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## Survey on the Knowledge Base of EFL Pre-service Teachers for Phonics Instruction

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### Abstract

Phonics which refers to the letter-sound relationship originates in English speaking countries. Phonics instruction is part of early reading instruction. Based on previous literatures, the most suitable one for EFL students is synthetic phonics instruction approach. Since 2011, phonics is required by National English Curriculum in China, literatures indicated that in the actual teaching activities, it is hard to implement phonics instruction, regardless of phonics instruction approaches. The rationale for this is that the in-service teachers and pre-service teachers are short of subject matter content knowledge. Very few studies are conducted to look into in-service EFL teachers and pre-service EFL teachers' knowledge base to teach phonics. To bridge the gap, this study aims at providing preliminary descriptive data via a survey on pre-service EFL teachers' knowledge base to teach phonics. To attain this goal, 104 pre-service EFL teachers ranging from the first academic year to the fourth academic year are selected via random sampling technique to fill in the survey. The findings indicate their weak knowledge base for phonics instructions. This study hopes to provide empirical information for policy makers or researchers to look into this matter to take some measures to prepare pre-service EFL teachers to teach phonics in order to promote the implementation of phonics instruction in EFL context in China.

**Keywords:** Pre-service EFL Teachers, Subject Matter Content Knowledge, Phonics Instructions, Teacher Preparation

### Background

English is an alphabetic language which contains 26 letters and represents 44 different sounds (International Literacy Association, 2019)[ILA, 2019]. Hence, for each individual letter, there may not be only one sound to be pronounced. Phonics is just the study of the relationship between letters and sounds (ILA, 2018). Once, the new language learners grasp

the decoding rules with phonemic awareness, could they successfully turn those prints into their inner verbal speech to improve their reading fluency. With more sight words and practice, more mental attention could be paid on comprehension rather than decoding, reading comprehension abilities might be improved (Blevins, 2017). Thus, the initial purpose of phonics instruction is to read on word level and then to text level. At the same time, decoding and encoding are reversed processes and decoding goes before encoding. Spelling abilities might also be developed consequently with the development of reading. Blevins (2017), Department of Education, Science and Training (2005) [DEST, 2005]; ILA (2019) indicated that phonics is suitable for all the English learners, including EFL students. In China, English is the foreign language. The pupils are called EFL learners. There are numerous empirical studies indicate that phonics instruction indeed can promote EFL pupils' reading and spelling abilities as well as interests and learning motivations (Huangpu, 2017).

In the National Curriculum of English, which was released by Chinese Education Ministry in 2011 (Ministry of Education, 2011), phonics was required and emphasized. More specifically, 26 letters and 44 sounds as well as some phonograms are required. After the year of 2011, most of the English textbooks for primary schools were revised. Textbooks provided phonics instruction content since then. However, even there were phonics content in the textbooks, teachers may ignore it (Hu, 2020). Mechanical words memorization and International Phonetic Alphabetics were still being used in the class (Hu, 2020). Zhao (2019) pointed out that novice teachers were lack of the related phonics knowledge base to teach phonics. They even had not learned phonics or the way to instruct it when they were in the teacher training programs. This might attribute to the poor implementation of phonics in daily teaching activities. Actually, according to Zhao et al (2015); Zhao (2019), even most of the teachers had undertaken phonology class in the pre-service teacher training program, but those courses merely focused on improving their own pronunciations via International Phonetic Alphabet. These training courses were not aiming at preparing the new teachers to teach phonics to EFL pupils. Hence, the purpose of this study is to investigate the pre-service EFL teachers' subject matter content knowledge for teaching phonics. Guided by the research purpose, the research objectives are to check pre-service EFL teachers' familiarization towards phonics knowledge and to investigate whether the degree of familiarization varies from different academic years or different genders.

Therefore, the research questions of this study are:

- Research question 1: What is the familiarization degree of the pre-service EFL teachers towards phonics subject matter content knowledge?
- Research question 2: Does the familiarization degree vary from different genders? The null hypothesis is:  $\bar{X}_{\text{male}} = \bar{X}_{\text{female}}$
- Research question 3: Does the familiarization degree vary from different academic years? The null hypothesis is:  $\bar{X}_1 = \bar{X}_2 = \bar{X}_3 = \bar{X}_4$ . To note that, 1, 2, 3 and 4 represents 4 different academic years.

### Literature Review

Phonics, as stated above, is the relationships between letters and the corresponding sounds (Blevins, 2017). It is not a specific teaching method and there are many approaches to teach it, such as synthetic phonics approach, analytic phonics approach as well as analogy phonics approach. However, in China, phonics was introduced in recent 11 years. Studies on phonics were comparatively scarce (Huangpu, 2017). Fundamentally, there were no such

differentiated terms referring to different phonics instruction approaches. On the other hand, the term phonics was used broadly and generally to a method to teach vocabulary to EFL beginners. Therefore, in the previous studies on phonics, it was hard to tell which phonics instruction the researchers has applied. This is a limitation of the current phonics studies in China.

In English speaking countries, phonics instruction aims at promoting early reading. Phonics is always the hot topic of researches. From 1930s-1990s, the hot debates are centered on phonics and whole words (Parker, 2019). From 1990s on, researches centered on no longer on phonics or whole word, and phonics was considered as the effective way to early reading. During this time, the debates were around which phonics instruction is the best one or most effective ones (DEST, 2005; Parker, 2019). After 2000, more research attention was paid on the knowledge base to teach phonics of the in-service teachers and pre-service teachers (Blevins, 2017; DEST, 2005). For instance, in the report of Department of Education, Science and Training of Australia, preparing teachers for phonics instructions is strongly recommended. And, Department for Education and Skills in England released a Primary National Strategy to guide the practitioners to teach phonics in 2007 (DfEs, 2007). In 2010, US Department of Education released the survey findings among more than 2000 pre-service teachers around the nation and found un-satisfactory knowledge construct for phonics teaching among them. The correct rate in the basic knowledge assessment is only 57% (Salinger et al., 2010). In Australia, Literacy Educators' Association released "Preparing Australian Teachers to Teach Literacy" in 2015 based on the recommendations of DEST (2005). The same year, in UK, Manchester Metropolitan University also developed a guide to train the pre-service teachers to teach phonics (MMU, 2015). In the following year, another survey on knowledge base for teaching phonics was carried out in English speaking countries and the result is similar as the one which carried out in the US in 2010 (Washburn et al., 2016). In 2017, International Literacy Association released the Standards for preparation of Literacy Professionals which called for the program or course evolution for early reading instruction by phonics (ILA, 2017). In 2020, International Literacy Association strongly recommends training pre-service teachers with science of reading (ILA, 2000). Indeed, it is necessary to prepare the pre-service teachers to teach phonics because Blevins (2017), ILA (2019), Sprague (2014) held the opinion that teachers' knowledge of phonics affects their abilities to teach phonics and pedagogical decisions. Just as Shulman (1986; 1987) and Howey and Grossman (1989) stated, the two main parts of teachers' knowledge base is subject matter content knowledge and pedagogical content knowledge. Subject matter content knowledge is about the subject matter which is the basis of pedagogical content knowledge. In other words, pedagogical content knowledge derives from subject matter content knowledge and help teachers to convey or express the subject matter explicitly, and easily to be understood by students. Thus, in order to implement phonics, subject matter content knowledge on phonics is essential. Spear-Swerling and Bruker (2004) held the same opinion that with adequate subject matter content knowledge teachers can provide students with effective instructions. Piasta et al. (2009) also found that the more subject matter content knowledge of phonics the teachers possess, the more explicit instructions they could give to their students and help students to gain the decoding skills which promote early reading. Hence, the basic knowledge base for phonics instruction is crucial. According to Han (2011) and Wu (2005), without subject matter content knowledge the teaching activities would not be realized. Hence, for pre-service EFL teachers, to possess subject matter content knowledge is the first and essential step to teach phonics.

However, in China, on search of China Knowledge Resources Integrated Database (CNKI) which is the most popular database for researchers, there are very few studies focusing on pre-service teachers' knowledge base. For in-service EFL teachers, Zhao et al. (2015) surveyed 766 teachers from 40 primary schools and found their knowledge base is not sufficient to allow them implement explicit phonics instruction. Since, no studies in China focus on pre-service teachers' knowledge base for phonics instruction. To bridge the research gap, the survey in the current study aims at peeping into pre-service EFL teachers' subject matter content knowledge for phonics instruction to intrigue more studies or more discussions on this matter.

To conduct the survey, as Nation and Macalister (2010) suggested, the required knowledge framework is generalized from previous literatures. More specifically, SSP Model for training pre-service teachers designed by the Faculty of Education in Manchester Metropolitan University (MMU, 2015) together with R+P framework proposed by Carroll et al. (2011) provides the required knowledge base for the adaption of the survey items from Zhao et al. (2015).

## **Methodology**

### **Samples**

This study adopts random sampling technique to enroll 104 pre-service EFL teachers in one of the teachers' college in China from the first year to the fourth year to fill in the questionnaire. They were selected randomly by matrix number. Among them, 21 participants were from the first academic year, 47 of them were from the second academic year, 33 of them were from the third academic year and only 3 of them were from the fourth academic year.

### **Instrument**

The instrument for this survey is a five-point Likert scale. Likert scale is a type of summated scale which consists of a number of items which express either favorable or unfavorable attitude towards certain object to which the respondent is required to react (Kothari, 2009). In this study, there are altogether 10 items in the form of 5-point Likert scale. Each item is designed to know pre-service EFL teachers' familiarization degree towards subject matter content knowledge of phonics. All the items in the questionnaire are adapted from Zhao et al (2015) based on the required knowledge framework generalized from SSP Model (MMU, 2015) and R+P framework (Carroll et al., 2011). And through the principle of Likert scale, the most favorable response is given a value of 5 and the least favorable one is given the value of 1 (Kothari, 2009). More specifically, in this instrument, the response of "not at all familiar" is given a value of 1 point, the response of "not very familiar" is given the value of 2 points, the response of "somewhat familiar" is given the value of 3 points, the response of "familiar" is given the value of 4 and the response of "very familiar" is given the value of 5 points. The ten items are about 1) phonics definition; 2) phonemic awareness and phonological awareness; 3) phonics instruction approaches; 4) vowel sounds; 5) irregular words; 6) consonant sounds; 7) purpose of phonics instruction; 8) role of phonemic awareness; 9)decoding rules reinforcing approach; 10) phonics instruction approaches in textbooks in China.

Since Reliability and Validity is essential to the instrument (Kothari, 2009). First, Cronbach's Alpha was applied to measure the internal consistency. The result showed that Cronbach's  $\alpha=0.944$ , which indicated a fair reliability of this instrument. Second, Kaiser-

Meyer-Olkin (KMO) and Bartlett test was applied to estimate the construct validity (Kumar, 2019). The result showed that KMO=0.936, Bartlett's Test Sphericity, Approx. Chi-square=833.856,  $P < 0.001 < 0.05$  which provide the evidence of the construct validity of it. Further, via applying Exploratory Factor Analysis, 1 component is extracted from the 10 items, and the cumulative is 67.943% means, those ten items have one focus and can explain 67.943% of the scale content which also indicated acceptable construct validity.

### Data Collecting & Analysis

Data were collected by a 5- point Likert scale on a professional questionnaire APP in China. The online questionnaire was delivered to the participants via QR code. All the participants were given 20 minutes to complete the questionnaire and the data collected were downloaded and analysed by statistic software. More specifically, to answer primary research question 1, descriptive statistics are employed to examine the means, percentiles as well as standard deviations. To answer primary research question 2, independent t test was adopted as Wu (2018) suggested that when sample size is larger than 30, t test is applicable in mean comparison regardless of the score distribution. To answer research question 3, One-way ANOVA was applied to check the mean difference between groups. All the data analyses were non-directional and the significance level was of 0.05.

### Findings

The findings are presented in this sub-section. First, the distribution of academic year is reported in table 1, and the gender distribution is reported in table 2.

Table 1: Distribution of different academic years

Academic Year	N	%
First year	21	20.2
Second year	47	45.2
Third year	33	31.7
Fourth year	3	2.9
Total	104	100

Table 2: Demographic information of Gender distribution

Gender	N	%
female	86	82.7
male	18	17.3
Total	104	100

From table 1 and table 2, the statistics show that altogether 104 valid questionnaires were filled in and returned. Among all the respondents, there were 18 males (17.3%), 86 females (82.7%). Also, there were 21 respondents from the first academic year (20.2%), 47 respondents from the second academic year (45.2%), 33 respondents from the third academic year (31.7%), and 3 respondents from the fourth academic year (2.9%).

Then, in order to answer primary research question 1: What is the familiarization degree of the pre-service EFL teachers towards phonics knowledge? The means and standard deviations are reported in table 3 as below:

Table 3: Descriptive Statistics about the means and Std. Deviation:

N	Minimum	Maximum	Mean	Std. Deviation
104	10	40	17.2212	7.39451

Table 3 shows that there are altogether 104 valid questionnaires. The minimum score is 10, which indicates that some of the respondents are not familiar with phonics knowledge at all. The maximum score is 40 implies that some of the respondents are familiar with phonics knowledge. However, the mean score 17.2212 indicates that on average, pre-service EFL teacher participants are generally not vary familiar with phonics knowledge.

To further understand the pre-service EFL teachers' self-evaluation on their phonics subject matter content knowledge, their responses of familiarization degree are ranked in decreasing order in table 4 below:

Table4. Respondents' familiarization degree of phonics knowledge in decreasing order

Rank No.	Item/topic: familiar with:	Not familiar at all	Not very familiar	Somewhat familiar	Familiar	Very familiar
		Respondents %				
1	Q2: relationship between phonemic awareness and phonological awareness	50	41.3	7.7	1.0	0
2	Q3: different phonics instruction approaches	59.6	29.8	10.6	0	0
3	Q5:relationship between high frequency words and irregulars	53.8	30.8	11.5	2.9	1.0
4	Q10:phonics instruction approaches in text books in China	52.9	30.8	12.5	3.8	0
5	Q9:decoding rules maintenance	55.8	27.9	11.5	4.8	0
6	Q7: purpose of phonics	53.8	29.8	14.4	1.9	50
7	Q1: phonics definition	48.1	30.8	15.4	4.8	1.0
8	Q6: consonant sounds decoding rules	50	27.9	15.4	5.8	1.0
9	Q4: vowel sounds decoding rules	49	27.9	12.5	7.7	2.9
10	Q8:importance of phonemic awareness	49	19.2	18.3	8.7	4.8

As indicated by table 4 that more than half of the respondents expressed they are not familiar with subject matter content knowledge. Especially, 78.9% of them do not know the definition of phonics and up to 91.3% percent of them are not able to distinguish phonemic awareness from phonological awareness. 89.4% of them are not familiar with phonics instruction approaches. 83.6 of them do not understand why to teach phonics. In other words, they are not familiar with the specific relationship between phonics and early reading. Up to 76.9 %and 77.9% of them expressed their inability to know basic phonics decoding rules of

vowels and consonants. Therefore, 83.7% of them do not know how to help their students to maintain acquired phonics decoding rules and 84.6% of them express inability to deal with irregulars. By far, research question 1 is answered and they consider that they have comparatively weak knowledge base for phonics instruction.

To further answer research question 2, independent t test was employed to test the null hypothesis:  $\bar{X}_{\text{male}} = \bar{X}_{\text{female}}$  and the findings are reported in table 4 below.

Table 5 Independent t test result between mean score of female and male participants

Variable	$\bar{x} \pm s$	t	P
Gender		0.945	0.347
male	17.53±6.98		
female	15.72±9.20		

By applying Independent T test to compare the means difference between two gender groups, the results in table 5 shows that  $P=0.347 > 0.05$ . The P value indicates that the null hypothesis is failed to be rejected. There is no statistical significant difference between the mean scores of both genders. In other words, both male and female pre-service EFL teachers have the same familiarization degree towards phonics subject matter content knowledge. Thus far, the primary research question 2 is answered.

To further answer primary research question 3, One-way ANOVA was applied to test the hull hypothesis:  $\bar{X}_1 = \bar{X}_2 = \bar{X}_3 = \bar{X}_4$  and the findings are reported in table 5 below.

Table 6: Results of One-way ANOVA

Variable	$\bar{x} \pm s$	F	P
Academic Year		1.391	0.250
1	15.52±6.61		
2	17.57±7.43		
3	18.36±7.89		
4	11.00±1.73		

The findings in table 6 suggests that  $F=1.391$ ,  $P=0.25 > 0.05$ . P value indicates that the null hypothesis is failed to be rejected. There is no statistical significant difference between groups. In other words, pre-service EFL teachers from all four academic years have the similar familiarization degree towards phonics subject matter content knowledge. Thus far, research question 3 is answered.

## Discussion

Seeing from the survey result, it is clear that those pre-service EFL teachers are short of related subject matter content knowledge to teach phonics. The results are in accordance with Salinger et al (2010); Washburn et al., 2016 that pre-service teachers were not well prepared for teaching phonics in English speaking countries. In addition, the findings of the current study is in align with Long (2019); Yan (2018); Zhao (2019) that in-service EFL teachers in China are not familiar with what is phonics, why to teach phonics and how to implement phonics instructions. The main reason is that during the four years EFL teacher training program, there were no related course provided to prepare them to teach early reading through phonics. Take this teachers' college as an example, in the preservice teachers' training program, there is indeed phonology class which only takes up 0.5 credits.



The contents of the phonology class focus on International Phonetic Alphabet with specific purpose of improving pre-service EFL teachers' own pronunciation rather than to teach early reading with phonics. This explanation is just in accordance with (Zhao et al., 2015). However, as mentioned above, the previous studies are carried out on pre-service teachers in English speaking countries or on in-service EFL teachers in China, via searching of the most popular database CNKI, studies conducted to peep into pre-service EFL teachers' knowledge base to teach phonics are scarce. In that case, the findings of the current study may humbly add a brick to the literatures on pre-service EFL teachers' phonics instruction field in EFL context in China.

In addition, empirically, the findings indicate that regardless of the academic year difference or gender, almost all of them expressed more or less their knowledge inadequacy in phonics and its instruction. This phenomenon also reflects the importance of professional phonics training in teachers' preparation program and calls for a phonics instructional guide as mentioned by (Long, 2019; Zhao, 2019; Zhong, 2020; Zhong and Kang, 2021). The findings also implies that, if a phonics instructional guide is going to be designed and developed to be adopted in professional training, the guide should be suitable for pre-service EFL teachers regardless of their academic years and to focus on make up their subject matter content knowledge inadequacy in teaching phonics. Therefore, theoretically, the findings of this study also address knowing target adult trainees' knowledge deficiency before instructional design in light of Andragogy Theory of Adult Learning (Branch, 2018; Knowles et al., 2015), which further requires a needs assessment to formally assess adult pre-service EFL teachers' knowledge discrepancy and their desired changes to ensure the quality of instructional design and the effectiveness of the professional training (Morrison et al., 2019).

### **Limitations and Conclusions**

First, due to the natural limitation of Liker scale, the data collected might be superficial. Also, this is a preliminary study which aims to peep into pre-service EFL teachers' knowledge base to teach phonics, the study is not deeper or extensive enough to provide profound information on pre-service EFL teachers' present knowledge status which might be solved by a formal needs assessment. This limitation guarantees further study to adopt multidimensional instruments to identify pre-service EFL teachers' current knowledge base and their desired changes.

Second, although, as Johnson & Christenson (2019) noted that randomization is the presumption of inferential statistics, this study adopts random selection technique to select 104 samples from four academic years. However, the number of samples in the fourth academic year is not quite comparable to the sample numbers in other academic years which may limit the generalization of the findings to a larger group. This limitation also implies that in future study in the similar context, random stratified sampling technique might be the most suitable one to select representative samples to ensure the samples possess similar or the same characteristics as the population in order to generalize findings to a broader layer.

Despite the above mentioned limitations, this study opens a window to look into pre-service EFL teachers' subject matter content knowledge to teach phonics and initially locate their knowledge shortage. Thus, humbly, the researcher hopes to provide thoughts on course reformation in teacher preparation program. Then to develop a phonics instructional guide to bridge the gap in assisting pre-service EFL teachers or even in-service EFL teachers promoting their understanding of phonics and acquiring subject matter content knowledge to teaching early English reading through phonics in EFL context in China.

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