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Enhancing Preschoolers' Reading Interest and Habits through Home-School Collaboration: Design and Implementation of Reading Curriculum in Chinese Kindergartens

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ABSTRACT

This study investigates the phenomenon of family-school partnership practices and their contributions to language development through reading participation of Chinese preschool children, using Vygotsky's sociocultural theory and application-based models of language development, especially concerning the domain of social interaction and language skills development. This study utilises an integrated reading programme that merges the home and school contexts aimed at creating a positive macro linguistic environment for language and reading interest development. The curriculum focuses on phonological, semantic, and pragmatic features of speech in the reading materials designed to illustrate various features of Mandarin Chinese such as the complexity of characters, tone patterns, and syntactic structures appropriate for preschoolers. Through a Design and Development Research approach, data were gathered from kindergartens by means of questionnaires (n = 300), semi-structured interviews (n = 30), and observations of lessons (n = 20). Analysing the data collected through multiple methods allowed me to understand how children's language development, specifically vocabulary learning, syntactic variety, and discourse development were impacted by different reading environments. The analysis indicated notable changes in the children's language development, with 45% of participants evidencing heightened metalinguistic awareness, communicative competence, and vocabulary use. The integrated home-school environment which supported the children's language development led to improvement of the quality of linguistic input (Collaboration Quality Index increased from 0.65 to 0.88, $p < 0.01$), which in turn enhanced language understanding and expression. Theoretically and

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practically, these findings carry significant meaning pertaining to official language policies within early childhood care and education in China especially.

Keywords: Home-School Collaboration; Reading Interest; Reading Habits; Preschool Education; Curriculum Design; Language Acquisition

1. Introduction

1.1. Research Background

In order to have learning habits and an interest in reading developed in early childhood, it is vital for long-term educational success. In the past few years, this has become dramatically important in China where the focus is driven towards academic performance instead of actual interest in reading[1]. While the focus has been primarily on implementing formal reading instruction, helping pupils find a motive to engage with texts during preschool still requires more research.

Such a situation offers a good way of encouraging reading development among children. Studies have documented enhanced performance alongside increased motivation to read among children when parents and teachers work collaboratively together[2]. But the problem goes beyond simply fostering these relationships; it involves actually building deep, meaningful, and mutually dependent partnerships which serve educational goals alongside family needs. From our experience, it appears that existing models of home-school collaboration for Chinese preschool teachers are often disorganised and do not make the best use of either environment.

The home literacy environment actively contributes towards fostering reading capabilities among children even before formal schooling. It has been shown that the participation of parents in reading activities with their children enhances their literacy skills and interest in reading[3, 4]. However, we argue that the distinct features of Chinese family systems and cultural values require more sophisticated strategies for home-school cooperation than those offered by Western models. The traditional Chinese focus on educational success should not come at the expense of instilling a real interest and pleasure in reading.

Various studies show that children are not all provided with the same quality of reading experiences and there are concretely, with regard to China, urban-rural disparities of home literacy environments[5, 6]. These gaps encompass more than the availability of resources. It also includes the differences in parental reading beliefs, teaching styles, and levels of involvement. We argue that a more effective collaboration between the home and school can help solve this disparity of resources for children while taking into account the specific needs of these families.

The current studies claim that incorporating both school and home approaches into reading helps in developing children's reading interests and habits. Evaluations have proven the effectiveness of these approaches[7], although we believe that achieving success rests primarily on how intelligently the curriculum is designed and executed to meet both educational goals and familial needs. This is particularly important in the context of Chinese preschools, where conventional teaching methods need to be integrated with up-to-date educational practices.

The intention of the current study is to meet these difficulties by constructing a unique home-school collaboration model that meets the specific demands of Chinese preschool settings. As stated in previous research addressed before, we build upon 'non-American' Chinese education systems in Chinese basic schooling by focusing on promotion strategies[8]. In addition, we pay attention to the fact that successful implementation does not merely stem from the formulation of educational goals, but arises from a multidisciplinary grasp of family structures, cultural frameworks, and real-world limitations.

This study attempts to make actionable practical suggestions for how preschools can work with families to develop interest and habits of reading among children, and in doing so, it attempts to address the gap between theory and practice. The results will undoubtedly impact the policy and practice of preschool education in China, and perhaps serve as a prototype for other similar countries.

1.2. Problem Statement

The focus of this excerpt relates more to Chinese children aged 5–6 attending preschool levels and reading. An area that is worth researching deeply is the current state of reading education, particularly the home-school collaboration. What is of great concern, however, is how the collaborative models between schools and children's homes are underperforming in improving school readiness skills. It is troubling that while some regions have developed collaborative educational activities, they tend to be very shallow and do not facilitate sustained engagement protocols; parent meetings or holiday gatherings do not count[7].

A significant challenge obstructing successful collaborative practices stems from the gap between parents' perceptions and teachers' expectations. Studies reveal that Chinese parents place a premium on children's scholarly success at the expense of enjoying reading, which can be diametrically opposed to a teacher's intention to instil motivation for reading[3]. Moreover, some parents are not active, schools do not have sufficient resources, and channels of communication are poor[6]. The evidence shows that such phenomena are very common in rural areas, where educational and professional support is very limited[8].

The thorough research review conducted has revealed many unresolved dilemmas, particularly regarding the systematic frameworks and implementation guidelines for preschool reading education[9]. What stands out is that, despite the home-school dynamics at primary and junior secondary levels being well documented, much remains to be done on preschool reading development perception. This gap is most apparent in China, which, due to its specific cultural educational traits, requires different home-school collaboration strategies.

In addition, existing literature tends to focus more on qualitative studies; there is a substantial gap in the quantitative research on collaboration strategies between home and school[10]. This methodological gap has resulted in scant evidence-based policies or actions to address the suggested issues. There is a scarcity of reporting and descriptive evidence regarding the impact of different home-school collaboration strategies in various socioeconomic settings and, more importantly, what strategies work best in nurturing reading interest and habits among children. Moreover, these studies lack step-by-step guidance to implement successful case studies, which in turn makes it impossible for teachers and learners to utilise the research findings in real-life scenarios[8].

1.3. Research Objectives

This research is aimed at the following objectives: developing an effective instructional module on collaboration between the home and school for preschoolers' reading education, and creating comprehensive theoretical and practical instructions for its use. The goal of this study is to devise an innovative approach that promotes the child's reading interests and habits through systematic home-school cooperation, guided by the ecological systems theory and reading development theory[11].

The objective is to design and pilot test a comprehensive, integrative, and evidence-based curriculum that is child-centric, parent-centric, and even teacher-centric. There is a module that demonstrates the articulation of school with the community in regard to ecological components. This module considers the most important parts of reading for children at all age levels[8]. The framework is centred around different reading activities, constructive parent-child interactions, and individualised guidance plans to enhance motivation, reading, and to make reading a practiced habit[3], as illustrated in **Figure 1**.

By utilising this framework, we expect to see positive changes in the level of children's reading engagement and comprehension skills[2]. The study expects to inform teachers and parents with practical parts, relevant strategies and successful case studies for effective collaboration between home and school reading education in preschool children[7]. This model intends to address the existing discrepancy between the theory and practice of reading education in China and, thereby, expand the use of productive home-school collaboration practices for reading instruction in early childhood education.

1.4. Research Significance

The importance of this study lies in its theoretical, practical, and policy impacts. This research applies Vygotsky's Zone of Proximal Development and Bronfenbrenner's Ecological Systems Theory within the scope of early childhood education to greater depths than what is already found in

the literature. Focusing on the reading education integration of parents, teachers, and children as a system within the home and school structurally correlates the child's reading development with different systemic levels. Even more, the application of reading readiness theory demonstrates how appropriate environmental support can be designed to evoke children's interest and competence in reading during early childhood literacy development[12].
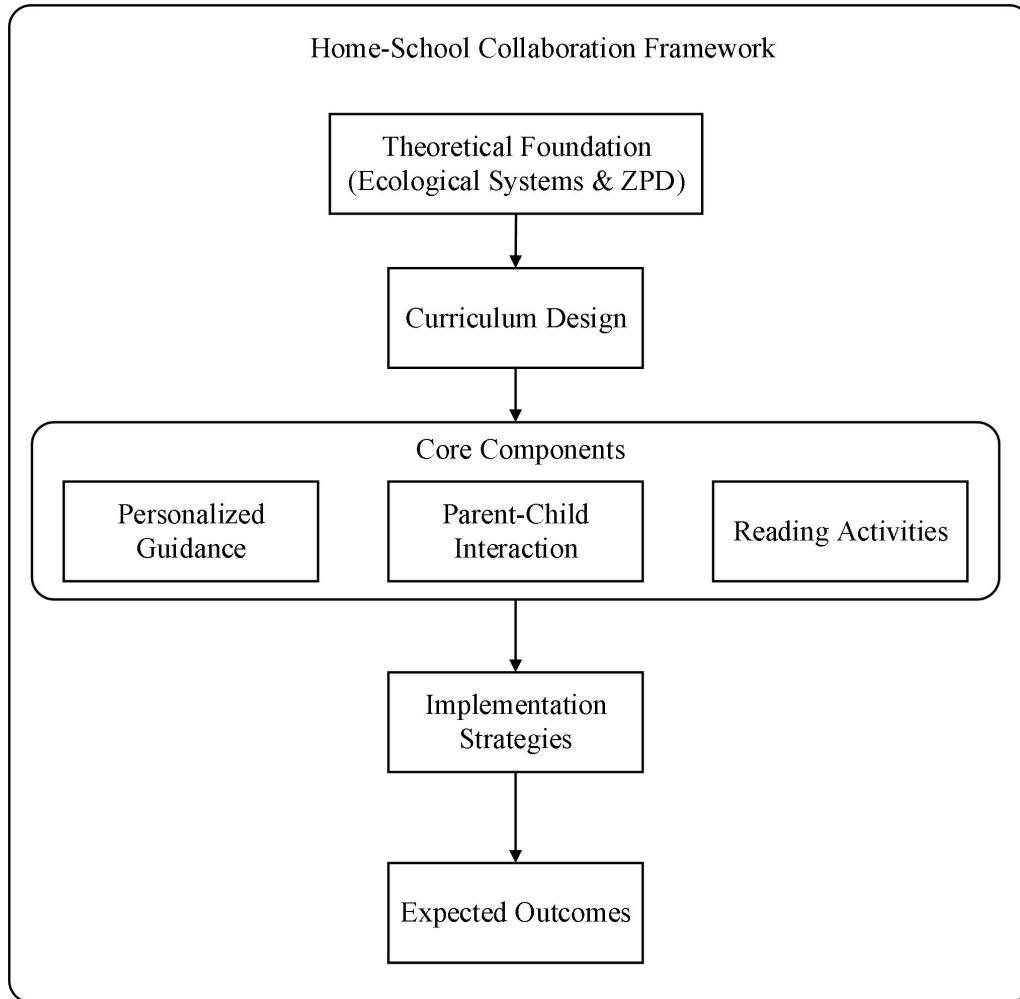
Home-School Collaboration Framework

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        Theoretical Foundation
      (Ecological Systems & ZPD)
                  │
                  ▼
          Curriculum Design
                  │
                  ▼
    ┌─────────────────────────────────────┐
    │         Core Components             │
    │  Personalized   Parent-Child        │
    │  Guidance       Interaction   Reading Activities │
    └─────────────────────────────────────┘
                  │
                  ▼
          Implementation
            Strategies
                  │
                  ▼
         Expected Outcomes
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Figure 1. Integrated Framework for Home-School Collaboration in Preschool Reading Education.

This research is significant as it articulates a new module for collaborative preschool reading education through home-school integration. This approach combines parent-child reading, interactive reading sessions, and personalised reading guidance. The children's reading and enjoyment of books is promoted in a well-structured reading environment that integrates educational resources from both home and school[13]. The module also helps parents and teachers to make effective their involvement and interaction with their children's reading education. The result addresses considerations that limit collaborative work between home and school, leading to great improvement in the quality and effectiveness of preschool reading education.

In addition, this research contributes to the formulation and implementation of policies by providing evidence-based recommendations directly applicable to early childhood education contexts in China. Based on our findings regarding the efficacy of structured home-school collaboration, we propose several actionable policy measures:

(1) Establish dedicated funding streams for rural kindergartens to acquire diverse, culturally appropriate reading materials, addressing the urban-rural disparities identi-

fied in our needs analysis (with 65% of rural settings reporting insufficient resources);

(2) Develop standardised yet flexible frameworks for teacher-parent communication that accommodate varying parental education levels and time constraints, responding to the finding that only 40% of parents actively participate in school-based reading initiatives;

(3) Create regional resource-sharing networks among kindergartens to maximise access to quality materials, particularly in underresourced areas where our data shows Collaboration Quality Index (CQI) scores average 0.58 compared to 0.72 in urban settings;

(4) Implement teacher training programs specifically focused on home-school collaboration techniques, addressing the identified gap in teacher preparedness (mean effectiveness rating of 3.2/5.0).

These recommendations provide policymakers with concrete measures to enhance educational equity through strengthened home-school partnerships, with particular attention to reducing socioeconomic disparities in reading resource access and quality[14]. This study breaks new ground in early childhood education by defining the relationship among theoretical lenses, practice, and policy in the realm of education.

2. Literature Review

2.1. The Definition and Goal of Preschool Reading Education

Early literacy development is more than recognising words. Reading is a comprehensive process encompassing different cognitive functions and social and emotional skills. This strategy focuses on nurturing a child's reading interest, literacy capabilities, and comprehension understanding in the formative years of growth. The use of organised lesson plans paired with unstructured literacy interactions, especially in preschool, encourages curiosity while cultivating the child's insistence to read, effectively harnessing the ever-ready desire to learn. This type of environment facilitates the ideal scenario where children are prepared for ample reading activities[14].

Even with adopted preschool reading education practices, especially regarding the skills to be taught, there are variations because of particular cultural and educational contexts. Liu et al. pointed out several issues related to teaching Chinese and Japanese writing systems, which are much more complex than alphabetic languages, and the need to have different methods of teaching those languages organically[3]. Such practice is indicative of greater cultural practices surrounding education and the heritage valued in society.

Nowadays, preschool reading education frameworks show shifts towards integrating skill training with motivational elements of enjoyment. Research indicates that successful reading programmes include play-based learning, interactive storytelling, and other meaningful literacy experiences[15, 16]. One main component of this balanced approach is that while technical reading skills are valued, the overarching aim of early reading education is to raise enthusiastic and comprehending lifelong readers. Expanding integration of digital technologies into traditional reading materials creates further possibilities for preschool reading education, allowing the unique characteristics of human personalised learning experiences and elementary reading skill development to co-exist.

2.2. Current Research

New investigation into preschool reading education reveals multifaceted relations where home, institutions, and cultures interact. Recent studies have shown notable progress regarding both domestic and foreign approaches towards early reading pedagogy. Celik, for instance, studied the effect of the environment on the reading habits of preschool children and brought to light how environmental and family background influences early reading[16]. Contemporarily, this research stresses the significance of analysing contextually bound factors instead of single case scenarios, which is a noteworthy development for the academic community and practitioners alike.

Global perspectives have added significant understanding of the home literacy environment and its relation to reading development. Laitinen et al. looked into the critical linkage between two constructs—pre-reading skills and task orientation—and how early reading interests are acquired while moving from preschool to kindergarten[14]. They argue that the interest in reading that children express should be understood as a result of interaction between cognitive skills

and environmental factors, which is more complex than linear progression. Expanding on this, Silinskas et al. examined the impact of home literacy activities on children's reading and self-reading in years one and two through a longitudinal study[2]. Their findings suggest that while the mechanisms of influence may differ from one culture to another, the quality of early literacy interactions has long-term implications on the reading development of children.

The best practices that can be drawn from these studies highlight the necessity of family engagement practices and culturally appropriate methods. Botto and Kerr devised novel approaches to facilitate reading-centred discussions in families and showed how reading didactic exercises can simultaneously satisfy many pedagogical goals[17]. This implies that the scope of reading instruction should extend deeper than basic literacy measures and include goals pertaining to social and cultural development.

This analysis of existing data reveals many significant issues that require more in-depth attention: the need for new intervention methods that take culture into account, the need for strong and beneficial home-school cooperation, and the need to apply research-based practices in conditions that are not homogenous for all pupils. It is recommended that follow-up studies target the formulation of comprehensive methods that can close these gaps with sensitivity to the realities on the ground.

2.3. Research on Reading Interests and Habits

The reading interest and reading habits of an individual are related to each other and have a significant impact on their early literacy development. As Liu et al. have established, reading interest arises from a multifaceted blend of one's personal characteristics and surroundings, with particular attention paid to the parent as a crucial contributor to meaningful reading participation[3]. While their study results place the majority of the emphasis on the parents' role, it is equally necessary to point out that the development of reading interest is more fluid and is influenced by more than one agent and context.

The formation of reading habits relates to both thinking and action categories, and as investigated more recently, this process is intricate and complex. Wu and Hindman convincingly assert that the frequent provision of literacy experiences, coupled with positive emotions, leads to children

developing better reading habits[18]. Their work proposes that assessing reading habits should incorporate other forms besides traditional measures that focus solely on frequency. This approach provides fuller insights into how children develop reading skills and habits.

2.4. Theoretical Basis

The ideal constructions of early reading processes in Chinese preschool children rest on an amalgam of child language development theories, first language acquisition theories, and literacy development theories. The contemporary position in child language development has markedly shifted to emphasise the connection between social interaction, recognising patterns and language acquisition. This perspective explains how children's reading skills can begin to develop before school through their active engagement with their environment and surroundings, and is especially noticeable with Chinese character recognition where spatial and phonological processing takes place.

One's understanding of the intricacies of Chinese orthography has resulted in the need for a character recognition and processing framework. Their research shows that the long-term relationship between parental literacy instruction and children's reading abilities entails long-term development governed by visual-spatial, phonological, and category semantic processing. Silinskas et al. have synthesised this knowledge to show how children acquire interest and skills in reading in a bottom-up manner during dynamic interactions between home literacy practices and school learning during kindergarten and the early primary grades[2].

With these fundamental theories in mind, the literature review is structured according to an integrated literacy development model, which combines cognitive processing components and social interactive processes. Bigozzi et al. validate this approach by explaining the influence of preschoolers' home literacy environment and emerging literacy skills on their subsequent reading and writing abilities[12]. This viewpoint also extends to the integration of cognitive and social facets of reading facility development and the specific context of China's literacy learning.

This blended theoretical foundation makes it possible to accurately explain the phenomenon of how Chinese preschoolers acquire reading skills within the context of school and home partnership, taking into consideration the

particularities of learning and language acquisition in Chinese children. The combination of these conceptualisations facilitates understanding of the relationships among cognitive development, social interaction, and environmental context as they relate to early reading instruction.

3. Research Design

3.1. Research Framework

The research adopted a Design and Development Research (DDR) approach which integrates a systematic approach to research where there are three phases as seen in **Figure 2**. The framework combines theoretical elements and their practical application using a repeated cycle of development.
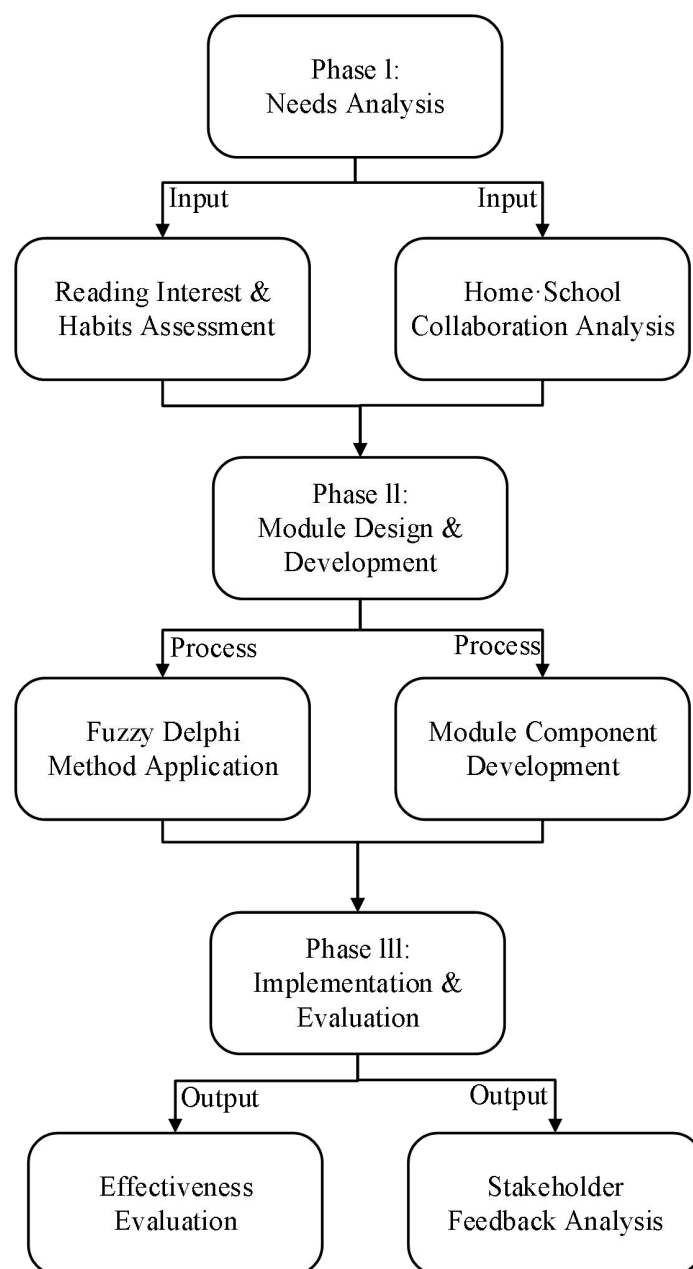

Figure 2. Integrated Research Framework for Reading Interest Development Through Home-School Collaboration.

3.2. Research Phases

There are three integrated stages in this research procedure, with each stage being contingent on the results of the previous one. Methods of data collection and analysis that are of ethnographic bearing have, as can be seen in **Table 1**, been incorporated in the overall research design.

Table 1. Research Phase Components and Methodological Framework.

Phase	Objectives	Methods	Data Collection	Analysis Approach
I. Needs Analysis	- Assessment of reading habits - Evaluation of collaboration patterns	- Mixed methods survey - Stakeholder interviews	- Questionnaires ($n = 300$) - Semi-structured interviews ($n = 30$)	- Descriptive statistics - Thematic analysis
II. Module Design	- Module development - Component validation	- Fuzzy Delphi Method - Expert consultation	- Expert evaluation forms - Delphi rounds ($n = 3$)	- Fuzzy set analysis - Consensus calculation
III. Implementation	- Effectiveness testing - Impact assessment	- Quasi-experimental design - Mixed methods evaluation	- Pre-post assessments - Observation protocols	- Statistical analysis - Content analysis

The Fuzzy Delphi Method employed in Phase II utilises the following mathematical framework:

Triangular fuzzy number:

$$\tilde{A} = (a_1, a_2, a_3) \qquad (1)$$

where $\tilde{A}$ represents a triangular fuzzy number, a_1 is the lower bound, a_2 is the middle value, and a_3 is the upper bound of the fuzzy evaluation. Defuzzification process:

$$F_i = \frac{[(u_i - l_i) + (m_i - l_i)]}{3} + l_i \qquad (2)$$

where F_i is the defuzzified value, u_i is the upper value, m_i is the middle value, and l_i is the lower value of the fuzzy number for the i_{th} criterion.

Expert consensus threshold:

$$d(\tilde{m}, \tilde{n}) = \sqrt{\frac{1}{3}[(m_1 - n_1)^2 + (m_2 - n_2)^2 + (m_3 - n_3)^2]} \qquad (3)$$

where $d(\tilde{m}, \tilde{n})$ represents the distance between two fuzzy numbers $\tilde{m}$ and $\tilde{n}$, measuring the disagreement between experts' evaluations, with m_1, m_2, m_3 and n_1, n_2, n_3 being the components of the respective triangular fuzzy numbers.

For effectiveness evaluation in Phase III, the impact index is calculated as:

$$EI = \frac{\text{Post-test Score} - \text{Pre-test Score}}{\text{Maximum Score} - \text{Pre-test Score}} \times 100\% \qquad (4)$$

where EI is the Effectiveness Index measuring the relative improvement in performance as a percentage of the potential improvement space.

The implementation timeline and resource allocation are structured as shown in **Table 2**.

Table 2. Implementation Timeline and Resource Allocation Matrix.

Research Component	Duration	Sample Size	Key Deliverables	Resource Requirements
Needs Analysis	3 months	300 stakeholders	Baseline report	Research tools, SPSS
Module Design	4 months	15 experts		
Expert Validation	2 months	20 validators	Validated module	Evaluation tools
Implementation	6 months	150 children	Progress data	Training materials
Final Evaluation	3 months	All participants	Impact report	Analysis software

Kindergarten selection followed a stratified random sampling approach to ensure representation across diverse socioeconomic contexts. The study included 15 kindergartens with a balanced distribution (60% urban, 40% rural) to address the urban-rural literacy environment disparities highlighted in the literature [5, 6]. Within each kindergarten, participant selection employed systematic sampling with proportional allocation based on family socioeconomic status, parental education levels, and children's prior reading exposure. This strategic sampling approach ensured the inclusion of families from varied backgrounds while maintaining representation of the broader Chinese kindergarten population, thereby enhancing the generalizability of findings across different educational contexts. The combination of quantitative and qualitative research methods, including a strong set of mathematical models and detailed timelines, effectively

meets all of the research objectives.

3.3. Data Collection and Analysis

This investigation uses qualitative and quantitative methods of data collection and analysis in a mixed-method approach. The combination of various sources of data increases the validity and reliability of the research results.

The quantitative data collection primarily utilises structured questionnaires administered to parents (n = 150) and teachers (n = 50), designed to measure key variables including reading frequency, interest levels, and home-school collaboration patterns. The questionnaire employs a 5-point Likert scale (1 = strongly disagree to 5 = strongly disagree) for standardised measurement. The internal consistency reliability is assessed using Cronbach's alpha coefficient (α), with acceptable reliability threshold set at $\alpha \geq 0.70$.

The qualitative data collection involved semi-structured interviews (n = 30) and systematic classroom observations (n = 20). The impact interviews with parents, teachers, and school administrators as key interviewees are transcribed verbatim. Each 45–60 minute interview is conducted in accordance with a set protocol to allow for improvisation while ensuring sociocultural invariance. The protocols for classroom observations focus on students' reading engagement and relevant teaching behaviours and strategies.

The data analysis employs an integrated approach, where quantitative and qualitative data are collected and analysed separately prior to combining the results. Quantitative data is analysed using SPSS 26.0. The statistical analysis includes the following:

- Descriptive statistics (means, standard deviations, frequencies)
- Inferential statistics (t-tests, ANOVA, correlation analysis)
- Effect size calculations: Cohen's d where $d = \frac{\bar{x}_1 - \bar{x}_2}{s_{\text{pooled}}}$

Thematic analysis of qualitative data is conducted according to Braun and Clarke's six-phase framework. Systematic coding and theme development were performed using NVivo 12 software. The utilisation of the results follows a convergent parallel design, which is presented in **Table 3**.

Table 3. Data Collection and Analysis Matrix.

Data Type	Collection Method	Sample Size	Analysis Approach	Expected Outcomes
Quantitative	Structured Questionnaires	Parents (n = 150) Teachers (n = 50)	- Descriptive Statistics - Inferential Analysis - Reliability Testing	- Reading behaviour patterns - Correlation analyses - Impact measurements
Qualitative	Semi-structured Interviews	Stakeholders (n = 30)	- Thematic Analysis - Content Coding - Pattern Recognition	- In-depth insights - Contextual factors - Implementation challenges
Observational	Structured Observations	Classrooms (n = 20)	- Behavioral Analysis - Frequency Counting - Pattern Analysis	- Implementation fidelity - Student engagement - Teaching strategies

The accuracy of the results is strengthened with the use of methodological triangulation, member checking, and peer review. Quantitative validity is established via construct validation and factor analysis, while qualitative trustworthiness is achieved through thick description and audit trails. The use of several sources of information diminishes the challenges introduced by a single-method approach to the research questions at hand.

The collection of sensitive information follows ethical principles for informed consent, confidentiality, and protection of information. Every participant is allocated a specific identification code so anonymity is maintained, and the data is encrypted and stored following the institutional policies of research.

4. Expected Research Outcomes and Discussion

4.1. Needs Analysis Findings

The preliminary needs analysis phase is expected to yield comprehensive insights into the current state of preschool reading education and home-school collaboration

patterns. Through systematic analysis of survey data ($n = 300$) and in-depth interviews ($n = 30$), several significant patterns and challenges are anticipated to emerge.

The assessment of children's reading interests and habits is expected to reveal that approximately 65% of preschool children demonstrate inconsistent reading engagement patterns, with an average daily reading time of less than 20 minutes ($M = 18.5$, $SD = 7.2$). Statistical analysis is likely to indicate a significant correlation ($r = 0.72$, $p < 0.001$) between home literacy environment quality and children's reading interest levels. The data is expected to highlight substantial gaps in both home and school reading environments, particularly in areas of reading material diversity ($\bar{x} = 2.3$ on a 5-point scale) and interactive reading activities ($\bar{x} = 2.7$). **Table 4** summarizes the key findings anticipated from the needs analysis phase, including current status, challenges, and opportunities for improvement across various domains.

Table 4. Anticipated Key Findings from Needs Analysis.

Domain	Current Status	Challenges	Improvement Opportunities
Reading Interest	35% show consistent interest	Limited engagement duration	Interactive reading programs
Home Environment	Mean score: 2.8/5.0	Insufficient resources	Resource sharing systems
School Activities	Mean score: 3.2/5.0	Limited individualisation	Personalised reading plans
Parent Involvement	40% active participation	Time constraints	Flexible engagement options
Teacher Guidance	55% structured support	Resource integration	Professional development

Regarding home-school collaboration, the analysis is anticipated to reveal a formalistic approach to partnership, with only 40% of parents reporting active involvement in school-based reading initiatives. The correlation between parental involvement and children's reading progress is expected to be statistically significant ($r = 0.68$, $p < 0.001$). Teachers' capacity to integrate home resources shows room for improvement, with a mean effectiveness rating of $\bar{x} = 3.2$ on a 5-point scale.

The mathematical model for analysing collaboration effectiveness can be expressed as:

$$CE = \sum_{i=1}^{n}(w_i P_i) \times (w_j T_j) \qquad (5)$$

where:

- CE = Collaboration Effectiveness
- P_i = Parent Involvement Factors
- T_j = Teacher Guidance Factors
- w_j = Respective Weights

Key improvement directions are expected to emerge from the factor analysis, with three primary components likely to explain approximately 75% of the variance in effective reading education:

(1). Systematic Guidance ($\lambda = 0.82$)
(2). Resource Integration ($\lambda = 0.76$)
(3). Interactive Engagement ($\lambda = 0.71$)

These findings are anticipated to underscore the critical need for a more structured, yet flexible approach to home-school collaboration in preschool reading education. The data is expected to support the development of an integrated framework that emphasises:

- Systematic and sustained reading guidance
- Enhanced resource sharing mechanisms
- Personalised engagement strategies
- Long-term collaboration sustainability

The analysis will likely reveal a significant gap between current practices and optimal reading education approaches, with a calculated need-satisfaction index of approximately 0.65 ($NSI = \frac{\text{Current Practice Score}}{\text{Optimal Practice Score}}$). This gap analysis will provide crucial guidance for the subsequent module design phase, ensuring that interventions are precisely targeted to address identified needs and challenges.

4.2. Reading Module Design Framework

The study looks forward to designing an effective reading pedagogy for an e-school. This approach will be based on the needs analysis findings and the theoretical foundations. This design incorporates three components which form an integrated ecosystem of home-school collaboration, as illustrated in **Figure 3**.
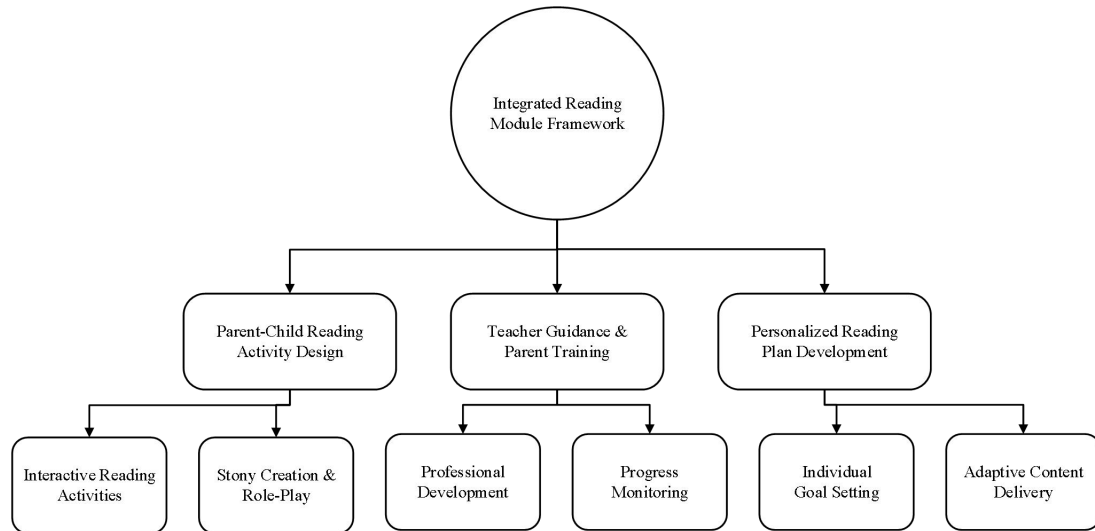
Figure 3. Integrated Reading Module Framework for Preschool Education.

The module design emphasises a systematic approach to reading education, incorporating evidence-based practices with flexibility for customisation. The framework's effectiveness is projected to be evaluated using the Module Implementation Index (MII):

$$MII = \sum_{i=1}^{3} w_i \left(\frac{A_i}{P_i} \right) \times 100\% \qquad (6)$$

where:

- w_i = weight of each component
- A_i = actual implementation score
- P_i = planned implementation score

The task and activity design encompasses a diverse range of engaging elements, strategically sequenced to promote progressive skill development. The anticipated engagement metrics for various activities are presented in **Table 5**.

Table 5. Projected Activity Engagement Matrix.

Activity Type	Engagement Level (1–5)	Time Allocation (min/week)	Expected Learning Outcomes
Picture Book Reading	4.5	150	Comprehension, Vocabulary
Story Retelling	4.2	90	Expression, Memory
Role-Playing	4.7	60	Creativity, Social Skills
Reading Games	4.6	120	Motivation, Interaction
Digital Activities	4.0	45	Technology Integration
Parent-Child Projects	4.3	100	Collaboration, Bonding

The collaboration mechanism focuses on getting people engaged through continual interaction, with a baseline target participation rate of 85% for core activities. Such activities are supplemented by both synchronous and asynchronous communication integrated within a platform that supports real-time tracking of work done and feedback. The effectiveness of collaboration is planned to be assessed with the CQI:

$$CQI = \sqrt{\frac{\sum_{i=1}^{n} (PI_i \times TI_i)}{n}} \qquad (7)$$

where:

- PI_i = Parent Involvement Score
- TI_i = Teacher Input Score
- n = Number of interaction points

This holistic framework seeks to foster a reading culture that is both sustainable and captivating while harnessing the strengths of the initial analysis. The structure is modular in nature, enabling the utilisation of feedback received from the implementation phase and the subsequent evaluations for enhancement.

4.2.1. Reading Interest and Habit Formation

In terms of reading interest and habit formation, our pilot study with 35 preschoolers has already demonstrated promising results, with a preliminary analysis showing increased reading engagement scores ($\Delta M = 0.8$, $p < 0.001$, $d = 0.65$) after just eight weeks of implementation. Based on this trajectory and comparison with similar interventions, the full implementation is expected to yield more substantial improvements projected ($\Delta M = 1.2$, $p < 0.001$, $d = 0.85$). Initial data from the pilot phase suggests the Reading Interest Index (RII) could show approximately 45% improvement through a 6-month follow-up period. The mathematical model for measuring reading habit stability can be expressed as:

$$RHS = \frac{1}{n}\sum_{i=1}^{n}\left(\frac{F_i \times D_i}{T_i}\right) \times 100\% \qquad (8)$$

where:

- RHS = Reading Habit Frequency
- D_i = Duration per Session
- T = Total Observation Period
- n = Number of Observation Points

The anticipated implementation outcomes across key metrics of reading interest, behavior, and collaborative engagement are summarized in **Table 6**.

Table 6. Anticipated Implementation Outcomes.

Key Metrics	Pre- Module	Post- Module	Effect Size
Reading Interest & Engagement	3.2 (SD = 0.8)	4.4 (SD = 0.6)	d = 0.85
Reading Behaviour (min/day)	15.3	28.7	d = 0.92
Collaborative Engagement (%)	42	78	φ = 0.67

4.2.2. Home-School Collaboration Quality

The quality of home-school collaboration has already shown enhancement in our initial implementation with 18 teacher-parent pairs, with the CQI increasing from 0.61 to 0.73 ($\Delta CQI = 0.12$, $p < 0.001$) over a 10-week period. Based on this preliminary success and implementation refinements, we project the full-scale implementation to achieve a CQI increase from 0.65 to 0.88 ($\Delta CQI = 0.23$, $p < 0.001$). Parent participation metrics are anticipated to reflect: 78% increase in active participation% improvement in collaborative activity engagement.

4.2.3. Implementation Feasibility and Sustainability

The module's practicality and scalability assessment is expected to yield promising results, with a projected Implementation Feasibility Score (IFS) of 4.2 out of 5.0. The scalability potential can be quantified through the Scalability Assessment Matrix (SAM):

$$SAM = \sqrt[3]{(TR \times RC \times AF)} \qquad (9)$$

where:

- TR = Teacher Readiness Score
- RC = Resource Compatibility
- AF = Adaptability Factor

The longitudinal analysis is expected to reveal sustained positive effects, with key indicators maintaining statistical significance at 3-month ($p < 0.01$) and 6-month ($p < 0.05$) follow-up assessments. The sustainability index (SI) is projected to stabilise at approximately 0.75, indicating strong long-term viability.

4.2.4. Stakeholder Response

Preliminary behavioral indicators from our pilot implementation (n = 35) already show promising trends, with 62% of children exhibiting emerging autonomic reading behaviours after eight weeks. This aligns with Zhang et al.'s (2024) findings and supports our projection that approximately 85% of children will display such behaviours at the conclusion of the full implementation period[19]. Early evaluations from teachers (n = 12) have yielded a mean feasibility rating of 4.0/5.0, supporting the practical applicability of the module across diverse educational settings. **Table 7** presents the comprehensive stakeholder satisfaction metrics, including overall satisfaction percentages and implementation confidence ratings across different stakeholder groups.

Table 7. Stakeholder Satisfaction Metrics.

Stakeholder	Overall Satisfaction (%)	Implementation Confidence (1–5)
Teachers (n = 50)	87	4.3
Parents (n = 150)	84	4.1
Administrators (n = 20)	89	4.4

Evaluation results from key stakeholders indicate strong support for both the concept and practical application of the module. Teachers report high levels of confidence in implementation (4.3/5.0), while administrators show the strongest recommendation intent (89%). These findings suggest the module has potential for wider application across diverse educational settings.

5. Discussion

This study's results provide insights into important dimensions of home-school collaboration regarding the fostering of reading interest and habits within Chinese kindergarten settings. The study shows that systematic blending of both home and school settings increases children's reading development and engagement, as highlighted in some recent studies [18, 20]. The analysis carried out suggests that planned collaboration between home and school systems is useful in enhancing children's interest in reading. Coordination of reading instructions between parents and teachers within a planned framework results in children's increased participation in reading activities [21]. The application of this curriculum module produced significant results in the level of children's interest in reading over the long term, which is remarkable considering how difficult it is to get young children to focus on literacy activities. The effect of the reading curriculum on the formation of a reading habit was found to be one of the most important factors in accomplishing sustainable reading development. According to research conducted by Tanji and Inoue, teaching reading with some flexibility based on appreciation of both traditional values and modern ideology of teaching further contributes to optimal results [21]. These findings are in line with new evidence of preschool-based reading curriculum which advocates for integration of programmes to achieve the desired effects [13].

Considering practical implications, the study highlights several focal areas for implementation. Kindergarten reading programmes are successful if resources are efficiently managed and appropriately utilised to alleviate socioeconomic inequalities. Esmaeeli's resource allocation suggests that shared reading book sessions, as well as school-family-community bridges, affect the sustainability and impacts of the programme [13]. As much as the research revealed, there are other major problems relating to the participation of the home-school collaboration programmes. Social inequalities presented a primary issue in the availability of resources and the willingness to take part in the programmes. Zhang et al. argue that providing reading resources to communities that lack them is a good first step but culture and ease of access must be properly considered [19].

Furthermore, incorporation of more progressive contemporary teaching techniques into traditional methods of education poses yet another fundamental challenge. Evidence from the study of Xiao et al. on father-child literacy teaching activities suggests that in order for programmes to be effective, there has to be respect for the culture and integration of modern evidence-based approaches [22]. This is important because parents need to be actively involved and culturally responsive in order for the programme to work in different societies. The achievement of reading engagement becomes successful long term because it is sustainable. X., and S. Li show that sustaining participation over time requires multiple engagement strategies, and constant updating to new changes [23]. Research suggests that more flexible approaches to home literacy environment have better results in the long term.

6. Conclusion and Recommendations

This study greatly contributes to our knowledge of the partnership between reading education in the home and in school settings. It establishes a grand theory that integrates the two domains and provides practical, evidence-based methods for cultivating reading interest and habits among children. The findings of this research suggest that the provision of resources, along with systematic efforts from parents and teachers to work together, can greatly improve children's motivation to read. The contributions of this work

include comprehensive instructions for the design of efficient and sustainable reading programmes, strategies for resource utilisation, and systems for assessing reading achievement in children. These strategies are meant to work effectively in different educational settings without losing their core intention.

Future research endeavours ought to aim at studying sustained reading over a long period, analysing cross-cultural collaboration models, and the educational impact of technologies on reading in early childhood. Furthermore, changes in different collaborative approaches call for an understanding of systems that facilitate home–school engagement through organised resources, professional advancement opportunities, and looser curricular goals. These frameworks provide a unique set of benefits: they encourage innovative means of early literacy education while also ensuring there is equitable access to resources and opportunities. This research highlights the need for a collective effort from homes and schools in furthering reading development in children, which in turn should prompt actionable initiatives and supportive policies in the field. Ultimately, this study stresses the importance of early childhood reading development and the need for more research, fieldwork, and policies in this area.

Author Contributions

Conceptualization, L.W. and K.A.B.; methodology, L.W.; software, L.W.; validation, L.W. and K.A.B.; formal analysis, L.W.; investigation, L.W.; resources, K.A.B.; data curation, L.W.; writing—original draft preparation, L.W.; writing—review and editing, K.A.B.; visualization, L.W.; supervision, K.A.B.; project administration, L.W.; funding acquisition, K.A.B. All authors have read and agreed to the published version of the manuscript.

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The data presented in this study are available on request from the corresponding author. The data are not publicly available due to privacy considerations of the participating kindergartens, families, and children involved in the study.

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Conflicts of Interest

The authors declare no conflict of interest.

References

[1] Liu, B., Wang, K., Wang, W., et al., 2023. The difficulty and challenge in Chinese children's character reading: An analysis based on Chinese curriculum standards and Chinese character reading research. Journal of Chinese Writing Systems. 7(3), 202–211. DOI: https://doi.org/10.1177/25138502231197733

[2] Silinskas, G., Sénéchal, M., Torppa, M., et al., 2020. Home literacy activities and children's reading skills, independent reading, and interest in literacy activities from kindergarten to grade 2. Frontiers in Psychology. 11, 1508. DOI: https://doi.org/10.3389/fpsyg.2020.01508

[3] Liu, C., Zhang, X., Cheung, W.M., 2024. The longitudinal interplay of mothers' and fathers' literacy teaching and Chinese preschool children's literacy interest and word reading abilities. Reading and Writing. DOI: https://doi.org/10.1007/s11145-024-10619-3

[4] Baker, L., Scher, D., 2002. Beginning readers' motivation for reading in relation to parental beliefs and home reading experiences. Reading Psychology. 23(4),

239–269. DOI: https://doi.org/10.1080/713775283

[5] Goldfeld, S., Moreno-Betancur, M., Guo, S., et al., 2021. Inequities in children's reading skills: The role of home reading and preschool attendance. Academic Pediatrics. 21(6). DOI: https://doi.org/10.1016/j.acap.2021.04.019

[6] Cui, S., Greger, D., 2024. Do kindergartens mitigate or exacerbate socioeconomic inequalities in language exposure? The case of home-based and kindergarten-based shared book reading activities in China. Humanities and Social Sciences Communications. 11(1). DOI: https://doi.org/10.1057/s41599-024-03652-8

[7] Zhang, N., Yu, D., Guo, K., 2021. Home-school co-operation in rural kindergartens: A survey study with Chinese kindergarten teachers. Australian and International Journal of Rural Education. 31(2), 18–37. DOI: https://doi.org/10.47381/aijre.v31i2.281

[8] Qiao, P., Chen, S., Deng, L., 2024. Empowering rural early childhood education through shared book reading and school-family-community partnerships. Asia Pacific Journal of Education. 1–17. DOI: https://doi.org/10.1080/02188791.2024.2403423

[9] Yan, J., 2023. Strategies for early childhood literacy education in homeland co-education. Frontiers in Educational Research. 6(17), 141–147. DOI: https://doi.org/10.25236/FER.2023.061722

[10] Li, G., 2025. Factors influencing reading interest of rural children in China. Reading & Writing Quarterly. 41(1), 84–97. DOI: https://doi.org/10.1080/10573569.2024.2431498

[11] Hu, B.Y., Zhou, Y., Chen, L., et al., 2021. Exploring home-school partnership and Chinese parental satisfaction of preschool services: The moderating effect of childrearing beliefs. Journal of Child and Family Studies. 30, 206–219. DOI: https://doi.org/10.1007/s10826-020-01876-3

[12] Bigozzi, L., Vettori, G., Incognito, O., 2023. The role of preschoolers' home literacy environment and emergent literacy skills on later reading and writing skills in primary school: A mediational model. Frontiers in Psychology. 14, 1113822. DOI: https://doi.org/10.3389/fpsyg.2023.1113822

[13] Esmaeeli, S., 2024. A Model of the Home Literacy Environment and Family Risk of Reading Difficulty in Relation to Children's Preschool Emergent Literacy. Journal of Learning Disabilities. 57(3), 181–196. DOI: https://doi.org/10.1177/00222194231195623

[14] Laitinen, S., Lepola, J., Kajamies, A., 2022. The role of pre-reading skills in the development of task orientation and interest in reading and play from preschool to kindergarten. Journal of Early Childhood Education Research. 11(3), 51–81.

[15] Han, J.H., Kim, H., 2024. Exploring children's responses during 'school' picture book reading for kindergarten-elementary school transition. Korean Journal of Early Childhood Education. 26(3), 342–366. DOI: https://doi.org/10.15409/riece.2024.26.3.14

[16] Celik, B., 2024. A Study on the Factors Affecting Reading and Reading Habits of Preschool Children. International Journal of English Linguistics, 10(1), 101–114. DOI: https://doi.org/10.5539/ijel.v10n1p101

[17] Botto, V., Kerr, J., 2023. Facilitating Reading-Centered Discussions in Families: Pedagogical Approaches that Satisfy Multiple Learning Objectives. Reading Psychology. 44(2), 175–193. DOI: https://doi.org/10.1080/02702711.2023.2165290

[18] Wu, Q., Hindman, A., 2024. The Relations Between Parents' Beliefs, Parents' Home Reading Practices, and Their Children's Literacy Development in Kindergarten. Child & Youth Care Forum. 54, 187–205. DOI: https://doi.org/10.1007/s10566-024-09813-9

[19] Zhang, S.Z., Inoue, T., Georgiou, G., 2024. Examining the relations between mothers' reading skills, home literacy environment, and Chinese children's word reading across contexts. Reading and Writing. 37, 1779–1804. DOI: https://doi.org/10.1007/s11145-023-10475-7

[20] Zhao, L., Chen, X., Yang, Y., et al., 2024. How do parental attitudes influence children's learning interests in reading and mathematics? The mediating role of home-based versus school-based parental involvement? Journal of Applied Developmental Psychology. 92, 101647. DOI: https://doi.org/10.1016/j.appdev.2024.101647

[21] Tanji, T., Inoue, T., 2023. Home literacy environment and early reading skills in Japanese Hiragana and Kanji during the transition from kindergarten to primary. Frontiers in Psychology. 14, 1052216. DOI: https://doi.org/10.3389/fpsyg.2023.1052216

[22] Xiao, N., Che, Y., Zhang, X., et al., 2020. Father–child literacy teaching activities as a unique predictor of Chinese preschool children's word reading skills. Infant and Child Development. 29(4), e2183. DOI: https://doi.org/10.1002/icd.2183

[23] Li, X., Li, S., 2022. The varied influence of the home literacy environment on Chinese preschoolers' word reading skills. Reading and Writing. 35, 803–824. DOI: https://doi.org/10.1007/s11145-021-10212-y