tests results. Although students have shown growth in pre-tests and post-tests scores, the students have shown the most significant improvement in post-tests scores regards to their phonemic awareness skills.

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