International Journal of Learning, Teaching and Educational Research
Vol. 21, No. 8, pp. 129-143, August 2022
https://doi.org/10.26803/ijlter.21.8.8
Received Jun 12, 2022; Revised Aug 11, 2022; Accepted Aug 24, 2022

The Role of Mother's Education and Early Skills in Language and Literacy Learning Opportunities

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Abstract. The purpose of this study was to examine the relationship between language and literacy learning opportunities, early skills, socioeconomic status, and mother's education in children's early education. In addition, we attempted to determine the language domains needed for training as well as the ideal duration for language and literacy learning for children. We used a mixed methods design to assess early childhood language and literacy skills. The study involved 2550 early childhood learners, 235 teachers, and parents of learner participants from 112 kindergartens. The standard measure of language proficiency was used to measure the learners' early language and literacy skills. Mother's education and learners' early abilities were positively correlated with learners' language and literacy learning opportunities. Learners who have mothers with a high level of education receive significant opportunities to learn language and literacy compared to those with mothers with a low level of education. Therefore, their language skills are superior. There are 12 language domains needed for training in early childhood and the ideal duration of language learning for children is 26 minutes per day or 182 minutes a week. The language domains are determining factors for obtaining reading skills in the future. Mother's education and child's early skills really help children in language and literacy learning. The implication of this research is that literacy programs are needed for early childhood learners who have low initial abilities and children with mothers with a low level of education.

Keywords: early skills; literacy and language learning; socioeconomic status; mother's education

1. Introduction

Early childhood education requires the introduction of various types of language knowledge in order to improve the oral language and literacy skills of children. This includes knowledge of the alphabet, phonology, practical vocabulary, and printed letters. These abilities are a determining factor for children's success in obtaining reading skills in the future (Beisly et al., 2020; Farley & Piasta, 2020). Evidence has reinforced that those children who show good early literacy skills have the potential to become good readers, whereas children who have poor early literacy skills tend to have difficulty in reading in the future. Children's success in language and literacy learning at an early age is also influenced by several factors, including socioeconomic status. Aspects included in determining socioeconomic status are income, social class, occupation, and education (Aarnoutse et al., 2005; Aram, 2008; Hammer et al., 2020). This research related to language and literacy learning, parental education, and early skills of children is very important because it can assist stakeholders in drafting policy to support the success of children's language and literacy learning in the family. It also provides an overview of the role of parents in supporting the success of children's language and literacy learning. The implication of this research is that teachers, parents, and stakeholders may know the standard measure of language learning and early literacy that must be possessed by early childhood. In addition, this standard measure might be useful for policy makers who will conduct literacy programs.

Several previous studies have proven that a better socioeconomic status of children contributes to their ability to learn language and early literacy (Alshatti et al., 2020; Hunkin, 2021). Children's language learning difficulties can be observed from the pre-school period and will continue until school age. As such, it is necessary to equip the parents with some early language recognition actions in a regular and patterned manner (Bailey & Bulotsky-Shearer, 2022; Bohlmann & Downer, 2016). Several studies have examined language learning and early literacy in early childhood. These include the research of Cabell et al. (2021), which proved that the level of children's early skills in spoken language and reading ability in early childhood greatly determines their writing ability when they enter elementary school in the early grades. In addition, Lee-Hammond and McConney (2017) examined the impact of early literacy programs on early childhood in rural areas and compared it with the early literacy abilities of early childhood learners in urban areas. Their findings showed that children's early literacy skills in literacy programs are superior for reading literacy and numeracy literacy despite living in rural areas (Bracken & Fischel, 2008; Hadianto et al., 2022). This proves that targeted interventions can be effective in improving children's early literacy skills. Farley and Piasta's research (2019) has also proven that early childhood literacy is positively correlated with maternal education. However, these studies did not explore the relationship of early childhood literacy with socioeconomic status and did not explore language skills in depth. The difference between the current study and previous studies is that the current study explored early childhood language and literacy skills that are associated with the ability of the

mother when considering socioeconomic status and education. In addition, this study also determined the standard measure of language learning and early literacy that must be possessed by early childhood. This standard measure is useful for policy makers who will conduct literacy programs.

The purpose of this study was to look at early childhood language and literacy skills as related to the mother's education and the socioeconomic status of the family. This study reveals the components of language and literacy learning and the ideal duration that is needed for early language and literacy learning in early childhood. Several previous studies have shown that socioeconomic status contributes to children's language and literacy skills, but in this study, we correlated it with the mother's education variable. This provides knowledge to stakeholders in determining what early literacy skills should be conveyed to children and makes it easier for stakeholders to determine which children need early literacy programs. Several research questions have been formulated to address this problem:

1. What is the relationship between mother's education, early abilities, and socioeconomic status with language learning abilities and early literacy in early childhood?
2. What are the domains of language learning and early literacy that need to be applied to children both at school and by their families at home?
3. What is the ideal duration for the ideal early childhood language and literacy learning to take place?

2. Literature Review

2.1 Opportunities to Learn Language and Literacy in Early Childhood

Many researchers have studied early childhood programs in various countries, finding that the programs have a positive impact on future academic abilities (Jones, 2014). One such program is an early literacy program that is applied to children of low socioeconomic status and has received government attention in developed countries. This program can improve the literacy skills of children whose language and literacy skills are delayed so that they have adequate abilities when they enter school age (Gibson, 2008; Shemwell & Furtak, 2010). The idea of learning opportunities first emerged in 1999 to assist children who are less academically capable. The term *learning opportunities* was then developed and applied in early childhood schools to increase students' learning opportunities in addition to what they receive at home with their parents. Teachers should be able to adapt instructional learning in early childhood if learners have academic abilities that lag behind that of other learners (Bathgate et al., 2015; Cinici, 2016). Educational institutions rarely ensure implementation of these different methods, making it necessary to equalize academic abilities in early childhood by providing many language learning opportunities at home.

Greater early language and literacy learning opportunities become very important for young children of low socioeconomic status considering they receive less language and literacy experience at home. This causes their abilities in school to be less developed than that of their peers who are of higher socioeconomic status (Gilles & Buck, 2020; Hadianto et al., 2021a, 2021b; Koffman

et al., 2017). Such cases often occur in schools in Indonesia, considering that there are still many people who are at a low socioeconomic level and parents who do not have the ability to acquire a higher education. This needs to be rectified with the literacy program for early childhood (Curenton & Justice, 2008; Gonzalez et al., 2017). Such literacy program needs to be supported by research to serve as a guide indicating the components of language learning and the ideal time by which learners in early childhood education must possess these and the ideal level they must be at. This concept is reinforced by research showing that children from families of lower socioeconomic status start kindergarten with fewer early literacy skills (Haak et al., 2012; Hartas, 2012). However, the standard deviation between these children and those of a higher socioeconomic status is 0.5–1 (Chatterji, 2006). It can thus be concluded that the intensity at which children learn language and literacy is based on the language learning they receive both in their school environment and at home with their parents.

2.2 Socioeconomic Status

Socioeconomic status refers to the social and economic level of the family in the community. This includes profession, family income, and education level of parents (Hu et al., 2019; Janus et al., 2019). The socioeconomic status greatly determines the pattern of language and literacy learning that mothers follow for their children's education at home. Several previous studies have proven that socioeconomic status contributes to children's academic abilities, including language skills and early literacy, showing that socioeconomic mapping of the community is an important component that the government must consider in implementing a literacy program (Kalia & Reese, 2009; Krahe et al., 2021).

Results of previous research that examined the provision of opportunities to learn mathematics and science to children of low socioeconomic status showed that children of high socioeconomic status performed better. This is due to the better teaching programs provided by parents of high socioeconomic status (Lee-Hammond & McConney, 2017; Lewis et al., 2016). Other evidence has shown that children of low socioeconomic status receive limited language learning opportunities and that their learning is dominated by rote activities, so that their creativity and critical thinking abilities are not explored (Marcella et al., 2014; Mashburn et al., 2010). The research has also shown that language and literacy learning opportunities are highly variable, not only so between classes but also within the same class. Previous research has shown that learners can get 0 to 81 minutes of early language and literacy learning opportunities per day regardless of socioeconomic aspects. This is not impossible if educators provide language learning opportunities according to children's needs. In different teaching frameworks, teachers are expected to be able to adapt teaching to the early skills of early childhood. Thus, teachers should provide more language learning opportunities for children who have low initial skills.

2.3 Early Skills

Early skills are early childhood language and literacy skills that are acquired naturally in the family. These early language and literacy skills include the ability to recognize the alphabet, phonological abilities, and early childhood oral language skills (Neumann et al., 2013; Poolman et al., 2017). Alphabet knowledge

includes names and pronunciations, phonological abilities include the ability to pronounce letters and words, while oral language skills are children's vocabulary knowledge. Several studies have specifically examined the differences in language learning opportunities and early childhood literacy provided to children of various levels of socioeconomic status or early skills (Reilly et al., 2020; Skibbe et al., 2013). This study examines the relationship between the variables of family socioeconomic status, mother's education, and children's early skills.

Other studies have shown that children from low-income families are more likely to use individualized instruction in the learning process. These children usually receive fewer language learning opportunities than children in other socioeconomic groups in the class. Children whose mothers have higher levels of education tend to be able to follow group instruction and work independently. These children also tend to receive better teacher response and support. The same is true in the early literacy skills of children. Children who have lower initial skills are also more suited to individualized instruction. So, it can be concluded that the children who most need the opportunity to learn language are those who have fewer initial skills (Slot et al., 2018; Varghese & Wachen, 2016).

3. Methodology

We used mixed methods research to study the relationship between the variables of language and literacy learning opportunities, mother's education, and the child's early skills. We used mixed methods research to combine quantitative data strengthened by qualitative data. Quantitative data were gathered on the relationship between variables and are described by inferential statistics, while qualitative data were gathered from observations and questionnaires to strengthen and complete the quantitative data. This study involved 2550 early childhood learners, 235 teachers, and parents of learner participants. The early childhood learners who were involved in this study were 4–6 years of age and attended 112 kindergarten schools in the city of Bandung, Indonesia. Sample selection of the early childhood learners was done using a purposive sampling technique mapped based on the variables that were to be studied. Teachers and parents of learners were involved in this study to assist us in analyzing language and literacy learning opportunities as well as the learners' language skills both at home and at school. The average age of the teachers was 42 years (SD: 10.71) and their average teaching experience was 10 years (SD: 8.12). Regarding education level of the teachers, 20% had a diploma, 50% had a bachelor's degree, and 18% had a master's degree. The participating schools were from several areas in Bandung, including urban (30%), suburban (30%), and rural areas (40%). The learners had a median age of 5.4 years (SD: 0.42) and were almost equally divided according to gender (51% male; 49% female). The average family income was between IDR 2 million and IDR 10 million per month.

3.1 Data Collection Tools and Procedure

Classroom observations mere made to determine the opportunities to learn language in the classroom. In addition, a researcher-made questionnaire was used to determine the mothers' level of education and family socioeconomic status. The instrument was made by adopting the language domains as presented in Table 1.

The validity test was carried out through the judgment of five PhD-qualified experts, while the reliability test was carried out through an empirical test on some learners who became research participants.

3.1.1 Opportunity to learn language and literacy

Observation of language learning opportunities was carried out in the classroom and at home. Observation at home was carried out by asking parents' help in filling out an observation grid. Observation of the teaching process in the classroom was carried out directly and facilitated using a camera for two semesters within one year. Observations were made every day to obtain an overview of language learning practices. The scale used to measure the vocabulary of spoken language, ranging from vocabulary that is commonly used to that which is not commonly used by children, ranged from 1 to 5. The average score on this assessment was 5.21 (SD: 0.74). Each class had an average duration of one day (M: 82;27 minutes; SD: 22.57; range: 30–60 minutes). Our classroom observation was facilitated by using a camera to document teaching activities. In addition, we also used observation notes to observe language and literacy learning opportunities in the classroom. The components of the assessment of language learning and early literacy were taken from the theory showing what level of language learning and early literacy must be possessed by early childhood. We used these components as instructions to assess the outcomes of early language and literacy learning as a guide. Table 1 presents the components and instructions followed for the early language and literacy learning assessment.

Table 1. The language domains assigned for the teaching process and evaluation

Domain	Method	Example
Phoneme awareness	Distinguishing the pronunciation of the letters individually or in words	Producing rhyming or alliterative phrases
Morpheme awareness	Introducing basic and compound words and affixes	Adding prefixes to alternate phrase meanings
Word identification/ decoding	Spelling the letters in the word	Reading sight phrases from a phrase wall
Word identification/ encoding	Spelling the letters in the word	Spelling through matching sounds and letters
Grapheme-phoneme correspondence	Listening or reading word for word	Identifying letters related to a couple of sounds
Fluency	Practicing the quick pronunciation of words	Reading sight phrases with increased speed
Print and text concepts	Writing printed letters and sounding them	Modeling ebook orientation and directionality
Spoken language	Speaking and introducing new vocabulary	Using role-play conversation to practice the use of vocabulary phrases that belong to the language domain
Pattern vocabulary	Writing new words and understanding their meanings	Defining homonyms and noting spelling patterns

Understanding	Reading text and understanding their meanings	Using earlier expertise to better recognize an ebook
Text reading	Reading text	Listening to an ebook on tape
Writing	Writing simple sentences from familiar words	Participating in shared writing throughout class time

After the observations had been made, the learning videos were analyzed by coding each action using the individualizing student instruction (ISI) coding scheme. The ISI code consists of 12 language learning and early literacy domains, namely phoneme awareness, morpheme awareness, word identification/decoding, word identification/encoding, grapheme-phoneme correspondence, fluency, print and text concepts, spoken language, pattern vocabulary, understanding, text reading, and writing (see Table 1). We calculated the time used for early language and literacy learning that included the 12 domains in the classroom and at home of learners who were observed with the help of their parents and assessed the results at the end of the semester. This was done to determine whether the opportunity to learn a language within a certain timespan was ideally used and whether the results of the assessment were related to the socioeconomic status variables and the education level of the learners' mothers.

3.1.2 Mother's education

In this study, we used mother's education level and socioeconomic status as variables that influenced the level of language learning ability and early literacy. As has been done in previous studies, the mother's level of education is a variable that can predict the success of the child's academic level and is more predictive than the level of family socioeconomic status. In this study, 10% of the mothers of learners who were participants were admitted to higher education but did not finish, 15% had a master's degree, 40% had a bachelor's degree, 30% had a diploma, and 5% had a doctoral degree.

3.1.3 Initial skills level

To determine the learners' early language skills, we conducted a series of tests in collaboration with participating schools. The components tested included knowledge of the alphabet and phonological and spoken skills. Each of these skills was analyzed and associated with the level of learners' reading ability. The components assessed are in line with the components of the ISI scheme in the 12 standard domains of language learning and early literacy.

3.1.4 Alphabet knowledge

We assessed learners' alphabet knowledge by testing their usage of uppercase and lowercase letters and pronunciation. The test sheet had the 26 letters of the alphabet arranged randomly, with one point awarded for each correct letter, for a total of 55 points for the maximum score. Internal consistency for the composite scale was high (0.98).

3.1.5 Phonological awareness

We assessed learners' phonological abilities through rhyming and repetition word tests. Assessment was done by instructing the learners to identify a picture

and give it a name. Learners were asked to choose words that do not rhyme and words that do not start with the same vowel during the alliteration test. One point was assigned for each correct answer and there were a possible twenty-four points to be received in total. Internal consistency for each subtest was high (0.85).

3.1.6 Oral language skills

Learners' oral language skills were assessed through sentence, phrase, and vocabulary tests. For the sentence test, learners were asked to choose a picture that matched the teacher's oral explanation. For the word structure test, learners were asked to complete the missing sentences. For the vocabulary test, learners were asked to identify the object and provide a description of the word that corresponds to the object. One point was awarded for each correct answer. The total score for the 3 subtests was 70 points. Internal consistency for the subtests ranged from 0.8 to 0.97.

4. Results

To answer the first research question, we tested the relationship between mother's education level, initial skills, and opportunities to learn language and literacy, as shown in Table 2.

Table 2. Relationship between, mother's education, early skills, and opportunity to learn language and literacy

	1	2	3	4	5	n	M	SD	Min	Max
Alphabet knowledge	–					2550	26.71	19.37	0	55
Phonological awareness	.405**	–				1606	8.51	4.63	0	30
Spoken language	.450**	.465**	–			1732	40.16	11.51	0	70
Mother's education	.367**	.245**	.315**	–		1762	3.45	1.57	0	9
Knowledge opportunities	.121**	.086**	.088**	.051*	–	1754	15.07	9.31	0	65

Analysis revealed that the learners' early skills showed a significant relationship with language learning opportunities. Likewise, mother's education had a significant relationship with spoken language and knowledge opportunities. Language learning opportunities showed a significant relationship with mother's education and early skills. On average, learners whose mothers had a higher education and who had better early skills tended to show better language skills (r2 0.02; see Table 3). Table 3 shows that mother's education and child's early skills greatly affect spoken language, alphabet knowledge, and phonological awareness. The results of this study indicate that although children are given the opportunity to learn language and literacy at school in the same amount and time, the results will vary depending on the mother's education and the child's initial skills that had been obtained at home.

Table 3. Processing results based on the linear hierarchy model to predict language and literacy learning opportunities

Parameter	Oral language			Alphabet knowledge			Phonological awareness		
	Coeffi cient		SE	Coeffi cient		SE	Coeffi cient		SE
Intercept (b00)	15.12	***	0.50	15.02	***	0.50	15.19	***	0.42
Classroom level									
Mother's education (b01)	_0.14		0.35	_0.06		0.32	_0.15		0.33
Learner level									
Early skill (b10)	0.05	**	0.05	0.02		0.02	0.05		0.04
Mother's education (b20)	0.22	*	0.11	0.25	*	0.11	0.24	*	0.12
Alteration components									
Learner level ®	17.19		4.08	16.75		4.11	17.25		4.25
Classroom level (u0)	68.36	***	9.22	71.36	***	9.22	69.13	***	9.15

SE = Effective contribution; *** p < .001; ** p < .01; * p < .05

For the second research question, data from observations in the classroom and at learners' homes and combined with the theory of language skills and early literacy in early childhood were used. The data were used to determine the domains of language learning and early literacy that are needed to train learners both through literacy programs and learning patterns carried out at home. These domains were phoneme awareness, morpheme awareness, word identification/decoding, word identification/encoding, grapheme-phoneme correspondence, fluency, print and text concepts, spoken language, pattern vocabulary, understanding, text reading, and writing. Learners' ability to differentiate between phonemes can be improved by distinguishing the pronunciation of the letters themselves or in words. Improving the ability to identify morphemes can be done by introducing basic and compound words and affixes. The ability to decipher words can be improved by spelling the letters in the word. Similarly, the ability to identify words can be achieved by spelling the letters in the word. Grapheme-phoneme skills can be practiced by listening or reading word for word. Fluency can be improved by practicing the quick pronunciation of words. To introduce the concept of print and text, learners can be trained by writing printed letters and sounding them. To improve spoken language skills, learners can be introduced to new vocabulary and practice speaking it. Furthermore, written vocabulary can be increased by training learners in writing new words and understanding their meanings. Lastly, to enhance writing text skills, learners can be trained to write simple sentences from familiar words.

To answer the third research question, we observed opportunities to learn language and literacy in the classroom and at home. The learners had the opportunity to learn language while in the school environment for an average of 80 minutes per day, whereas their opportunity to learn language at home differed remarkably. Regarding language learning opportunities obtained while at home,

the results showed that learners with mothers with a low level of education only received additional language learning opportunities of an average of five minutes per day. To improve spoken language skills, these learners received an additional 10 minutes of language learning opportunities per day. This is low when compared to learners with highly educated mothers, who received an additional 30 minutes per day, totaling 210 minutes per week. The average amount of time for language learning a child generally needs is 26 minutes per day or 182 minutes a week. Of course, it is not surprising that children with mothers who have higher levels of education have different language learning patterns that are applied to them every day.

5. Discussion

This study sought to determine the relationship between the variables of language and literacy learning opportunities, mother's education, and early skills by providing knowledge of language and literacy learning in schools and ending with an evaluation. The evaluation used included the 12 domains of language learning and early literacy that have been mentioned previously. The results showed that the mother's education and the child's early skills greatly affect the child's language skills, even though the material and implementation method are the same. Learners with highly educated mothers tend to have superior language skills. This is due to the learning pattern applied by the mother at home. In addition, based on the questionnaire, the results showed that the duration of language learning for learners whose mothers are highly educated is longer than that of learners with mothers with lower levels of education. Based on the theory, learners have the opportunity to learn language both in the family and at school for an average of 85 minutes per day (Poolman et al., 2017; Reilly et al., 2020). This skills gap must be overcome by the pre-school literacy program, which must be able to equip parents on how to train their children in language skills and early literacy in their home environment (Krahe et al., 2021; Lane et al., 2014). Of course, this can help better prepare children for school. Stakeholders must include children who have mothers with lower levels of education into the equalization program for language and literacy learning (Poolman et al., 2017; Reilly et al., 2020).

The results of this study also indicated that children with low levels of maternal education and early skills have more difficulty in understanding material and learning in the school environment (Meng, 2015; Neumann et al., 2013). Children's oral language ability is another indicator of poor language skills. Oral language skills are basic skills and abilities that will greatly determine a child's success in reading and other academic abilities. The results showed that children belonging to the lower socioeconomic groups tended to lag behind in their oral language skills. In addition, it also tended to be difficult to improve their oral language skills through classroom instruction (Skibbe et al., 2013; Slot et al., 2018). Of course, these skills need to be promoted through the learning pattern that must be applied by the mother at home. The findings of this study are in accordance with the real situation in society. Children with mothers who have higher levels of education and have a high ability for communication will have better language and literacy skills. The findings of this study are also in accordance with previous studies which reinforce that the mother's level of education has a very important role in

the success of children in language learning (Gilles & Buck, 2020; Koffman et al., 2017).

The findings of this study are also in line with that of other studies (Mulyati & Hadianto, 2022; Slot et al., 2018). However, it should be noted that language and literacy learning opportunities in schools always favour children of higher socioeconomic status. One alternative to overcome this problem, as recommended by literature, is that pre-school education should be done individually (Varghese & Wachen, 2016; Wasik & Hindman, 2010). Needless to say, this will require quite a lot of teachers. One alternative option is that pre-school education should be grouped based on factors that greatly affect learners' academic abilities, which factors include maternal education, learners' initial abilities, and socioeconomic status (Weigel et al., 2006; Wickstrom & Pelletier, 2021). The aim here is to provide children who have fewer language skills with more intensive learning compared to other groups of children.

The 12 language domains used in this study also need to be considered as main focus areas in which children require training by their parents and in the school environment (Varghese & Wachen, 2016; Yazejian & Peisner-Feinberg, 2009). The domain of language learning and early literacy is believed to be the most decisive component of children's success in reading and other academic abilities when entering elementary school. The findings of this study concur with this, namely that children who have more opportunities to learn language have superior oral language skills (Reilly et al., 2020; Skibbe et al., 2013). These findings reinforce the fact that the more intensively children are introduced to language and literacy learning at an early age, the better their academic abilities will be at school age. These findings are reinforced by literature (Lewis et al., 2016; Meng, 2015). This research has the short-term goal to strengthen and clarify the role of parents and teachers in supporting the success of children's language and literacy learning in terms of domain, method, and duration. The long-term goal is that the findings of the study provide guidelines for literacy-program makers to improve the literacy skills of children starting from an early age. These programs will certainly have an impact on the literacy level of children when they reach adulthood.

6. Conclusions, Limitations, and Recommendations

Mother's education, early skills, and socioeconomic status are determining factors in a child's success in acquiring language and literacy skills. Therefore, it is necessary to map the mother's education, the child's initial skills, and socioeconomic status as material for implementing early education in schools and education through literacy programs outside of school. In language learning and early literacy, attention should also be paid to the 12 domains identified in this study, as these are the basis of children's success in the future. The number of language learning opportunities also greatly determine children's oral language skills; hence, individual instruction is needed that provides language learning opportunities for children with mothers with a low level of education. Promoting the language and literacy learning of children both in school and at home can instil character values in children. This can be done by the mother when giving advice, during study time, or through casual dialogue. Therefore, the mother's role is very

important in the success of children in language and literacy learning. Mothers must be active in providing language learning opportunities by paying attention to the language domains in this study. Opportunities can be created in various situations, whether through chatting, studying, or playing.

This study had several limitations, including linking children's language skills with only the variables of mother's education and socioeconomic status. Perhaps there are other factors that also determine the success of children's language learning, so research can thus be expanded to include other variables. Furthermore, participants were from only one area in Indonesia, and it would have been better had children from various regions in Indonesia been involved. Third, it is possible that we excluded other important aspects of instructional opportunities in relation to mother's education. Despite these limitations, the main finding of this study was that the language and literacy learning opportunities provided during early childhood are largely determined by the mother's level of education and early spoken language skills. In addition, through this study, we also formulated the language domains and estimated duration needed to assist parents in their children's language learning. For future research, we recommend adding more variables and selecting a wider range of participants to identify the factors that determine the success of children's language learning.

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