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The role of a mother-child interaction to support English vocabulary production in home environment: a longitudinal case study

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abstract

Exposure has been an essential to second language acquisition in the context of English as a foreign language. Both formal and natural methods can be used to obtain exposure. At such a young age, children can engage in activities and interact with their parents or other caregivers at home, which can lead to productive vocabulary growth in natural settings. Vocabulary production is a key indicator of the success of early English vocabulary development. This study aims to characterize the growth of a four-year-old child's vocabulary production in English through interactions with her caregiver at home. A 4-year-old child served as the research participant in this qualitative longitudinal case study. Observation and recordings of the mother and child's interactions over a specific time period were used to gather data. The child's utterances during interaction sessions were transcribed for analysis, with an emphasis on the quantity of vocabulary items, the types of vocabulary production, the development of vocabulary categories, and the categorization of spontaneous, prompted, and imitated production. The results demonstrated the beneficial effects of mother-child interaction on the development of the child's English vocabulary production, especially in terms of the increase in spontaneous vocabulary production. Early English vocabulary development is effectively supported in home learning environments when parents consistently participate in natural language interaction. This study provides concrete proof that parents and early childhood educators can support children's development of foreign languages through meaningful interaction.

1. Introduction

The limitation on the use of English particularly in the environment where English as a foreign language which may result to the inhibition of language acquisition due to insufficient exposure to meaningful language input and interaction. Exposure can affect to the increase of comprehensible input, support vocabulary growth, and improve English

skills especially listening and speaking skills, and support the process of natural language acquisition. Therefore exposure plays crucial roles in language development. In early childhood, exposure is gained mostly through meaningful interaction. According to Ellis (2011), young learners tend to acquire vocabulary through natural communication instead of structured instruction. Such natural communication are potential to happen at home enviroment, as children spend a lot of time with their parents or caregivers. From a sociocultural standpoint, language development transpires through engagement with more knowledgeable individuals who facilitate children's learning during routine communication termed as scaffolding (Vygotsky, 1978). Recent studies continue to confirm that the quality and consistency of caregiver–child interaction strongly influence children's expressive vocabulary growth. For example, caregiver responsiveness and interactional engagement have been shown to support vocabulary development during early childhood across different learning contexts (Murray et al., 2021; Finders et al., 2023). Similarly, interactional experiences such as shared routines, storytelling, and play activities provide opportunities for children to practice new vocabulary in meaningful situations, which strengthens both retention and production (Kaelin et al., 2024). In EFL settings, the role of interaction at home becomes even more important because English is rarely used as a daily communication language in the surrounding environment. As a result, natural exposure through caregiver interaction can function as an essential bridge that supports children's early foreign language development. Previous research has shown that children's vocabulary growth is closely related to the quantity and quality of language input they receive during interaction with adults (Yang et al., 2021). In addition, studies on early bilingual and foreign language learning highlight that opportunities to use language actively during communication contribute significantly to the development of productive vocabulary rather than passive recognition alone (Erdemir & Brutt-Griffler, 2020; Farrow et al., 2024). These findings suggest that interaction-based exposure at home deserves greater attention as a meaningful pathway for supporting early English learning.

Although research on early language exposure has increased in recent years, many studies still focus primarily on classroom instruction, bilingual families, or technology-mediated learning environments. Comparatively fewer studies have explored how vocabulary production develops through natural caregiver–child interaction in EFL contexts, particularly through longitudinal observation of children's language use in everyday communication. Moreover, limited attention has been given to examining how different types of vocabulary production such as spontaneous, prompted, and imitated production emerge and develop over time in early childhood foreign language learning. This indicates a need for closer investigation of how natural interaction at home contributes to children's productive vocabulary development in EFL settings.

In response to this gap, the present study investigates the development of English vocabulary production in a four-year-old child through interaction with her caregiver in a home environment. Specifically, this study examines the number of vocabulary items produced, the types of vocabulary categories that emerged, and the patterns of spontaneous, prompted, and imitated vocabulary production during interaction over time. By documenting vocabulary development longitudinally in a natural setting, this study provides empirical insight into how caregiver involvement supports early English vocabulary production. The findings are expected to contribute to current discussions on

early foreign language learning and offer practical implications for parents and early childhood educators seeking to support children's vocabulary growth through meaningful interaction.

2. Method

2.1 Kind of Research

This study employed a qualitative approach using a longitudinal case study design, as the study aimed to explore in depth how vocabulary production emerged and developed naturally during interaction. Qualitative research is particularly suitable for investigating language development processes in early childhood contexts where rich descriptions of interactional behavior are needed to understand learning phenomena comprehensively (Creswell & Poth, 2018). The longitudinal case study design allowed the researcher to observe vocabulary development over time within a natural setting. In the present study, the child's vocabulary production was examined through repeated observations of caregiver-child interaction sessions conducted across 3 sessions of observation period in the home setting. The study specifically aimed to analyze the quantity of vocabulary items produced, the types of vocabulary categories that emerged, and the patterns of vocabulary production, including spontaneous, prompted, and imitated production during interaction. A longitudinal qualitative design enabled the researcher to capture changes in vocabulary use over time and to document how interaction with the caregiver supported the child's developing productive vocabulary.

The selection of this research design was also based on the need to investigate language exposure in a natural environment where English functions as a foreign language rather than a daily communication language.

2.1 Data Collection

The data for this study were collected through naturalistic observation and audio recordings of mother-child interaction sessions conducted in the child's home environment. These methods were selected because they allowed the researcher to capture authentic language use in everyday communication contexts, which is essential for examining early vocabulary production in young learners learning English as a foreign language. The participant of this study was a four-year-old child who was exposed to English through regular interaction with her mother as the caregiver at home. The participant was selected using purposive sampling, as the study focused specifically on a child who received consistent English exposure through natural interaction in a non-English-speaking environment. This sampling technique ensured that the participant met the criteria relevant to the objectives of the study, particularly the opportunity to observe vocabulary production emerging through caregiver-supported interaction over time. Data were collected over a longitudinal observation period through repeated interaction sessions between the caregiver and the child during daily routines such as play activities, object naming, storytelling, and simple conversations. These sessions were recorded using audio recording devices to ensure accurate documentation of the child's language production. Natural interaction settings were intentionally maintained so that the child could produce vocabulary spontaneously without pressure from formal instruction.

During the observation process, the researcher documented the child's utterances and interaction patterns, with particular attention given to the number of vocabulary items produced, the types of vocabulary categories that emerged, and the forms of vocabulary production, including spontaneous production, prompted production, and imitated production. All recorded interaction data were then transcribed verbatim to prepare them for detailed analysis. Field notes were also used to support interpretation of interaction contexts and to clarify situations in which vocabulary production occurred. The use of observation and recording as primary data collection techniques enabled the researcher to obtain detailed and reliable evidence of the child's vocabulary development in a natural learning environment, which is considered essential for investigating early foreign language acquisition processes in young learners (Duff, 2020; Creswell & Poth, 2018).

2.2 Data Analysis

The collected data were analyzed using a qualitative content analysis approach to examine the development of the child's English vocabulary production over time. The analysis began with the transcription of recorded interaction sessions between the caregiver and the child. After transcription, the child's utterances were carefully identified and segmented into individual vocabulary items. Each vocabulary item produced by the child was then categorized based on its frequency of occurrence, lexical category, and type of production, namely spontaneous, prompted, or imitated production. Spontaneous production referred to vocabulary items produced independently by the child without direct prompting, prompted production referred to vocabulary produced following caregiver cues or questions, and imitated production referred to vocabulary repeated after caregiver modeling.

Following the categorization process, the researcher analyzed patterns of vocabulary growth across observation sessions to identify changes in the child's productive vocabulary development over time. The analysis focused particularly on increases in vocabulary quantity, variation of vocabulary categories, and shifts from imitated and prompted production toward more spontaneous vocabulary use. These patterns were interpreted in relation to the role of caregiver interaction in supporting early English vocabulary development in a home learning environment. To enhance the credibility of the findings, the researcher conducted repeated reviews of the transcription data and cross-checked vocabulary classification to ensure consistency in coding. Field notes collected during observation sessions were also used to support interpretation of interaction contexts and to strengthen the trustworthiness of the analysis. The results of the analysis were then interpreted in relation to the research objectives and supported by relevant theories of early language exposure and interaction-based vocabulary development.

3. Results and Discussions

3.1 Results

This study investigated the development of English vocabulary production in a four-year-old child through mother–child interaction in a natural home environment over a longitudinal observation period. The findings indicate that the child’s vocabulary production increased gradually across interaction sessions, with a noticeable shift from imitated vocabulary production toward more spontaneous vocabulary use. The results also show that caregiver interaction played an important role in supporting vocabulary expansion across several lexical categories such as nouns, verbs, adjectives, and routine expressions.

The analysis identified three main types of vocabulary production during interaction sessions: imitated production, prompted production, and spontaneous production. At the beginning of the observation period, the child relied mostly on imitated vocabulary following caregiver modeling. However, as interaction continued across sessions, the frequency of spontaneous vocabulary production increased, indicating growing confidence and independence in using English vocabulary.

Table 1 presents the distribution of vocabulary production types observed during the interaction sessions.

Table 1. Distribution of Vocabulary Production Types Across Observation Sessions

Session	Total vocabulary (frequency)	Dominant Lexical Categories Observed	Spontaneous	Imitated	Prompted	Interpretation
1	123	Nouns (objects, food items, toys, family members)	25	34	18	Vocabulary production dominated by object labeling and reliance on caregiver modeling
2	140	Nouns + emerging verbs and simple descriptive words	27	28	20	Beginning transition toward action-related vocabulary and reduced imitation
3	155	Nouns, verbs, adjectives, short functional expressions	60	17	25	Increased spontaneous production and more communicative vocabulary use

The findings indicate that the child’s English vocabulary production increased progressively across the three observation sessions in terms of the quantity of vocabulary items, the types of vocabulary production, and the development of lexical categories. The total number of vocabulary items produced by the child increased from 123 items in

Session 1 to 140 items in Session 2 and reached 155 items in Session 3, demonstrating steady vocabulary growth during mother–child interaction at home. In addition, the analysis of vocabulary production types revealed a substantial increase in spontaneous vocabulary production from 25 items in Session 1 to 27 items in Session 2 and significantly to 60 items in Session 3, indicating the child’s growing independence in using English during interaction. In contrast, imitated production showed a decreasing pattern across sessions, declining from 34 items in Session 1 to 28 items in Session 2 and further to 17 items in Session 3, suggesting reduced reliance on caregiver modeling over time. Meanwhile, prompted vocabulary production remained relatively stable, increasing slightly from 18 items in Session 1 to 20 items in Session 2 and 25 items in Session 3, reflecting the continued role of caregiver scaffolding in supporting vocabulary use. Furthermore, the child’s vocabulary production developed qualitatively across sessions, moving from the dominance of noun-based vocabulary referring to familiar objects in the home environment toward the inclusion of verbs, descriptive words, and short functional expressions used in everyday communication. These findings indicate that natural caregiver interaction contributed positively to both the quantity and quality of the child’s English vocabulary production over time. During the first observation session, most vocabulary items produced by the child consisted of nouns referring to familiar objects in the home environment, such as food items, toys, household objects, and family-related vocabulary. These early productions mainly reflected the child’s immediate surroundings and daily routines. In the second observation session, the child began to produce a wider range of vocabulary categories, including action verbs and descriptive words. This shift indicates that the child started to use vocabulary not only for labeling objects but also for describing actions and expressing simple meanings during interaction. By the third observation session, vocabulary production became more diverse and communicative in function. The child produced short expressions, descriptive vocabulary, and functional interactional words used for responding to questions, making requests, and expressing preferences. This development suggests that vocabulary production moved beyond isolated word naming toward more meaningful language use in communicative contexts. The expansion of vocabulary categories across sessions demonstrates that caregiver interaction supported both quantitative and qualitative aspects of early English vocabulary development. The results demonstrate a clear developmental pattern in which vocabulary production progressed from imitation toward spontaneous usage. This shift suggests that repeated exposure through caregiver interaction supported the child’s ability to internalize vocabulary and use it independently during communication. In addition to production types, the findings also show growth in the variety of vocabulary categories produced by the child during interaction sessions. At the early stage, vocabulary production was dominated by concrete nouns related to familiar objects in the home environment. Over time, the child began to produce verbs, adjectives, and short expressions used in daily communication routines.

Session 1: Vocabulary production dominated by object labeling and reliance on caregiver modeling

During the first observation session, the child’s vocabulary production was primarily dominated by object-labeling vocabulary referring to familiar items in the home environment. Most vocabulary items produced consisted of nouns such as *ball*, *milk*,

spoon, book, doll, cat, table, and mommy. These words were typically produced after caregiver prompts or repetition of caregiver utterances. For example, when the caregiver asked, “What is this?” while pointing to a spoon, the child responded by repeating the word *spoon*. Similarly, the child produced the word *a book* after the caregiver modeled the expression “.....read a book after dinner.” These interaction patterns indicate that early vocabulary production relied strongly on caregiver modeling and prompting rather than independent lexical retrieval. The child’s utterance “*Mommy, boleh letakkan doll-nya di sini?*” represents an example of prompted vocabulary production. In this interaction, the caregiver introduced the English lexical item *doll* in the preceding question, which then supported the child in retrieving and producing the same vocabulary item in the response. Although the overall sentence structure remained in Indonesian, the successful insertion of the English noun indicates that the child was able to produce English vocabulary with contextual support from the caregiver’s prompt. This pattern demonstrates that caregiver prompting functioned as an interactional scaffold that facilitated vocabulary recall and encouraged the child’s participation in bilingual communication during the early stage of vocabulary development.

(spontaneous)

Mother: What is this?

Child: Spoon.

(Imitated)

Mother: Do you want to read a book after dinner?

Child: a book?

(Prompt)

Mother : Where do you want to put the doll?

Child : *Mommy, boleh letakkan doll-nya di sini?*

Mother : *Sure.*

3.2 Discussion

The findings of this study demonstrate that mother-child interaction in a natural home environment contributed positively to the development of the child’s English vocabulary production in terms of quantity, production types, and lexical-category expansion. The results showed a consistent increase in the total number of vocabulary items across the three observation sessions, from 123 items in Session 1 to 155 items in Session 3, indicating that repeated exposure through meaningful interaction supported vocabulary growth in a foreign language context. This finding supports the view that language exposure plays a central role in early second-language acquisition, particularly when interaction occurs in natural and meaningful communicative settings. Recent studies have also highlighted that early exposure through daily interaction with caregivers provides opportunities for children to acquire vocabulary more effectively and naturally (Sun et al., 2021; Rowe & Snow, 2020).

In addition to the increase in vocabulary quantity, the findings revealed a developmental shift in vocabulary production types. Spontaneous vocabulary production increased substantially across sessions, while imitated production gradually decreased over time. This pattern indicates that the child moved from relying on caregiver modeling toward more independent vocabulary use. Such a transition reflects the role of interaction as a scaffold that supports children's movement from assisted performance to autonomous language production. This result is consistent with interaction-based perspectives of language development, which emphasize that children actively construct linguistic knowledge through social engagement with more competent language users. Recent research has similarly shown that interactive exposure and responsive caregiver input significantly contribute to children's productive vocabulary growth in early foreign-language learning contexts (Kartushina et al., 2022; Nicoladis et al., 2023).

Furthermore, the findings demonstrated qualitative development in the child's vocabulary categories across observation sessions. In the early session, vocabulary production was dominated by nouns referring to familiar objects in the home environment. In later sessions, the child began to produce verbs, descriptive words, and short functional expressions, indicating a shift from simple labeling toward communicative language use. This progression reflects a natural pattern of early lexical development, in which children initially acquire object-related vocabulary before expanding toward action-related and functional expressions that support interaction. Similar developmental patterns have been reported in recent studies on early second-language vocabulary acquisition, which emphasize that meaningful interaction in daily routines supports both lexical expansion and communicative competence in young learners (De Houwer, 2021; Place & Hoff, 2022).

Another important finding of this study is the continued presence of prompted vocabulary production across sessions, which indicates that caregiver support remained an important component of the interaction process. Prompting strategies provided opportunities for the child to recall vocabulary items and participate actively in communication. This finding highlights the importance of scaffolding strategies in supporting early vocabulary learning, especially in foreign-language environments where exposure outside the home may be limited. Previous research has similarly emphasized that structured yet natural caregiver support plays a crucial role in sustaining children's engagement and vocabulary development during early language learning (Rowe & Snow, 2020; Sun et al., 2021).

Despite these positive findings, several limitations should be acknowledged. This study involved only one participant and was conducted within a limited observation period, which may restrict the generalizability of the findings to broader populations of young learners. Future research is therefore recommended to involve more participants and longer observation periods in order to provide a more comprehensive understanding of vocabulary development patterns in early foreign-language learning contexts. Further studies may also explore how different types of caregiver interaction strategies influence children's vocabulary production in diverse sociolinguistic environments.

Overall, the findings of this study provide empirical support for the important role of caregiver interaction in supporting early English vocabulary production in natural home environments. The results suggest that consistent exposure through meaningful daily interaction can facilitate both quantitative vocabulary growth and qualitative development of communicative vocabulary use in young children learning English as a foreign language.

4. Conclusion

This study investigated the development of English vocabulary production in a four-year-old child through mother-child interaction in a natural home environment and revealed clear progress in three important aspects of early foreign-language learning: the quantity of vocabulary items, the types of vocabulary production, and the development of lexical categories. The findings showed a steady increase in the total number of English vocabulary items across observation sessions, accompanied by a noticeable shift from imitated vocabulary production toward more spontaneous production, indicating the child's growing independence in using English during interaction. In addition, the child's vocabulary expanded from simple noun-based object labeling to include verbs, descriptive words, and short functional expressions, demonstrating qualitative development in communicative language use. These results confirm that consistent exposure through meaningful caregiver interaction can effectively support early English vocabulary development in foreign-language contexts. Although the study involved a single participant within a limited observation period, the findings provide empirical evidence that natural interaction in home learning environments plays an important role in supporting both the quantity and quality of young children's productive vocabulary growth. The study therefore contributes to early childhood English language learning research by highlighting the practical role of caregivers as active language partners and offers useful pedagogical implications for parents and early childhood educators to support children's foreign-language development through regular and meaningful daily interaction.

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