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COMPARISON OF EARLY LITERACY SKILLS ACHIEVEMENT ACCORDING TO CHILDREN'S AGE

Juppri Bacotang (a), Siti Farhana Md. Yasin (b)*, Nurfarhana Diana Mohd Nor (c), Nur Farhana Abd Wahid (d), Muhamad Suhaimi Taat (e), Adibah Abdul Latif (f), Connie Shin @ Connie Cassy Ompok (g), Nur Suhaidah Sukor (h), Abdul Said Ambotang (i), Ratin Wahyu Juni Atma (j), Frederick Josue Frederick Mojilon (k)
*Corresponding author

(a) Universiti Malaysia Sabah, Malaysia, juppri@ums.edu.my
(b) SEGi University, Malaysia, farhanayasin@segi4u.my
(c) Universiti Pendidikan Sultan Idris, Malaysia, farhanadiana@fpm.upsi.edu.my
(d) Universiti Tunku Abdul Rahman, Malaysia, farhanaw@utar.edu.my
(e) Universiti Malaysia Sabah, Malaysia, suhaimi@ums.edu.my
(f) Universiti Teknologi Malaysia, Malaysia, p-adibah@utm.my
(g) Universiti Malaysia Sabah, Malaysia, connieompok@ums.edu.my
(h) Universiti Malaysia Sabah, Malaysia, nursuhaidahsukor@ums.edu.my
(i) Universiti Malaysia Sabah, Malaysia, said@ums.edu.my
(j) Sekolah Tinggi Ilmu Tarbiyah Palapa Nusantara, Indonesia, ratinwahyuj@yahoo.com
(k) Universiti Malaysia Sabah, Malaysia, mfadhil@ums.edu.my

Abstract

The aim of this article was to compare the achievement of early literacy skills that include language and communication, print awareness, phonological awareness, narrative comprehension, and early writing according to children's age. This quantitative study used a survey method to collect data from children aged 3+ to 4+. The study involved 222 children, which comprised of 119 children aged 3+ (53.6 percent), and 103 children aged 4+ (46.4 percent) from 12 nurseries or kindergartens in Perak and Selangor, Malaysia. The Early Literacy Skills Indicator (ELSI) was used as an instrument to collect data, and Independent Sample T-Test analysis was conducted for data analysis. The findings showed that the achievement in overall early literacy skills in children aged 4+ was higher than children aged 3+, which consisted of print awareness, phonological awareness, narrative comprehension, and early writing. However, the oral language achievement for both 3+ and 4+ years old children was similar. This study suggested that an emphasis on early literacy skills for 3+ years old children is needed. Thus, educators need to ensure that the teaching and learning activities related to early literacy skills should be implemented according to the children's age.

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Keywords: Children's age, early childhood, early literacy skills

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1. Introduction

Currently, the focus and policy of national education and early learning standards have shifted towards literacy mastery, which is reading and writing skills among children. Usually, the mastery of children's literacy begins during the teaching and learning process (T&L) either in kindergarten or primary school. However, literacy learning has actually existed since early years and this continuous development process known as emergent literacy or the emergence of literacy (Clay, 1966). According to the Model of Early Literacy Development by Dunst et al. (2006), the development of early communication, language, and literacy of children is divided into three phases; (i) preliterate for children aged 0 to 1; (ii) emergence of literacy for children aged 1 to 2; and (iii) early literacy for children aged 3 to 4. Thus, to help children's literacy mastery, they need to be exposed to the emergence of literacy from an early age.

Furthermore, most of previous studies have shown that early literacy skills are a determinant of a child's future level of reading and writing proficiency (Li & Yang, 2015; Machado, 2016; Ozernov-Palchik et al., 2017). Early literacy skills are also an important aspect of a comprehensive early childhood education program (ECE) (Che Mustafa et al., 2018, 2019; Strickland & Ayers, 2007), and have expanded to kindergarten (Bowman et al., 2001). Sometimes, information related to the achievement of children's early literacy skills is interpreted as a reflection of all aspects of teaching in the ECE program (Strickland & Ayers, 2007). Early literacy skills refer to basic mastery of reading, writing, and other literacy-related skills (Hall et al., 2003). Early literacy skills also include existing skills, knowledge, and attitudes during early years that form the basis for conventional reading and writing skills in the future (Beaty & Pratt, 2015; Machado, 2016; Moravcik & Nolte, 2018). Therefore, early literacy skills need to be exposed to children before they learn more about formal literacy skills.

There are several key components of early literacy skills that children need to master. These coincide with other models which emphasized on the mastery of several components of early literacy skills in a balanced and integrated manner (Cowen, 2003; Dunst et al., 2006; Mason & Stewart, 1990; Rohde, 2015; Whitehurst & Lonigan, 1998). In this study, researchers focused on five components of early literacy skills; oral language, print awareness, phonological awareness, narrative comprehension, and early writing (Bacotang et al., 2017, 2022; Mohamed Isa, Bacotang, et al., 2018; Mohamed Isa, Bacotang et al., 2021).

2. Problem Statement

Early literacy skills are indeed influenced by age factors as children's thinking and cognitive development increase as they grow up. Cognitive development theories such as Piaget (2013) and Vygotsky (2012) explain the development of children's experiences and thinking changes with increasing age. Hamzah (2005) also stated that children's mental representation develops in line with their age and level of knowledge after receiving stimuli from the environment. According to Fowler (1991), children must master certain levels of cognitive development before they can understand abstract concepts such as words, syllables, and phonemes. The study of Dickinson et al. (2006) also found that 3 to 5 years old is the most important time for linguistic, cognitive, and affective development.

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Previous studies have shown inconclusive findings of the relationship between age factor and achievement of early childhood literacy skills. However, some studies show that younger children have lower achievement compared to older children in overall early literacy skills (Abu Zahar, 2013; Kaminski et al., 2014; Mohamed Isa, 2013; Razak et al., 2018), and according to specific components (Che Azid, 2016; Mohamed Isa et al., 2015; Sarudin et al., 2016). On the other hand, there are studies that show age is not associated with the achievement of overall early literacy skills (Ayatollahzadeh, 2004), and age does not follow certain components (Bauer et al., 2016; Birgisdottir et al., 2015; Goodrich et al., 2016). Therefore, the achievement of Malaysian children's overall and by components of early literacy skills based on age needs to be proven.

3. Research Questions

This study questions are there a difference the achievement of early literacy skills that include language and communication, print awareness, phonological awareness, narrative comprehension, and early writing according to children's age?

4. Purpose of the Study

This study's central aim is to compare the achievement of early literacy skills that include language and communication, print awareness, phonological awareness, narrative comprehension, and early writing according to children's age.

5. Research Methods

This study used a quantitative approach through a survey study of children aged 3+ to 4+. The study sample consisted of 222 children, with 119 children aged 3+ (53.6%) and 103 children aged 4+ (46.4%). The study was conducted in 12 nurseries or kindergartens around Perak and Selangor. Researchers used the Early Literacy Skills Indicator (ELSI) as a research instrument to identify the achievement of early childhood literacy skills (Bacotang, 2019). ELSI has been proven to have good validity and reliability in assessing early childhood literacy skills (Bacotang et al., 2020, 2020b; Mohamed Isa et al., 2016). ELSI is suitable for children because it is authentic and conducted through before, during and after reading activities.

Before conducting ELSI to children, the researchers established a good rapport with the children to ease the study process. This was done through the involvement of researchers in learning activities, assisting children in completing assignments, and playing together with children. Then, ELSI was conducted with the children in the classroom which was isolated from others. This was to ensure that the implementation of ELSI was smooth without external distractions. Table 1 shows the components and items related to early literacy skills assessed through ELSI.

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Table 1. Components and items of ELSI

Components	Items
1.0: Oral Language	1.1: Active listening skills in a variety of situations (questions).
	1.2: Focus on conversation / activity.
	1.3: Respond through facial / body gesture.
	1.4: Participate in conversation (expressing opinions / questions).
	1.5 Basic vocabulary acquisition (vocabulary acquired by age).
	1.6: Language acquisition (speaking using correct and fluent spoken language).
	1.7: Speak according to situations / cultures / manners.
2.0: Print Awareness	2.1: Functions of book (showing parts of book as front / back / title).
	2.2: Picture comprehension (distinguish between print and picture).
	2.3: Print rules (knowing reading directions).
	2.4: Environmental print (symbol).
	2.5: Knowledge of text prints (letter).
	2.6: Knowledge of text prints (word).
3.0: Phonological Awareness	3.1: Identify and manipulate sounds from the environment.
	3.2: Knowledge of rhythmic languages.
	3.3: Identify relationship between sound and letter.
4.0: Narrative Comprehension	4.1: Read / listen to stories.
	4.2: Introducing local literature or culture (song).
	4.3: Predicting story.
	4.4: Associate stories with experiences or existing knowledge.
	4.5: Retelling stories.
	4.6: Do reading activities (shared reading).
5.0: Early Writing	5.1: Scribbles / sketches / meaningful drawings.
	5.2: Imitate lines / shapes.
	5.3: Writing techniques (knowing starting point,directions and position of writing).
	5.4: Write own name.
	5.5: Write patterned letters / strings.
	5.6: Write letters / syllables / words.
	5.7: Writing for various purposes (story / experience).

Researchers use parametric test analysis which is Independent Sample T-Test to analyze the data. Researchers have met a number of requirements before using the T-Test which includes variable characteristics, sample size, normal distribution, and variance similarity (Chua, 2014; Elliot & Woodward, 2016; Field, 2018; Howell, 2013; Pallant, 2016; Tabachnick & Fidell, 2013; Talib, 2018). Moreover, the data of this study were measured in the interval scale, and the calculation of the test was based on the mean value (Chua, 2008; Talib, 2018). Through ELSI, children's achievement of early literacy skills was in item form with ascending order responses, namely 0, 1, 2, and 3 (rating scale). Independent Sample T-Test could determine whether there was a difference in the achievement of early literacy skills based on the child's age or vice versa.

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6. Findings

The researchers identified differences in children's overall achievement and through five components of early literacy skills based on their age; (i) oral language; (ii) print awareness; (iii) phonological awareness; (iv) narrative comprehension; and (v) early writing.

6.1. Overall Early Literacy Skills

The first hypothesis (H1) for this study was "There is a difference in the overall achievement of early literacy skills for children aged 3+ and 4+." The results of the Independent Sample T-Test were significant ($t = 6.91$, $df = 220$, $p = 0.00 < 0.05$), hence the H1 was accepted. The findings showed that there was a difference in the overall achievement of early literacy skills for children aged 3+ and 4+. Specifically, the overall achievement of early literacy skills for children aged 4+ ($n = 103$, $M = 2.21$, $SD = 0.53$) was higher than children aged 3+ ($n = 119$, $M = 1.67$, $SD = 0.62$). The results are presented in Table 2 below;

Table 2. Overall score of early literacy skills overall between 3+ year olds and 4+ year old children

Age	N	m	SD	df	T value	p
3+ years	119	1.67	0.62	220	6.91	0.00
4+ years	103	2.21	0.53			

Note: N = number of sample, m = mean score, SD = standard deviation, df = degree of freedom, p = significant, significant level at the significance level 0.05.

6.2. Oral Language

The second hypothesis (H2) for this study was "There is a difference in the oral language achievement between children aged 3+ and 4+." In H2 testing, the researchers found that the Lavene Test for the mean score of oral language across children's age was significant [$F = 8.56$, $p = 0.00 < 0.05$] which explained the condition of variance was not met. Therefore, the p-value for the Independent Sample T-Test was reported using "Equal variances not assumed".

Independent Sample T-Test results were insignificant ($t = 0.18$, $df = 218.25$, $p = 0.86 > 0.05$), hence the H2 is failed to be accepted. Findings showed that there was no difference in oral language achievement between children aged 3+ and 4+. This means oral language achievement for children aged 3+ ($n = 119$, $M = 2.11$, $SD = 0.78$) was similar to children aged 4+ ($n = 103$, $M = 2.10$, $SD = 0.61$). The results are presented in Table 3 below;

Table 3. Differences in the mean score of oral language between children aged 3+ and children aged 4+

Age	N	m	SD	df	T value	p
3+ years	119	2.11	0.78	218.25	0.18	0.86
4+ years	103	2.10	0.61			

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6.3. Print Awareness

The third hypothesis (H3) for this study was "There is a difference in print awareness achievement between children aged 3+ and 4+." The results of the Independent Sample T-Test were significant (t = -6.06, df = 220, p = 0.00 <0.05), hence the H1 is accepted. The findings showed that there was a difference in the print awareness achievement between children aged 3+ and 4+. This means the print awareness achievement for children aged 4+ (n = 103, M = 2.05, SD = 0.62) was higher than children aged 3+ (n = 119, M = 1.52, SD = 0.66). The results are presented in Table 4 below;

Table 4. Differences in the mean score of print awareness between children aged 3+ and children aged 4+

Age	N	m	SD	df	T value	p
3+ years	119	1.52	0.66	220	-6.06	0.00
4+ years	103	2.05	0.62			

6.4. Phonological Awareness

The fourth hypothesis (H4) for this study was "There is a difference in the phonological awareness achievement between children aged 3 and 4+." The results of the Independent Sample T-Test were significant (t = 4.4.43, df = 220, p = 0.00 <0.05), which showed that the H4 was accepted. Findings showed that there was a difference in the phonological awareness achievement between children aged 3+ and 4+. This means the phonological awareness achievement for children aged 4+ (n = 103, M = 2.16, SD = 0.78 was higher than children aged 3+ (n = 119, M = 1.66, SD = 0.89). The results are presented in Table 5 below;

Table 5. Differences in the mean score of phonological awareness between children aged 3+ and children aged 4+

Age	N	m	SD	df	T value	p
3+ years	119	1.66	0.89	220	-4.43	0.00
4+ years	103	2.16	0.78			

6.5. Narrative Comprehension

The fifth hypothesis (H5) for this study was "There is a difference in the narrative comprehension achievement between children aged 3+ and 4+." In H5 testing, the researchers found that the Levene's Test for the mean score of narrative comprehension across children's age was significant [F = 5.59, p = 0.02 <0.05] which explained the condition of variance was not met. Therefore, the p-value for the Independent Sample T-Test was reported using "Equal variances not assumed".

The results of the Independent Sample T-Test were significant (t = 2.2.18, df = 219.65, p = 0.03 <0.05), hence the H5 is accepted. The findings showed that there was a difference in the narrative comprehension achievement between children aged 3+ and 4+. This means the narrative comprehension achievement for children aged 4+ (n = 103, M = 2.11, SD = 0.68) was higher than children aged 3+ (n = 119, M = 1.89, SD = 0.82). The results are presented in Table 6 below;

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Table 6. Differences in mean score of narrative comprehension between children aged 3+ and children aged 4+

Age	N	m	SD	df	T value	p
3+ years	119	1.89	0.82	219.65	-2.18	0.03
4+ years	103	2.11	0.68			

6.6. Early Writing

The sixth hypothesis (H6) for this study was "There is a difference in the early writing achievement between children aged 3+ and 4+." In testing H6, the researchers found that the Levene's Test for the mean score of early writing across childhood was significant [F = 4.66, p = 0.03 <0.05] which explained the condition of variance equality was not met. Therefore, the p-value for the Independent Sample T-Test is reported using "Equal variances not assumed".

The results of the Independent Sample T-Test were significant (t = 1515.89, df = 219.38, p = 0.00 <0.05), hence the H6 is accepted. The findings show that there was a difference in the early writing achievement between children aged 3+ and 4+. This means the early writing achievement for children aged 4+ (n = 103, M = 2.61, SD = 0.62) was higher than children aged 3+ (n = 119, M = 1.14, SD = 0.76). The results are presented in Table 7 below;

Table 7. Differences in the mean score of early writing between children aged 3+ and children aged 4+

Age	N	m	SD	df	T value	p
3+ years	119	1.14	0.76	219.38	-15.89	0.00
4+ years	103	2.61	0.62			

Overall, researchers found that the 4+ years old children had higher achievements than 3+ years old children in early literacy skills, and in four components namely the print awareness, phonological awareness, narrative comprehension, and early writing. However, the oral language achievement was similar for both age groups.

6.7. Discussion

The researchers conducted a study on 222 children aged 3+ to 4+ to identify differences in early literacy skills. The number of sample for both ages was almost the same as 119 children were 3+ (53.6%), and 103 children were 4+ (46.4%). This also coincides with the social sciences studies which suggest 30 to 500 samples are the most suitable for quantitative approach (Ibrahim, 2017). In addition, the number of samples in this study met the results of G * Power software that determines the required sample size for this study design is 210 samples. Therefore, all the findings related to early literacy skill differences in this study could be obtained because of the number of samples available and similarity in both groups.

Findings showed that 4+ years old children achieve better than 3+ years old children in overall literacy skills, and in four components which were print awareness, phonological awareness, narrative comprehension, and early writing. This explains age influenced children's overall early literacy skills, in these four components.

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The findings of this study coincide with the theory of cognitive development which explains that changes in the progress of experience and thinking are in line with changes or improvements in childhood (Piaget, 2013; Vygotsky, 2012). The study of Hamzah (2005) also found that mental representation develops in line with the age and level of knowledge of children after receiving stimuli from the environment. In this study, the environmental stimulus received by children was through the existing learning in the National PERMATA Curriculum (Early Childhood Education Division, 2013). This is in line with Fowler (1991) who explains that children must master concrete levels of cognitive development before they can understand more abstract concepts such as words, syllables, and phonemes. Thus, the findings of this study are consistent with the theories of cognitive development that explain children's achievement is increased by age.

Specifically, the findings of this study are in line with the study of Ayob et al. (2008) who found that the overall level of language development, communication, and early literacy for children aged 4+ was higher than children aged 3+. The study of Kaminski et al. (2014) also showed that the overall achievement of early literacy skills in children aged 4+ was better than children aged 3+ which included phonological awareness, alphabet knowledge, vocabulary and oral language, and comprehension.

Referring to the Early Communication, Language, and Literacy Development Model, children aged 3+ to 4+ are in the early literacy phase which is the third developmental phase of the model (Dunst et al., 2006). Although these older children are in the same developmental phase, age plays a role in causing the focus of children's mastery. The model explains that 4+ years old have higher reading and writing skills than 3+ years old children who only focus on early literacy and linguistic awareness.

For print awareness, researchers further discuss the achievement of print concepts based on the age of the child. This is because ELSI evaluates the concept of print more than environmental print. This study found that children aged 4+ had higher achievement of print awareness than children aged 3+. The findings of this study are also supported by findings from previous studies that show the achievement of print concept increases in line with increasing age, that is, 5-year-old children show the highest achievement followed by 4- and 3-year-old children (Evans, 2006; Mohamed Isa et al., 2015).

For phonological awareness, this study found that children aged 4+ have better performance than children aged 3+, in which similar findings are also reported by Kelman (2007). In this study, ELSI emphasizes phonemics and phonetics which is part of phonological awareness. This is supported by the study of Cunningham and Carroll (2011) which showed that there is an age effect on phoneme awareness in children aged 4 to 6, that is, older children have better phoneme awareness achievement than young children. In addition, there are previous studies showing that there is a relationship between age and phonological awareness of kindergarten children (Foy & Mann, 2003; Lonigan et al., 1998). Thus, the achievement of phonological awareness is indeed increasing based on the age of the child.

This is because the development of children's phonological awareness starts from a simple level of oral language units such as words, syllables, onset and rhyme, and phonemes; to a difficult level i.e., small units of oral language such as phonetics (Goswami & Bryant, 2016; International Reading Association, 1998; Machado, 2016; Vukelich, 2018). Findings from previous studies show that words, syllables, initial sounds, and rhymes can be mastered by children at the age of 3+, while phoneme awareness can only be mastered by children at the age of 4+ (Goswami, 2002; Kelman, 2007; Lonigan et

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al., 1998). Thus, the findings of this study are consistent with the findings of most previous studies that found that the mastery of phonological awareness is increased by age.

For narrative comprehension, the findings of this study are in line with Mohamed Isa (2013) who explained that children aged 3+ are at the level of new readers, while children aged 4+ are at the level of early readers. According to Clay (1982), the level of children's reading development is divided into three levels from low to high; new readers, early readers, and advanced readers. This means that 4+ years old children have a better reading level compared to 3+ years old children. In addition, a study conducted among children aged 5 to 6 by Razak et al. (2011) found that narrative skills increased .by age. This is because as age increases, children's storytelling abilities also increase as a result of the development of speech complexity and increased ability to understand the content of the story. Therefore, the achievement of comprehension of children aged 4+ is better than children aged 3+ because it is influenced by the level of reading and narrative skills they possess. Narrative comprehension can be enhanced through newspaper reading (M-C. Li et al., 2021), folktales and storytelling (Engliana et al., 2021; Ismail et al., 2022), and questioning during storytelling activities (Huai et al., 2020).

The findings of this study regarding early writing are in line with the findings of a study by Sulzby (1985) who stated that age is a factor in determining the level of development of children's writing based on age. Three-year-old are in the second stage of scratching, while four-year-old are in the third and fourth stage of letter-like shapes, and non-phonetic letter combinations. Puranik and Lonigan (2011) also found that children's skills in writing such as writing letters, names and words are easily improved by age. Furthermore, a study by Che Azid (2016) found that children aged 4+ are more proficient in early writing than children aged 3+.

Many other researchers explain writing skills primarily mechanically influenced by fine motor skills (Falconer, 2010; Molfese et al., 2011; Vinter & Chartrel, 2010). Abdullah (2001) explains that children's fine motor development increases rapidly especially at the age of 2 to 6. When children are 3 years old, they can draw straight lines and round shapes. 4-year-old show improved motor skills and become more efficient when they can write letters. Some researchers also found that 4-year-old have good fine motor skills when they are able to master the grip of fingers and thumbs to hold a pencil, and control objects (Ahmad & Abdul Aziz, 2015; Machado, 2016). Studies prove that 4-year-old children are able to hold a pencil better than 3-year-old children (Schneck & Henderson, 1990). This is supported by Zaidon and Md. Ali (2009) who explained that writing skills are influenced by writing ergonomic factors such as the use of writing equipment and the way a pencil is hold while writing. Therefore, 4+ years old have better early writing achievement than 3+ years old children because they are influenced by their fine motor skills.

However, the findings of this study showed that oral language achievement for children aged 4+ and 3+ was similar. This is in line with the study of Bauer et al. (2016) who showed no relationship between age and word mastery for children aged 3 to 4 years. In that study, the child's vocabulary was assessed individually by showing pictures of objects mentioned by the researcher. The study only focused on six new words that children need to master. The children in the study had the same level of word mastery because the words assessed were simple and could not show the actual achievement of the children.

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However, the findings of this study are contradicted from the findings of previous studies that show children have different levels of language acquisition based on age (Kader & Tan, 2002; Steinberg, 1995; Subramaniam, 2005). This is supported by Sarudin et al. (2016) who found that the language achievement of 5-year-old was higher than that of 4- and 3-year-old in phonological, morphological, syntactic, semantic and pragmatic aspects. The study of Mohamed Isa, Che Mustafa, et al. (2018) found that oral language achievement for children aged 2 to 4 is weak. These studies assess children's language achievement comprehensively covering all language domains.

In this study, ELSI evaluates the oral language achievement of children aged 3+ to 4+ which includes listening skills, speaking skills, non-verbal language, vocabulary, and language politeness. However, oral language achievement for children aged 3+ to 4+ was found to be more focused on complete words and sentences (Jalongo, 2014; Juni Atma & Bacotang, 2021, 2023; Mohamed Isa, Che Mustafa, et al., 2021; Subramaniam, 2005). According to Machado (2016), children aged 3+ can master 800 words, use opposite words and time expressions, and construct words; while 4+ years old can master 1500 or more words, speak clearly, construct five to six words in sentences, and make up stories. This coincides with the IGP which explains that children aged 3 to 4 have 500 to 1000 vocabulary, and can form sentences using three to four words (Early Childhood Education Division, 2013).

Therefore, the focus for oral language emphasized in ELSI does not reflect the achievement of oral language for children aged 3+ and 4+ as a whole. They have the similar oral language achievement because ELSI emphasizes less mastery of more challenging words and complete sentences. This is one of the shortcomings of this study that needs to be improved by researchers in the future. Further studies need to assess children's oral language achievement more accurately which also emphasize complete word and sentence mastery.

7. Conclusions

Overall, this study shows that there were differences in the achievement of early literacy skills based on children's age. Researchers found that the achievement of early literacy skills of children aged 4+ was better than children aged 3+. Therefore, mastery of early literacy skills is important especially for children aged 3+ to 4+ because this age range is in the Early Literacy Development Phase as suggested by the Literacy Development Model (Dunst et al., 2006). Apart from that, educators need to ensure that T&L activities related to early literacy skills conducted are age-appropriate for children.

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