



Alphabetic Knowledge and Phonological Awareness: A comparison between Malaysian Preschool Children from Public and Private Kindergartens

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ABSTRACT

Alphabetic knowledge and phonological awareness are essential skills in learning to read. This research examined the level of acquisition on alphabetic knowledge and phonological awareness among 60 preschoolers from private and public preschools in Kuching, Sarawak. The mean age of the children was 5.58. The children were administered letter name and sound knowledge, and letter naming fluency tests to examine their alphabetic knowledge; Comprehensive Test of Phonological Processing and Yopp-Singer Phoneme Segmentation Test to examine their phonological awareness. Higher achievement in alphabetic knowledge and phonological awareness was found among preschoolers from private preschools compared to those from public preschools. This study discusses the implications for practice and ways teachers could explicitly foster alphabetic knowledge and phonological awareness skills in classroom.

Keywords: Learning to read; Alphabetic knowledge; Phonological awareness; Preschool children.

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INTRODUCTION

Learning to read is important in early literacy development. Many researchers have demonstrated that alphabetic knowledge (AK) and phonological awareness (PA) are two fundamental skills that children must

acquire in learning to read. The National Early Literacy Panel [NELP] (2008) claimed that the foundation for conventional reading is formed by emergent literacy skills which are the multiple skills associated with early reading ability. These skills include AK and PA, two strong predictors that provide consistent positive impact on students' later decoding and reading comprehension abilities when taught in combination (Shanahan & Lonigan, 2013).

Alphabetic Knowledge

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Alphabetic knowledge (AK) refers to the ability to identify, name, write letters, and produce the sounds corresponding to letters (Piasta & Wagner, 2010). It has always been recognised as the most robust predictor of later literacy achievement (NELP, 2008). Children's familiarity with letter forms, names, and corresponding sounds are the key to AK acquisition (Piasta & Wagner, 2010). The learning of letter sounds and word spellings will be easier for a child who has automatic and accurate recognition of letters, compared to a child who does not have automaticity and accuracy in letter recognition (Wood & Mclemore, 2001).

Letter name knowledge and letter sound knowledge. Letter name knowledge (LNK) is the knowledge of the letter names of the alphabet; letter sound knowledge (LSK) is the knowledge of the sound of the letters including vowels and consonants. Recognised as vital predictors in reading readiness, LNK and LSK greatly influence reading achievement (Sigmundsson, Eriksen, Ofteland, & Haga, 2017; Snow, Burns, & Griffin, 1998). LNK promotes children's LSK and phonemic sensitivity skills thus making LNK and LSK the fundamental skills to help children decode words and write (Foulin, 2005; Roberts, Vadasy, & Sanders, 2019).

Letter naming fluency. Letter naming fluency (LNF) refers to the speed and accuracy in naming the letters of the alphabet (Speece, Mills, Ritchey, & Hillman, 2003). LNF task measures an individual's familiarity with the letters of the alphabet (Cummings, Kennedy, Otterstedt, Baker, & Kame'enui, 2011). It is typically measured in isolation, unlike the case of LNK and LSK, which are usually combined (Speece et al., 2003).

Phonological Awareness

Phonological awareness (PA) is the ability to explicitly capture the sound structure of spoken language (Schneider, Roth, & Ennemoser, 2000). PA develops in children over time in the course of learning to read (Landerl et al., 2018; Meyer, Invernizzi, & Ford, 2018). It is an important skill and also one of the strongest predictors of reading ability (Lerner & Lonigan, 2016; Sigmundsson et al., 2017).

Studies have shown that the later success in learning to read in both alphabetic and non-alphabetic languages is predicted by pre-readers' PA ability (Sodoro et al., 2002; Ziegler & Goswami, 2005). It is challenging for children with poor PA to fully understand the mappings between a certain spoken language and its orthography (Suggate, 2016).

The continuum of phonological awareness. PA develops along a continuum of complexity, an ordered developmental progression, starting from onset rime awareness, word awareness, syllable awareness to phonemic awareness (Lane, Pullen, Eisele, & Jordan, 2002; Lerner & Lonigan, 2016). With a corresponding hierarchy of instructional tasks, each level increases in skill difficulty (Fogarty, 2014).

Onset rime awareness, the first component in the continuum of PA, is a preliteracy skill where children are taught to detect the onset and rime of a word (Bryant, Maclean, & Bradley, 1990). Onset refers to the initial sound of a word and rime refers to the terminal sound of a word (Steward, 2004). Mihai et al. (2015) described an example of onset rime awareness in intentional PA in-

struction within storybook reading, using “Someone Bigger” by Jonathan Emmett; where children identified the words “mail” and “jail” have different onsets (/m/ and /j/) but similar ending rime (-ail). The children were also encouraged to figure out other sounds they could put in front of “-ail” to create more words (Mihai et al., 2015).

Word awareness is the ability to recognise words as discrete elements of both print and speech (Bowey, Tunmer, & Pratt, 1984). It is one of the key elements of emergent literacy development among young children (Justice & Ezell, 2001). Chaney (1994) studied how preschool children were readily making sophisticated metalinguistic judgments about words, which include the ability to discriminate words from sounds and segment spoken utterances into their corresponding word elements.

Syllable awareness is the ability to recognise the different combinations of phonemes that constitute words constructed based on alphabetic principles (Wright & Jacobs, 2003). According to Güldenöglü (2016), syllable awareness is a skill that is generally mastered in kindergarten as an auditory skill.

The last component in the continuum of phonological awareness (PA) is phonemic awareness, which refers to the ability to manipulate phonemes – the smallest unit of sounds (Fogarty, 2014). It is one of the best predictors of children’s reading acquisition (Ehri et al., 2001) and the most advanced PA skill (Fogarty, 2014; Lerner & Lonigan, 2016). There are two significant aspects of PA that encompass phonemic awareness – the ability to segment words into phonemes and the ability to blend phonemes into

words (Chapman, 2003). According to Sodoro et al. (2002), phonemic awareness is required when there are tasks involving blending, deleting, substituting, or moving individual phonemes within or between words. The correlation between reading and PA becomes stronger during the early grades due to the strong association between phonemic awareness and the skills that children acquire to sound out pronounceable nonwords and unfamiliar printed words (Snow et al., 1998).

Alphabetic Knowledge and Phonological Awareness Instruction in Reading Development

Instruction on alphabetic knowledge (AK) and phonological awareness (PA) are crucial for children’s reading development. Reading instruction facilitates children’s acquisition of skills that enable them to read, understand, and feel the enjoyment of the written language (Torgesen, 1998). Alphabetic principle holds critical role in predicting and supporting reading and spelling development (Gillon, 2005). The importance of the alphabetic principle has been demonstrated in many intervention studies. For example, Hulme and Snowling (2015) found that incorporating phonology with reading intervention program that provided letter-sound knowledge and phoneme awareness along with direct reading instruction produced significant improvements in reading outcomes.

The mastery of alphabetic principle and PA aid children in decoding unfamiliar words and recognising letter and sound pattern, which increase the accuracy during word identification (Preßler, Konen, Hasselhorn, & Krajewski, 2014; Soto, Olszewski, &

Goldstein, 2019). Kindergarteners who received phoneme awareness instruction that included letter-sound instruction were significantly better in beginning reading and developmental spelling measures, compared to children who only received letter-sound instruction (Ball & Blachman, 1991).

Critical period hypothesis. According to Lenneberg (1967), the critical period lies between two years of age to puberty, which is around fourteen years of age. The critical period of language development for children is from birth to six years old, when spoken words develop naturally (Schmidt, 2015). Based on the critical period hypothesis (CPH) theory with regards to early language acquisition, it is said that language acquisition proceeds easily and swiftly without external intervention (Fromkin, Rodman, & Hyams, 2010). With children's preliterate PA (the PA they developed via mother tongue language prior to formal learning) and the PA that they develop while learning the names and sounds of letters in the alphabet, this period where children are learning to "break the alphabetic code" can take around 1 to 3 years (Anthony & Francis, 2005).

Context and Purpose of the Present Study

In Malaysia, alphabetic knowledge (AK) and phonological awareness (PA) are not widely studied. There is a dearth of research on AK and PA acquisition by English as Second Language (ESL) learners and the focus of the studies were limited to the primary school level and beyond (Abdullah, Kepol, & Shari, 2014; Chew, 2012; Jamaludin, Alias, Mohd Khir, DeWitt, & Kenayathula, 2015). Additionally, several studies discovered that many Malaysian students

in primary and secondary school level have poor reading and comprehension skills (Abdullah, Kepol, & Shari, 2014; Chew, 2012). Thus, it is vital to address the importance of AK and PA at the early stage of education – preschool, to examine whether the root cause of poor reading and comprehension skills are due to the lack of AK and PA skills. In this case, the gaps in the current literature show that there is still a dearth of AK and PA research for preschool children in Malaysia.

The significance of conducting this study is to examine the AK and PA among Malaysian preschool children and to address their importance to preschool children in reading acquisition. Past studies have demonstrated that AK, PA, and reading acquisition have strong correlations (NELP, 2008). Examining the AK and PA of young children clearly provides a window of opportunity for PA intervention to be conducted on young children who may be at risk of developing reading difficulties. The present study aims to identify the AK and PA of Malaysian preschool children in public and private kindergartens. There were three primary research questions:

1. What is the level of alphabetic knowledge among preschool children?
2. What is the level of phonological awareness among preschool children?
3. Is there any significant difference in alphabetic knowledge and phonological awareness among the preschool children based on the types of preschool?

METHOD

Participants

The sample in the current study consisted of 60 children (mean age = 5.58 years, $SD = .31$) from public and private preschools. The randomly selected children were from two public preschools ($n = 30$), with 12 males (40%) and 18 females (60%); and three private preschools ($n = 30$) with 14 males (46.7%) and 16 females (53.3%). The public preschool children's ethnic backgrounds were as follows: Malay (15%), Indian (1.7%), Bidayuh (10%), Iban (20%) and other (3.3%); the private preschool children's ethnic backgrounds were as follows: Chinese (48.3%) and Malay (1.7%). The participants were without visual or auditory impairment. Only children whose parents had given informed consent participated the present study.

Measures

Alphabetic knowledge. We assessed the children's alphabetic knowledge (AK) using the letter name knowledge, letter sound knowledge and letter naming fluency tests from the early literacy test administrator kit developed by Lee et al. (2020).

(a) Letter name knowledge (LNK). This test consists of two parts: capital letters and small letters. For both types of LNK tests, the letters were randomly arranged. The LNK test required the children to read all the letters correctly. The number of correct letters named for both capital and small letters were added and the average scores were obtained.

(b) Letter sound knowledge (LSK). Using the same test kit as the LNK test, the children were required to sound each letter in the same order as the LNK test. The number of correct letters sounds for both capital and

small letters were added and the average scores were obtained.

(c) Letter naming fluency (LNF). LNF test consists of two alternate forms. The children were required to name as many letters that they could within 30 seconds for both alternate forms. The correct letters named in 30 seconds for each form was calculated and then the average scores from both forms were obtained.

Phonological awareness. The phonological awareness (PA) of the preschool children was measured using 3 subtests, namely Elision, Blending Words, and Sound Matching from the Comprehensive Test of Phonological Processing (CTOPP; Wagner, Torgesen, & Rashotte, 1999). The scores from these subtests were then used to form the Phonological Awareness Composite Scores (PACS).

(a) Elision. This subtest assessed the children's ability to delete words. For example, the children were required to say "leg" without saying /l/.

(b) Blending Words. This subtest assessed the children's ability to orally blend words ranging from larger to smaller units of words. For instance, the children were required to blend /r/ and /un/ and say "run" in response.

(c) Sound Matching. This subtest consists of two parts: First Sound and Last Sound. These subtests assessed the children's ability to orally segment the first and last sound of words. For example, in the First Sound test, children were asked "Which word starts with the same sound as "cat"? "Fire", "can" or "sun"?", and they were required to

respond “can.” In the Last Sound test, children were asked “Which word ends with the same sound as “tap”? “Rub”, “cup” or “dig”?”, and they were required to respond “cup.”

Phonemic awareness. The Yopp-Singer test of Phoneme Segmentation (Yopp, 1995) was used to measure the phonemic awareness of the preschool children. Specifically, the children’s ability to isolate and pronounce the individual phonemes in words was assessed (Torgesen, 1998). For example, the children were required to segment the word “big” into its individual phonemes and to say each sound in the word sequentially. For example, the expected response for “big” is /b/-/i/-/g/. There were 22 words in this test.

This study was conducted by administering the tests on each child for approximately 30 minutes. Psychological distress upon the children was avoided and no forcing happened while conducting the research. All responses were made voluntarily by the children.

Data Analysis

The scoring of each test was based on the test administrator kits provided in the tests. For analysing AK, the raw scores obtained from LNK, LSK, and LNF tests were converted into percentiles and ranked into poor (below the 25th percentile), average (between the 25th and the 75th percentile) and good (above 75th percentile). As for PA, with the provided guidelines and benchmarks in the CTOPP, the raw scores from

each subtest were converted to standard scores, summed up, and then converted into composite scores.

For the Yopp-Singer test of Phoneme Segmentation measure, the tests scores were interpreted and categorised as ‘lack appropriate levels of phonemic awareness’, ‘emerging phonemic awareness’ or ‘phonemically aware’ (Yopp, 1995).

The Independent Samples T-test was used to analyse the significant difference in AK and PA among the preschool children based on the types of preschools. Levene’s Test for Equality of Variances was conducted to examine whether the assumption homogeneity of variance was met. If the assumption was violated, the Mann-Whitney test would be used instead.

RESULTS

What is the Level of Alphabetic Knowledge among Preschool Children?

Alphabetic knowledge was measured by using three tests: letter naming knowledge, letter sound knowledge and letter naming fluency. The percentile ranks for each test are presented in Table 1.

Letter naming knowledge. Across all the measures, the range of percentiles for letter naming knowledge (LNK) was between 1.92 and 100 ($M = 80.80$, $SD = 32.55$), where 47% of the preschool children had good LNK while 10% and 11.7% had average and poor LNK, respectively.

Table 1: The percentile rank for the tests used in measuring alphabetic knowledge

Rank	Letter naming knowledge		Letter sound knowledge		Letter naming fluency	
	<i>n</i>	%	<i>N</i>	%	<i>n</i>	%
Good	47	78.3	27	45.0	-	-
Average	6	10.0	17	28.3	42	70.0
Poor	7	11.7	16	26.7	18	30.0
Total	60	100	60	100	60	100

Table 2: The ranks of the tests used in measuring phonological awareness of preschool children

Rank	Phonological Awareness Composite Scores	
	<i>n</i>	%
Very superior	1	1.7
Superior	3	5.0
Above average	8	13.3
Average	35	58.5
Below average	11	18.3
Poor	2	3.3
Total	60	100
Yopp-Singer Test of Phonemic Segmentation		
Phonemically aware	35	5.0
Emerging phonemic awareness	11	30.0
Lack of appropriate levels of phonemic awareness	2	65.0
Total	60	100

Letter sound knowledge. The range of percentiles for letter sound knowledge (LSK) was between 0 and 100 ($M = 57.69$, $SD = 37.65$), where 45% of the preschool children had good LSK, 28.3% were average and another 26.7% of the children were poor in LSK.

Letter naming fluency. For the letter naming fluency (LNF) test, the range of percentiles was between 0 and 69.70 ($M = 30.26$, $SD = 18.35$), where 70% of preschool children had average LNF while another 30% had poor LNF.

What is the Level of Phonological Awareness among Preschool Children?

Phonological awareness (PA) was measured by using the CTOPP and Yopp-Singer Test of Phonemic Segmentation. Table 2 presents the ranks of the tests used in measuring PA of preschool children – Phonological Awareness Composite Scores (PACS) and Yopp-Singer Test of Phonemic Segmentation.

Phonological Awareness Composite Scores. The range of scores for PACS was between 79 and 147 ($M = 100.35$, $SD = 12.96$). Approximately 1.7% of the preschool children had very superior level of PA; 5% were superior; 13.3% were above average; 58.5% were average; 18.3% were below average; and 3.3% had poor level of PA.

Yopp-Singer Test of Phonemic Segmentation. The range of scores for the Yopp-Singer Test of Phonemic Segmentation was between 0 and 17 ($M = 4.57$, $SD = 5.93$). Approximately 35% of the preschool children were phonemically aware, 11% had emerging phonemic awareness, and another 2% lack the appropriate levels of phonemic awareness.

Is there any Significant Difference in Alphabetic Knowledge and Phonological Awareness among the Preschool Children Based on the Types of Preschools?

An Independent Samples T-Test was conducted to compare the components of alphabetic knowledge (letter name knowledge, letter sound knowledge and letter naming fluency) and phonological awareness (Phonological Awareness Composite Scores and Yopp-Singer Test of Phonemic Segmentation) among participants from the public and private preschools. Table 3 presents the Independent Samples T-Tests for alphabetic knowledge and phonological awareness. Given the violation of the assumption of homogeneity of variances, Mann-Whitney Test was conducted. The results are presented in Table 4.

Letter name knowledge. Levene's test showed that the variances for letter name knowledge (LNK) were not equal, $F(58, 31.54) = 135.07$, $p = .00$. In this case, Mann-Whitney U Test was used because the assumptions of homogeneity of variances were violated, $p < .05$. Therefore, from the Mann-Whitney U test (see Table 4), the participants from private preschool obtained higher scores in LNK compared to those from public preschool. The LNK knowledge of children from private preschools was

statistically significantly higher than children from the public preschools ($U = 244.50$, $p = .00$).

Letter sound knowledge. Levene's test showed that the variances for letter sound knowledge (LSK) were not equal, $F(58) = 7.73$, $p = .01$. Here, Mann-Whitney U Test was used because the assumptions of homogeneity of variances were violated, $p < .05$. Thus, from the Mann-Whitney U test, children from the private preschools had higher score in LSK compared to children from the public preschools. It can be concluded that private preschool was statistically significantly higher than public preschool in LNK ($U = 64$, $p = .00$).

Letter naming fluency. The independent samples test showed that the difference in letter naming fluency (LNF) between public preschool ($M = -.57$, $SD = .87$) and private preschool ($M = .57$, $SD = .78$) were statistically significant, $t(58) = -5.32$, $p = .00$, 95% CI [-1.56, -.71], $d = -1.12$. Levene's test showed that the variances for LNF in public and private preschool were equal, $F(58) = 2.44$, $p = .12$.

Phonological Awareness Composite Scores. The independent samples test showed that the difference in PACS between public preschool ($M = 92.53$, $SD = 8.5$) and private preschool ($M = 108.17$, $SD = 11.95$) were statistically significant, $t(58) = -5.84$, $p = .00$, 95% CI [-20.99, -10.27], $d = -15.63$. Levene's test showed that the variances for PACS in public and private preschools were equal, $F(58) = 1.43$, $p = .24$.

Yopp-Singer Phoneme Segmentation Test. Levene's test showed that the variances for Yopp-Singer Phoneme Segmentation Test

Table 3: Independent Samples Tests for AK – LNK, LSK and LNF; and PA – PACS and Yopp-Singer Test of Phonemic Segmentation

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
LNK	Equal variances assumed	135.07	.00	-3.9	58	.00	-.90	.23	-1.37	-.44
	Equal variances not assumed			-3.9	31.5	.00	-.90	.23	-1.38	-.43
LSK	Equal variances assumed	7.73	.01	-7.16	58	.00	-1.36	.19	-1.74	-.98
	Equal variances not assumed			-7.16	55.2	.00	-1.36	.19	-1.74	-.98
LNF	Equal variances assumed	2.44	.12	-5.32	58	.00	-1.14	.21	-1.56	-.71
	Equal variances not assumed			-5.32	57.4	.00	-1.14	.21	-1.56	-.71
PACS	Equal variances assumed	1.43	.24	-5.84	58	.00	-15.63	2.68	-20.99	-10.3
	Equal variances not assumed			-5.84	52.3	.00	-15.63	2.68	-21.01	-10.3
Yopp-Singer Test of Phonemic Segmentation	Equal variances assumed	73.77	.00	-9.23	58	.00	-9.07	.98	-11.03	-7.10
	Equal variances not assumed			-9.23	29.1	.00	-9.07	.98	-11.08	-7.06

* $p < .05$

Note. AK = alphabetic knowledge; LNK = letter name knowledge; LSK = letter sound knowledge; LNF = letter naming

were not equal, $F(58, 29.07) = 135.01, p = .00$. Given that assumptions of homogeneity of variances were violated, $p < .05$, the Mann-Whitney U Test was used. The private preschools had higher score in Yopp-Singer Phoneme Segmentation Test compared to the public preschools. It can be

concluded that the children from the private preschool obtained statistically significantly higher scores than the children from the public preschools in the Yopp-Singer Phoneme Segmentation Test ($U = 47, p = .00$).

Therefore, there is a significant difference in alphabetic knowledge and phonological awareness among the preschool children based on the types of preschools. The early literacy skills of children from private preschools were statistically significantly higher than the children from the public preschools.

DISCUSSION

The goal of the study was to explore the alphabetic knowledge (AK) and phonological awareness (PA) among preschool children in public and private preschools. Analyses demonstrated that majority of the public preschool children in this study lack the essential literacy skills, especially in PA. Meanwhile, children from the private preschools were average in both AK and PA. Many factors may be associated with the poor to average PA among pre-schoolers, but it was beyond the scope of the present study.

Implications of the Present Study in Explicit Instruction of Alphabetic Knowledge and Phonological Awareness in Classroom

The importance of AK and PA in learning to read have been emphasised repeatedly and demonstrated by many researchers around the world. AK and PA skills are fundamen-

tal to learning to read, even though there are other variables such as intelligent quotient (IQ) and socioeconomic status (SES) that might impact one's ability to read well (NELP, 2008; see also Lee & Al Otaiba, 2015). What can teachers and parents do in order to enhance the AK and PA of the children? The findings from the present study provide several implications regarding the importance of explicit instruction of AK and PA in classrooms. Explicit teaching approach on AK and PA is needed to improve the reading acquisition of preschool children (Kelly, Leitão, Smith-lock and Heritage, 2017).

For example, AK can be explicitly fostered by using Enhanced Alphabetic Knowledge (EAK) by Jones, Clark and Reutzel (2013). In EAK, teachers can vary instructional pacing to devote more time to the letters that students find difficult to learn and less time to letters that they already know, besides strategically revisiting the more difficult to learn letters (Jones et al., 2013). Jones and colleagues further elaborated that EAK provides students with the instruction that allows immediate use of each letter in reading and writing by explicitly and efficiently teaching them how to identify the letter name and sound, recognize the letter in text, and produce the letter form.

In fostering PA, the understanding on how

Table 4: Mann-Whitney U test for letter naming knowledge, letter sound knowledge and Yopp-Singer Test of Phonemic Segmentation

	Letter naming knowledge	Letter sound knowledge	Yopp-Singer Test of Phonemic Segmentation
Mann-Whitney U	244.50	64.00	47.00
Wilcoxon W	709.50	529.00	512.00
Z	-3.12	-5.72	-6.47
Asymp. Sig. (2-tailed)	.00	.00	.00

a. Grouping Variable: Type of School

to effectively and efficiently integrate PA instruction into everyday classroom environment is critical in order to support the goal of elevating reading achievement and reducing disparity in reading outcomes (Carson, Gillon, & Boustead, 2013). So, it is best to comprehensively focus on developing children's awareness at the phoneme level during PA teaching time (Carson et al., 2013).

Limitation and Future Research

The sample size used in this study might not be sufficient to generalise a conclusion to represent all the public and private preschools in Malaysia. It is warranted that future research should investigate other aspects including spelling, writing, learning disabilities, reading instruction, cognitive ability, mother tongue, and socioeconomic status (SES) of preschoolers. Besides, this study can be further explored in a more detailed manner by including the upper and lower case letters to assess AK, the impact of SES in public and private preschools, and the correlation between AK and PA in learning to read. The addition of these variables enables the generation of comprehensive results via ANOVA, MANOVA, and structural equation modelling statistical tools. Longitudinal data should be collected and analysed so that policymakers and practitioners can understand how children in multilingual environments such as Malaysia learn to read in Malay and English from kindergarten onwards.

CONCLUSION

The findings that private preschool children have better AK and PA level compared to public preschool children is indeed a con-

cern. AK and PA are fundamental skills that help children to read well. Any child who lacks these skills should receive early intervention that is carried out within the critical period for optimal reading acquisition to occur. It is hoped that this study would initiate efficient approaches among parents, practitioners, researchers, and policy makers in enhancing the children's AK and PA.

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