

The Reading Seed Programme Effectiveness Scale (RSPes) for Early Childhood Literacy from a Malaysian Context: A Scale Validation

Awang Rozaimie¹⁾

Universiti Teknologi MARA

Abstract

The innovative reading programme is in demand and serves as the primary national literacy initiative, aiming to instil a reading culture. The Reading Seed Programme (RSP) was developed in-house by PUSTAKA Negeri Sarawak as a literacy intervention programme for early childhood, specifically targeting toddlers aged 0-3 years. The process is vital to helping children learn to read from a young age and eventually empower them to be independent readers for life. Particularly, the objectives of RSP are to promote reading habits by getting parents to read to their children, strengthen a child's vocabulary, and develop their confidence, especially in reading. This study created a scale (known as the Reading Seed Programme Effectiveness Scale, or RSPes) to gauge the RSP's feasibility and measure how effectively it achieved its objective of fostering toddlers' early childhood literacy development. Exploratory factor analysis was utilised to assess the scale's criterion validity (both construct and content), followed by assessments of the measure's reliability and validity. The results demonstrated that the reading habits, the child's vocabulary ability, and the RSP measures stand as multidimensional constructs. The parents' engagement and confidence development remained as unidimensional constructs as conceptualised. Nonetheless, the findings of this study demonstrate that the RSPes is valid and reliable for empirical research on the specified constructs.

Keywords: reading seed programme, scale validation, early childhood, literacy development

Corresponding author, ¹⁾ awgrozaimie@uitm.edu.my

Introduction

Effective reading development programmes are required to help children learn to read, identify the factors that impede children's reading development, and recognise the roles and responsibilities of supporting systems (such as family, the library, and society) to achieve the national expected levels of literacy. Cultural disparities, poverty, language learning, special needs, and implications for struggling readers are the influencing elements in literacy learning (Braunger & Lewis, 1997). It is crucial to consider whether the current reading development programmes run by public libraries have helped or hindered children's interest in reading. Scholars (Cartwright et al., 2023) propose that reading competence is a dynamic and alterable cognitive process. The knowledge received and taught is cognitively assimilated to produce comprehension, which then directs a specific behaviour. Thinking skills (Rahmawati, 2024) and reading habits (Yana, 2024) are especially important in preparing children to navigate complex tasks and gain knowledge, comprehension, decision-making, and life experiences. It makes it challenging for non-native English learners to understand and comprehend information. Thus, reading skills are critical for children's knowledge acquisition, comprehension, and cognitive abilities. Reading proficiency has a significant impact on academic performance, which is defined as the ability to comprehend written material and achieve specific levels of educational achievement. Consistently encouraging toddlers to read as part of their early childhood literacy programme will help them develop analytical and writing skills, thus preparing them for school.

Effective early childhood reading programmes are substantial interventions that bolster toddlers' confidence in their thoughts and conscious behaviours. Toddlers' cognitive, emotional, and behavioural development is significantly influenced by their home environment, particularly their interactions with their parents, siblings, and other adults, as well as their childcare environment (Rozaimie, 2018, 2024). Thus, toddlers' efficacy and reading habits are heavily influenced by their home and childcare reading environments. When they are ready to read, it will help to instil reading habits in children, especially those who enjoy electronics and technology. Teh (2013) and Zhang (2024) defined reading readiness as the process of preparing a child for reading, encouraging the child to read, and engaging the child in reading. Reading readiness, according to Akubuilu et al. (2015) and

Joseph (2002; 2008), is the maturation of all cerebral, physical, and socio-emotional aspects of the reading process.

Reading is a continuous development process, and readiness is merely a concept in various stages of reading (Majzub & Kurnia, 2010). Despite numerous reading initiatives, programmes, and campaigns predominantly organised by libraries in Malaysia, a bibliometric analysis by Saiful Farik et al. (2014) illustrates a paucity of studies assessing the societal impact of early childhood literacy programmes and the promotion of reading as a beneficial habit, in contrast to other nations, such as Japan. The earlier children learn to read, the better equipped they will be for formal education when they start school at age four (kindergarten) (Majzub & Kurnia, 2010). Conferred to Rajaratnam (2013), learning to read should begin long before a child enters school, and there is a strong correlation between a child's development and the level of success that he or she will achieve later in life. The home and other socio-ecocultural environments have a significant impact on early childhood school readiness and brain development (Hutton et al., 2015; Rozaimie, 2018, 2024). Additionally, the more toddlers and kids learn to read, the more they know and the more confident they become in understanding information.

Ha and Kim (2026) asserted that guidance support and parental mediation within daily routines are more important than in play contexts for early language and literacy development, particularly from a sociocultural perspective (Yang et al., 2026). Maylani et al. (2026) highlighted that an interactive session, wherein parents actively co-read, facilitate discussions, and judiciously select suitable content, can markedly enhance young children's language and literacy skills by promoting prolonged and meaningful dialogue. In today's digital landscape, characterised by artificial intelligence (AI) and the Internet of Things (IoT), awareness of cyberattacks, developmental suitability, and the potential benefits and drawbacks is essential. Scholars (Leung et al., 2026; Ljungcrantz, 2026; Maylani et al., 2026) emphasise the necessity of incorporating comprehensive media literacy into literacy programmes. The knowledge, attitudes, and behaviours regarding advice on early childhood education for sustainable practices are methodologically sound (Kahriman Pamuk et al., 2026). Eryaşar and Özel (2025) illustrated that the crucial role of educators in cultivating early environmental awareness significantly affects the instruction of sustainability principles in early childhood education, hence promoting a more sustainable future.

Background of the Reading Seed Programme (RSP)

In light of the aforementioned circumstances, the Sarawak State Library [PUSTAKA Negeri Sarawak (PNS)] developed an in-house initiative for early childhood literacy called the Reading Seed Programme (RSP), specifically aimed at toddlers aged 0-3 years. This intervention approach is essential for facilitating early reading literacy development in children, ultimately enabling them to become lifelong independent readers. Specifically, despite the need to cultivate toddlers' reading habits, the RSP was invented to foster toddlers' confidence development in reading, enhance parents' engagement in the toddler's reading journey, and enrich toddlers' vocabulary ability. The RSP was designed to cover five distinct elements of early childhood development, including physical development and nutritional status; cognitive and social development; language and hearing skills; gross motor skill development; literacy development; and screen time (PNS, 2019; 2018). Inspired by the Born to Read initiative (an early literacy programme established in 1990 by the New Carlisle Literacy Exchange in Gaspé, Canada), the RSP was developed and launched in Sarawak in 2016. Tailored with local elements, the RSP has pioneered and demonstrates the importance of early literacy, wherein parents assume vital supportive roles and exert efforts to cultivate a reading culture within their familial environment. The RSP aims to establish enduring community-orientated early literacy initiatives that offer opportunities for all children in Sarawak, especially those from lower-income households in rural areas. The RSP uses a bilingual approach, featuring materials in both English and Bahasa Melayu (Malay language). The language content and materials of the RSP include storybooks and learning books (the reading kits include bilingual books and sets of storybooks written in both English and Bahasa Malaysia to support early vocabulary growth); cultural focus (the texts reflect Malaysian culture and diversity to help young children connect with their local environment while building language skills); and digital access (digital content provided through partner platforms like the Me Books app features multi-language audio and interactive children's books).

A thorough theoretical framework of the RSP established by the PNS was structured around three fundamental pillars: (1) Emergent Literacy Theory (cf. McMunn Dooley &

Matthews, 2009) asserts that the evolution of literacy is an ongoing journey commencing at birth; (2) Bronfenbrenner's Bioecological Systems Theory (cf. Bronfenbrenner, 1994; Dimova et al., 2026) delineates the influence of interconnected environmental systems on a child's development; and (3) Lev Vygotsky's Sociocultural Theory and dialogic reading (cf. Moghadam, 2025) underscore that education occurs via structured social engagement with a more informed individual (typically a parent). Scholars (Kaur & Jawaid, 2018; Zawiyah & Abrizah, 2018) indicated that a validated literacy programme may foster an exceptional interest in reading and cultivate a favourable view of language learning among rural child learners. Hence, the primary objective of this paper is to develop a scale, labelled the Reading Seed Programme Effectiveness Scale (RSPes). Specifically, this paper aims to assess the feasibility of the RSP in measuring its effectiveness to foster early childhood literacy development in toddlers.

Method

Research Design and Instrumentation

The cross-sectional quantitative survey approach was used in this study. The survey questionnaire, newly designed for this study, has a total of 96 items, in accordance with the initial RSP objectives with five conceptual constructs (reading habit, parents' engagement, vocabulary ability, confidence development and the programme (RSP)). The survey's questions were adopted and adapted from four major sources of RSP and reading-related programmes: the PNS's RSP feedback form, the RSP kit, the RSP module for parents, and the Children's Early Literacy Practices at Home and in Early Year Settings: Second Annual Survey of Parents and Practitioners (Formby, 2014). A 10-point Likert scale, ranging from 0 (not applicable/strongly disagree) to 10 (completely applicable/strongly agree), was used to measure participants' understanding of the programme (RSP). To ascertain whether the scale is reliable, an item analysis was performed.

Predominately, this paper is designed to establish a valid and reliable psychometric property of the scale to measure the feasibility of the RSP invented by the PUSTAKA Negeri

Sarawak. Therefore, a preliminary analysis was conducted to examine the criterion (construct and content) validity. The survey questionnaire underwent rigorous review by teams of enumerators and 10 RSP users to ascertain its construct validity. The analyses comprise comprehension of the contents, the intensity (coverage), the language, the length (total survey items), the arrangement of the sections, dimensions, and item (statement), the measurement scale, the overall questionnaire design, and other relevant issues (if any). The questionnaire underwent minimal revisions in response to the construct's validity check. Moreover, a content validity evaluation was performed to verify that the survey addressed the relevant construct, as affirmed by three experts engaged in the development of the RSP. These validation procedures are vital to ensuring that the scale encompasses the conceptualised constructs. The initial 96 items were refined and tuned to 65 items (excluding demographic information) as a new instrument, which was named the Reading Seed Programme Effectiveness Scale (RSPes). Specifically, Table 1, as below, summarises the constructs and the numbers of items, respectively, and the sample items for each construct.

Table 1. *Number of items for each construct and sample item.*

<i>Construct</i>	<i>No. of Items</i>	<i>Sample Item</i>
Reading Habit	13	My child is attracted to interesting pictures in books.
Parents' Engagement	12	I engage in supportive activity by reading aloud to my child at home.
Vocabulary Ability	16	My child can say one-syllable words.
Confidence Development	12	My child can flip book pages correctly.
The Programme (RSP)	12	I believe that the Reading Seed Programme gives me the skills to read to my newborn.
<i>Total</i>	65	

The online survey questionnaire was distributed to the targeted respondents using a purposive sampling method. The respondents include those who have enrolled in the programme (RSP) and have been deliberately recruited, amounting to 1027 users who state that they reside in the Kuching division of Sarawak, Malaysia. Out of the 1027 RSP users that signed up, 590 have completed the RSP training provided by the PNS. Therefore, for a population size of 600, a sample size of 234 participants (with a 95% confidence level) is essential (Krejcie & Morgan, 1970). A total of 417 were contacted, and 385 responses were

received, yielding a response rate of 92.33%. A comprehensive exploratory factor analysis (EFA) procedure was carried out to determine the underlying structure and underlying relationships of a comparatively large set of measured variables (Gaur & Gaur, 2006; Pallant, 2013).

Sampling Design

As shown in Table 2, the majority of the respondents, i.e., 66.2% (255 out of 385), were between 31 and 40 years old; 84.7% were female; 50.9% were Malay; 47.5% were university graduates; 43.9% had a household income between RM1001 and RM3999; 48.3% were working in the public sector, joined the RSP, and received their RSP kit between 2020 and 2022; and 88.6% received their RSP kits directly from PNS. Apart from that, 79.8% of respondents said they gave birth in government hospitals, 52.2% said they are male, and 64.2% said their children who were exposed to the RSP kits are between 0 (newborn) and 3 years old.

Table 2. Respondents' Demographic Profiles

<i>Demographic</i>	<i>n</i>	<i>%</i>	<i>Demographic</i>	<i>n</i>	<i>%</i>
(Respondents)					
Age			Household Income		
20-30	82	21.3	Less than RM1000	40	10.4
31-40	255	66.2	RM1001-RM3999	169	43.9
41-50	32	8.3	RM4000-RM8500	136	35.3
Not specified	16	4.2	Above RM8500	40	10.4
<i>Total</i>	<i>385</i>	<i>100.0</i>	<i>Total</i>	<i>385</i>	<i>100.0</i>
Gender			Employment		
Female	326	84.7	Public Sector	186	48.3
Male	59	15.3	Private Sector	87	22.6
<i>Total</i>	<i>385</i>	<i>100.0</i>	Self-employed / small business	28	7.3
			Unemployed / housewife	82	21.3
Ethnicity			Not specified	2	0.5
Bidayuh	36	9.4	<i>Total</i>	<i>385</i>	<i>100.0</i>
Chinese	116	30.1			
Iban	15	3.9	Year received the RSP kit		
Orang Ulu	4	1.0	2017 – 2019	69	17.9
Malay	196	50.9	2020 - 2022	313	81.3

<i>Demographic</i>	<i>n</i>	<i>%</i>	<i>Demographic</i>	<i>n</i>	<i>%</i>
Melanau	16	4.2	Not Specified	3	0.8
Not Specified	2	5.0	<i>Total</i>	385	100.0
<i>Total</i>	385	100.0			
The RSP kit was obtained from:					
Highest Qualification			Health Clinic/Polyclinic	26	6.8
University Degree	183	47.5	PUSTAKA Negeri Sarawak	341	88.6
Diploma	85	22.1	Others: <i>Can't remember, event booth, KEMAS, local council, PERKIM, and Pusat Internet Malaysia.</i>	18	4.6
Certificate	31	8.1			
Secondary School	81	21.0			
Primary School	5	1.3	<i>Total</i>	385	100.0
<i>Total</i>	385	100.0			
(Child)					
Child's Age			Child's Place of Birth		
0-3 years old (born 2019-2022)	247	64.2	Government Hospital	307	79.8
4-6 years old (born 2016-2018)	122	31.7	Private Hospital	76	19.7
≥ 7 years old (born in ≤ 2015)	10	2.6	Others	2	0.5
Not Specified	6	1.6	<i>Total</i>	385	100.0
<i>Total</i>	385	100.0			
Child's Gender					
Female	184	47.8			
Male	201	52.2			
<i>Total</i>	385	100.0			

Results

Reading Habit

Subsequent to the promising preliminary analyses, the validation of the psychometric properties of the newly designed RSPes is examined by the exploratory factor analysis (EFA) procedure. The study's EFA analysis was carried out utilising principal component analysis (to determine uncorrelated components of the latent variables of RSPes) and varimax rotation (which enhances factor interpretation by optimising the variance of squared loadings for each

factor). First, it was discovered that the mean value of the item 'enjoys looking at or reading from printed books' ($\mu = 8.64$) is the most important item in the reading habit construct. The lowest mean value ($\mu = 2.18$) indicated that the respondents were approximately disagreement with the item 'your child frequently reads on screen in a week'. The results showed that all communality values were over 0.50 except for 'brings his/her favourite book to me to be read' (0.23), 'your child frequently reads printed books in a week' (0.28), and 'your child frequently reads on screen in a week' (0.40). Typically, communality values below 0.50 should be eliminated or adjusted. However, these items were retained based on the subsequent assessment protocols prior to implementing any modifications.

The correlation coefficients between a single item and every other item in the investigation were found to be lower than the principal diagonal of the correlation matrix (i.e., close to zero), which indicates the reading habit construct is considered a good model; hence, all items were kept. Next, an important step involved weighing the overall significance of the correlation matrix through Bartlett's Test of Sphericity; fortunately, the results were statistically significant [$\chi^2 (n = 385) = 3381.95 (p < 0.001)$], which indicates their suitability for factor analysis. Additionally, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (MSA) was 0.85; according to Shrestha (2021), MSA values above 0.80 are considered meritorious (sufficiency of samples is greater than 0.60) and appropriate for factor analysis. The anti-image matrices help to determine whether individual items should be removed from the factor analysis. Exceptionally, the MSA value for the reading habit construct is displayed on the diagonal of the anti-image correlation matrix and has generated values greater than 0.50, i.e., between 0.79 and 0.90. Therefore, all items can be included in the factor analysis.

Moving on, the factor solution derived from the analysis yielded a multidimensional construct of three factors for the scale (reading habit). The factor extraction accounted for 64.62% of the variation among the items in this construct. These three factors with an eigenvalue (quality scores) of 1.00 or higher were extracted from thirteen items of the construct (reading habit). The first factor accounted for 24.72% of the variance, with an eigenvalue of 3.21. Five items were loaded onto this first factor, labelled as 'physical reading habit', as they reflect the reader's interest in physical reading material (books). The second factor accounted for 24.15% of the variance, with an eigenvalue of 3.32. Five items are

loaded onto this second factor, labelled as 'digital reading habit', as they reflect the reader's interest in digital reading materials (screentime). The third factor accounted for 15.75% of the variance, with an eigenvalue of 2.05. Three items loaded onto this third factor are labelled as 'reading interest', as they reflect interest in printed reading materials. Table 3 summarises the factors related to the reading habit construct, with all thirteen items retained.

Table 3. *Summary for Factors Related to Reading Habit*

	<i>Factor</i>	<i>Diagonal Anti-image Correlation</i>	<i>Communality after Extraction</i>	<i>Mean (μ)</i>	<i>Standard deviation (σ)</i>	<i>Factor Loading</i>
<i>Items</i>	<i>Component 1: physical reading habit</i>					
1	Shows interest in books.	0.89	0.77	8.08	1.92	0.80
2	Is attracted to interesting pictures in books.	0.83	0.82	8.60	1.62	0.87
3	Likes it a lot when I read story books to him/her.	0.90	0.73	8.13	1.98	0.74
4	Brings his/her favourite book to me to be read.	0.82	0.23	7.83	1.30	0.36
5	Enjoys looking at or reading from printed books.	0.84	0.84	8.64	1.62	0.86
<i>Items</i>	<i>Component 2: digital reading habit</i>					
6	Enjoys looking at stories on a touchscreen.	0.89	0.58	7.61	2.66	0.69
7	Read longer on a touch screen than on printed form.	0.85	0.78	5.90	3.16	0.87
8	Uses the screen more for edutainment than for reading.	0.87	0.61	6.82	2.85	0.77
9	Prefers interactive digital media for reading.	0.79	0.80	6.47	2.98	0.90
10	Your child frequently reads on screen in a week.	0.87	0.40	2.18	1.07	0.62
<i>Items</i>	<i>Component 3: reading interest</i>					
11	Reads books on his/her own with encouragement.	0.85	0.77	6.97	2.76	0.79
12	Can read along together	0.84	0.80	6.55	3.09	0.81
13	Your child frequently reads printed books in a week.	0.88	0.28	2.19	0.91	0.45

Parents' Engagement

For the second construct of parents' engagement, the mean value for the item 'encouraging my child to identify the pictures' ($\mu = 8.29$) indicates that it is the most important item in this construct. In contrast, the lowest mean value ($\mu = 7.08$) indicates that the respondents were

approximately in agreement with the item 'doing follow-up activities related to the stories'. Consequently, the results show that all communalities were over 0.50, indicating that each item of this parents' engagement construct is well explained by the factors. The correlation coefficients between a single item and every other item were found to be lower than the principal diagonal of the correlation matrix (i.e., close to zero), which indicates that the parents' engagement construct is considered a good model. Then, the result of the Bartlett's Test of Sphericity was found to be significant [$\chi^2 (n = 385) = 5504.21 (p < 0.001)$], which indicated that this parents' engagement construct is suitable for factor analysis. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (MSA) value of 0.91 is considered marvellous (Shrestha, 2021) and indicates that the data are appropriate for factor analysis.

Table 4. *Summary for Factors Related to Parents' engagement*

<i>Factor</i>		<i>Diagonal Anti-image Correlation</i>	<i>Communality after Extraction</i>	<i>Mean (μ)</i>	<i>Standard deviation (σ)</i>	<i>Factor Loading</i>
<i>Items</i>	<i>Component</i>					
1	Reading aloud to my child at home	0.89	0.56	7.45	2.31	0.75
2	Reading regularly to my child at home	0.94	0.79	7.59	2.12	0.89
3	Talking to my child about lessons learned from the story	0.93	0.79	7.63	2.21	0.89
4	Talking to my child about characters in the story	0.95	0.76	7.66	2.22	0.87
5	Encouraging my child to identify the pictures	0.91	0.69	8.29	1.91	0.83
6	Doing follow-up activities related to the stories	0.86	0.55	7.08	2.52	0.74
7	Reading aloud to my child at home	0.89	0.56	7.63	2.32	0.75
8	Reading regularly to my child at home	0.94	0.73	7.60	2.12	0.85
9	Talking to my child about lessons learned from the story	0.91	0.82	7.75	2.21	0.91
10	Talking to my child about the characters in the story	0.91	0.81	7.77	2.12	0.90
11	Encouraging my child to identify the pictures	0.89	0.70	8.28	1.85	0.84
12	Doing follow-up activities related to the stories	0.85	0.53	7.34	2.38	0.73

Progressively, the MSA for a parents' engagement construct is displayed on the diagonal of the anti-image correlation matrix, showing that the values are more than 0.50, i.e., between 0.85 and 0.95. It therefore follows that all variables can be included in the factor analysis.

Essentially, the factor solution derived from this analysis yielded a uni-dimensional construct for one factor on the scale (parents' engagement), which accounted for 68.94% of the variation among the twelve items in this construct with an eigenvalue of 8.27. These eleven items are loaded onto this factor, labelled as 'parents' engagement', which retains its conceptual construct. A summary of factors related to the parents' engagement construct is shown in Table 4.

Vocabulary Ability

Moving forward, the mean value for the third construct of vocabulary ability indicates that the item 'can laugh at funny made-up words' ($\mu = 8.57$) is the most important. The lowest mean value ($\mu = 6.12$) indicates that the respondents were approximately in agreement with the item 'can tell number of shapes'. The results also show that all communality values are marked over 0.50 except for 'can speak in a unique baby language' (0.32). Taking the next step, the correlation coefficients on the factor matrix table were found to be lower than the principal diagonal values of the correlation matrix (i.e., close to zero), which indicates the vocabulary ability construct is considered a good model.

The result of Bartlett's Test of Sphericity was found statistically significant [χ^2 (n = 385) = 5932.78 ($p < 0.001$)], which specifies its suitability for factor analysis. Moreover, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (MSA), which indicates the appropriateness of the data for factor analysis, was found at 0.92. These KMO values were considered marvellous, the sample adequate, and the approach appropriate for factor analysis. Additionally, the MSA for a parents' engagement construct is displayed on the diagonal of the anti-image correlation matrix, showing the values are greater than 0.50, i.e., between 0.83 and 0.96. Hence, all items of this construct can be included in the factor analysis.

The factor solution derived from this analysis generated a multidimensional construct of two factors for the scale (vocabulary ability), which accounted for 73.36% of the variation among the sixteen items in this construct. The first factor accounted for 39.08% of the variance, with an eigenvalue of 6.25. Eight items are loaded onto this first factor, labelled as 'counting', as they reflect the child's ability to count things that help build their vocabulary. The second factor was found to account for 33.28% of the variance, with an eigenvalue of

5.33. Eight items are loaded onto this second factor, labelled as 'talking', as they reflect the child's ability to talk about things that help build their vocabulary. Table 5 summarises these two factors related to the vocabulary ability construct, with all sixteen items retained.

Table 5. *Summary for Factors Related to Vocabulary Ability*

<i>Factor</i>		<i>Diagonal Anti-image Correlation</i>	<i>Communality after Extraction</i>	<i>Mean (μ)</i>	<i>Standard deviation (σ)</i>	<i>Factor Loading</i>
<i>Items</i>	<i>Component 1: counting</i>					
1	Can count the alphabet	0.89	0.77	7.74	3.29	0.87
2	Can count the numbers	0.89	0.81	7.77	3.27	0.89
3	Can say the number of words	0.96	0.66	7.80	3.09	0.81
4	Can tell body parts	0.94	0.81	7.83	2.99	0.90
5	Can tell colours	0.92	0.86	7.15	3.22	0.93
6	Can tell the number of shapes	0.93	0.69	6.12	3.24	0.83
7	Can tell the names of animals	0.94	0.83	7.65	3.15	0.91
8	Can tell the number of objects	0.96	0.83	7.40	3.26	0.91
<i>Items</i>	<i>Component 2: talking</i>					
9	Can say one-syllable word	0.92	0.58	7.57	2.85	0.68
10	Can speak in a unique baby language	0.83	0.32	7.20	2.88	0.53
11	Can imitate playful sounds	0.89	0.77	8.44	2.11	0.64
12	Can imitate adults' voices	0.94	0.59	7.72	2.58	0.68
13	Can sing along to children's songs	0.91	0.81	8.04	2.63	0.88
14	Can say what he/she is thinking	0.86	0.85	7.61	2.81	0.92
15	Can laugh at funny made-up words	0.91	0.58	8.57	2.04	0.68
16	Can ask questions	0.86	0.81	7.38	3.23	0.89

Confidence Development

The fourth construct of confidence development identifies the item 'can hold books independently' ($\mu = 8.49$) as the most important item in this construct. The lowest mean value ($\mu = 5.80$) indicates that the respondents were approximately in agreement with the item 'can use the mini shadow theatre to tell stories'. All communality values were found to be over 0.50 except for two items, i.e., 'can show interesting pictures' (0.49) and 'can use the mini shadow theatre to tell stories' (0.47). The correlation coefficient values were found to be lower than the principal diagonal of the correlation matrix (i.e., close to zero), indicating that the confidence development construct is considered a satisfactory model; hence, all items were retained.

Primarily, the result of the Bartlett's Test of Sphericity was found statistically significant [$\chi^2 (n = 385) = 3925.23 (p < 0.001)$], which indicates its suitability for factor analysis. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (MSA) values indicate the appropriateness of the data for factor analysis and were found at 0.94. In this regard, these KMO values were considered marvellous, and the samples were deemed adequate and appropriate for factor analysis. Additionally, the MSA for a confidence development construct, displayed on the diagonal of the anti-image correlation matrix, shows values greater than 0.50, i.e., between 0.89 and 0.97. Therefore, all items of this construct can be included in the factor analysis.

Over and above that, the factor solution derived from this analysis yielded a unidimensional construct of one factor for the scale (confidence development). This factor extraction has accounted for 62.12% of the variation among the twelve items in this construct, with an eigenvalue of 7.45. These twelve items loaded onto this factor, labelled as 'confidence development', retaining its conceptual construct. Factors related to the confidence development construct are summarised in Table 6.

Table 6. *Summary for Factors Related to Confidence Development*

<i>Factor</i>		<i>Diagonal Anti-image Correlation</i>	<i>Communality after Extraction</i>	<i>Mean (μ)</i>	<i>Standard deviation (σ)</i>	<i>Factor Loading</i>
<i>Items</i>	<i>Components</i>					
1	Can flip book pages correctly	0.92	0.59	7.61	2.71	0.77
2	Can hold books independently	0.89	0.53	8.49	2.13	0.73
3	Can show interesting pictures	0.95	0.49	8.41	1.95	0.70
4	Can hold a pencil steadily	0.95	0.71	7.28	2.79	0.84
5	Can draw spontaneous scribbling	0.95	0.71	7.84	2.73	0.84
6	Can draw circular scribbling	0.95	0.72	7.03	3.17	0.85
7	Can identify colours	0.92	0.64	7.55	3.18	0.80
8	Can colour within a shape	0.92	0.62	6.23	3.40	0.79
9	Can arrange colour blocks	0.95	0.74	7.87	2.91	0.86
10	Can share with other children	0.94	0.63	7.48	2.81	0.79
11	Can use the mini shadow theatre to tell stories	0.94	0.47	5.80	3.46	0.69
12	Do small chores like taking his/her plate to the sink.	0.97	0.60	7.74	3.08	0.77

The Early Childhood Literacy Programme (The RSP)

In the fifth construct of the programme (the RSP), two items were found to be the most important, namely 'language used in all the materials is clear' and 'exposes my child to a greater number of words through books', both with similar mean values ($\mu = 8.63$). However, the lowest mean value ($\mu = 8.01$) indicates that the respondents were approximately likely to agree with the item 'I know how to use the RSP module for Parents Reading Friends'. The results also show that all communality values were over 0.50. This result indicates that all items are adequate for factor analysis. From the correlation matrix, the correlation coefficient values found to be lower than the principal diagonal (i.e., close to zero) indicate that the programme (RSP) construct is a good model.

The result of Bartlett's Test of Sphericity was found statistically significant [χ^2 ($n = 385$) = 5972.34 ($p < 0.001$)], which indicates its suitability for factor analysis. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (MSA) values was found at 0.94, which indicates the appropriateness of the data for factor analysis. This KMO value is considered marvellous because the sample sufficiency is greater than 0.60, which is appropriate for factor analysis. Additionally, the MSA for the RSP construct is displayed on the diagonal of the anti-image correlation matrix, showing the values are greater than 0.50, i.e., between 0.92 and 0.96. It consequently shows that all items can be included in the factor analysis.

Likewise, the factor extraction procedure yielded a factor solution from this analysis that produced a multidimensional construct of two factors for the scale (RSP). These two factors accounted for 81.39% of the variation among the twelve items in this construct. The first factor extracted accounted for 43.75% of the variance, with an eigenvalue of 5.25. Seven items were loaded onto this first factor and labelled as 'RSP kits', as they reflected the learning materials provided to the participants. The second factor accounted for 37.64% of the variance, with an eigenvalue of 4.52. Five items were loaded onto this second factor and labelled as 'literacy programme', as they reflect the respondents' appraisal of the RSP. Table 7 summarises these two factors in relation to the RSP.

Table 7. Summary for Factors Related to the RSP.

	Factor	Diagonal Anti-image Correlation	Communality after Extraction	Mean (μ)	Standard deviation (σ)	Factor Loading
<i>Items</i>	<i>Component 1: RSP kits</i>					
1	I know how to use all the materials in the kit.	0.94	0.85	8.24	2.07	0.86
2	I know how to use the RSP module for Parents Reading Friends.	0.93	0.72	8.01	2.20	0.79
3	I know how to use the growth development checklist.	0.92	0.83	8.04	2.19	0.85
4	The growth chart helps to monitor my child's development.	0.93	0.82	8.24	2.11	0.83
5	The language used in all the materials is clear	0.96	0.77	8.63	1.87	0.77
6	Reading materials attracts my child's interest.	0.94	0.80	8.43	1.96	0.77
7	RSP materials help me to communicate with my child.	0.95	0.80	8.32	1.96	0.74
<i>Items</i>	<i>Component 2: the programme</i>					
8	Provides access to quality early literacy materials	0.96	0.82	8.62	1.77	0.76
9	Gives me the skill to read to my newborn	0.96	0.70	8.34	2.16	0.78
10	Makes reading enjoyable for me and my child	0.94	0.90	8.60	1.76	0.87
11	Exposes my child to a greater number of words through books	0.92	0.93	8.63	1.74	0.87
12	Grooms my child for more precise oral communication	0.95	0.83	8.50	1.86	0.85

Ultimately, the scale's validity is determined by evaluating the items' internal consistency, which represents the underlying conceptual design of the constructs. Examining the connections between the several items in a construct that are meant to measure the same construct is crucial. In principle, the variables indicated as greater than 0.70 are considered acceptable reliability coefficient values (Tavakol & Dennick, 2011), with a combination of them as a scale (Cronbach, 1951; Nunnally, 1967). Fortunately, Table 8 demonstrated the Cronbach's alpha reliability coefficient of the five constructs, and the factors extracted are highly established.

The Reading Seed Programme Effectiveness Scale (RSPes) for Early Childhood Literacy from a Malaysian Context:
A Scale Validation

Table 8. *Scales' Reliability Analyses*

	<i>No. of Items</i>	<i>Alpha (α)</i>	<i>Mean (μ)</i>	<i>Variance (σ^2)</i>	<i>Standard deviation (σ)</i>
Reading Habit	13	0.87	85.96	333.65	18.27
<i>physical reading habit</i>	5	0.89	41.28	51.20	7.16
<i>digital reading habit</i>	5	0.88	28.97	115.24	10.74
<i>reading interest</i>	3	0.79	15.71	36.05	6.00
Parents' Engagement	12	0.96	92.08	488.72	22.11
Vocabulary Ability	16	0.90	122.00	888.19	29.80
<i>Counting</i>	8	0.97	59.46	524.73	22.91
<i>Talking</i>	8	0.91	62.54	267.71	16.36
Confidence Development	12	0.95	89.32	770.31	27.75
The Programme (RSP)	12	0.97	100.60	410.35	20.26
<i>RSP kits</i>	7	0.96	57.91	168.98	13.00
<i>Literacy programme</i>	5	0.96	42.69	74.27	8.62
Overall	65	0.96	466.34	7197.96	84.84

Pursuant to the above-mentioned analyses, this paper demonstrated that the survey questionnaire's criterion validity (convergent and discriminant) is assumed. Hence, the newly developed instrument (RSPes) is considered valid and reliable for future confirmatory factor analysis (CFA) and other empirical investigations.

Discussion

This paper primarily aimed to validate a scale for measuring the feasibility of the RSP, an early childhood literacy programme, in achieving its stated goals. The Reading Seed Programme Effectiveness Scale (RSPes) is a new scale for assessing the feasibility of the RSP early childhood literacy programme. The scale developed comprises five constructs based on the initial objectives of the RSP, including reading habits, parents' engagement, vocabulary ability, confidence development, and information about the programme. A preliminary analysis of the criterion (construct and content) validity of the scale has helped reduce the number of measurement items from the initial 96 to an acceptable 65 items. Further exploratory factor analyses have generated an exceptional reliability coefficient of

RSPes ($r = 0.96$) for the assessment of internal consistency. Moreover, each construct manifested a good-to-excellent reliability coefficient range of 0.87 to 0.97. These reliability values indicate that the scale (RSPes) is reliable in assessing the impact of the RSP on establishing a toddler's reading habits, parents' engagement, the child's vocabulary ability, and their confidence development in reading.

Progressively, the EFA analysis revealed that the reading habit measure is a multidimensional construct. Three factors have been extracted: physical reading habit, digital reading habit, and reading interest. Parents should ensure that their children are ready to read before encouraging them to develop reading habits. Reading readiness is the process of preparing a child for reading, encouraging the child to read, and engaging the child in reading, which includes developing all mental, physical, and socio-emotional components (Akubuilu et al., 2015; UNICEF, 2012). According to Rajaratnam (2013), learning to read should begin long before a toddler reaches school, and there is a strong link between the growth of a child who establishes reading habits at a young age and the level of success that he or she will accomplish later in life. It is also noted that infants who have the pre-reading skill of distinguishing the building blocks of speech at six months are found to be better at other more complex language skills at two and three years of age, in addition to being better at learning to read at four and five years of age.

As the study progressed, parental engagement has remained a unidimensional construct. It is shown that the respondents' perceptions of direction, engagement, and support correspond across items of this well-understood notion of parental engagement and support. The importance of parents reading to their kids helps foster optimal cortical development patterns during important and sensitive phases of early child development (Council on Early Childhood, 2014). This phenomenon, which occurs throughout prenatal and postnatal neurodevelopment, has long-term consequences for neural networks and brain function. Scholars (Hutton et al., 2015) found that children with higher levels of home reading exposure had higher levels of brain activation in the left-sided parietal-temporal-occipital association cortex, which is responsible for mental imagery and narrative comprehension. Interestingly, when babies and toddlers hear adults read stories to them and observe adults reading newspapers, periodicals, and books for themselves, they begin to absorb written language. These early encounters led to superior literacy outcomes for children, as

demonstrated by scholars (Armbruster et al., 2006; Ha & Kim, 2026; Maylani et al., 2026; Roulstone et al., 2010). When a child and his or her parents read together, they spend more time together and build a deep link between the child and his or her parent(s). According to Williams (2021) and Maylani et al. (2026), rituals such as reading together can help develop the family bond by providing unique experiences that the family may share together. In addition to ensuring their children's health and safety, reading to young children is among the most essential activities a parent can engage in (Ledger & Merga, 2018; Joyce, 2017), particularly within the diverse sociocultural contexts of Sarawak (Yang et al., 2026).

Marching on, the vocabulary ability turned into a multidimensional construct. Two factors were engendered and labelled as counting and talking. Labelling and categorising these two dimensions demonstrate that RSPes encapsulated the foundational approach (reading, counting, and speaking) for early childhood development, integrating literacy, numeracy, and oral language competencies. Cunha et al. (2006) emphasise that the most effective period for parents to invest in cognitive skills is early in their children's lives, when reading to them can increase their word knowledge and their success in school (Clay et al., 2019). The more communication activities parents engage in (talking about the story, encouraging children to notice the pictures, and talking about the characters), the more likely children are to have above-average vocabulary attainment (Formby, 2014). Kalb and Van Ours (2014) prove that the frequency of reading to children at a young age has a direct causal effect on their schooling outcomes, regardless of their family background and home environment. Research suggests that reading to children helps increase their vocabulary (Beck et al., 2002), reading comprehension, and cognitive skills (Kalb & Van Ours, 2014).

Nonetheless, the development of confidence has remained a unidimensional construct. Analogous to the construct of parental engagement, the respondents' perceptions of consensus align across items pertaining to the well-established concept of toddlers' developmental processes. The development of a child's fine motor, gross motor, social, and cognitive skills is explicitly referred to as confidence development. Scholars (see Tomopoulos et al., 2006; Guthrie et al., 2004) provide important information on how to increase a child's reading confidence as well as measures of comprehension, motivation, and reading methods. Parent-child interactions, particularly reading aloud and giving children toys, are associated with improved cognitive and language development in children

(Tomopoulos et al., 2006). Furthermore, an instructional framework (mixing motivational support and method training) resulted in the engagement perspective of reading development (Guthrie et al., 2004).

Limitation of the Study

The study successfully validated the RSPes using Exploratory Factor Analysis (EFA), but it also highlighted a few methodological limitations that need to be addressed in subsequent phases of research, both implicitly and explicitly. At the outset, advanced reliability testing was deficient, with the current study relying on internal consistency (Cronbach's alpha) but failing to assess test-retest and inter-rater reliability. In addition, there is a necessity for further structural validation, given that the study utilised Exploratory Factor Analysis (EFA) to identify the initial factor structure, but Confirmatory Factor Analysis (CFA) was not performed to corroborate this structure. Ultimately, the cross-sectional nature of the study suggests that future longitudinal research is necessary, as the existing data reflect only a single moment, which constrains the evaluation of how the assessed constructs evolve or stabilise throughout a child's development. Notably, the programme (RSP) has become a multidimensional construct. Two factors were stimulated and labelled as RSP kits and literacy programmes. According to research, Reading Seeds' efforts and an online reading programme designed for children aged 3 to 8 have greatly increased their reading confidence and skills (McGowan et al., 2020). The feasibility of the RSP is essential to measure its significance and relevance in the context of artificial intelligence (AI), the Internet of Things (IoT), awareness of cyberattacks, developmental suitability, and the contemporary benefits and drawbacks of the internet-driven environment (Leung et al., 2026; Ljungcrantz, 2026; Maylani et al., 2026). Reading is a continuous development process, and readiness is merely a concept in various stages of reading (Majzub & Kurnia, 2010). The library's reading activities were systematic and long-term planned, not like a carnival (Gong, 2016). The results of long-term reading promotion activities were to form a solid foundation of reading consciousness and promote the whole country as well as every reader.

Practical Implication of RSPes

Reemphasised what scholars (cf. Kaur & Jawaid, 2018; Zawiyah & Abrizah, 2018) conceived about the need for the validated literacy programme, RSPes, which assists in validating the RSP as a beneficial early intervention programme innovated by the PUSTAKA Negeri Sarawak. Specifically, the measure (RSPes) helps practitioners, educators and library systems improve early childhood literacy practices by having a reliable programme evaluation. The findings of the RSPes, as demonstrated in this paper, provide practitioners with a validated and reliable psychometric instrument for gauging the feasibility and effectiveness of literacy intervention programmes for early childhood. Secondly, RSPes provides practitioners with the ability to evaluate specific nuances of a child's development, such as distinguishing between physical and digital reading habits or tracking the specific vocabulary growth of their child. Thirdly, RSPes effectively measures parental engagement, which highlights the critical role parents play in reading to their children. Practitioners can use the RSPes to emphasise the importance of interactive activities such as reading aloud, discussing story characters, and identifying pictures, which have been shown to build vocabulary, foster neural networks, and strengthen family bonds. Fourth, RSPes helps parents and educators monitor a child's confidence and readiness by assessing their confidence development and specifically encompasses a toddler's fine motor, gross motor, social, and cognitive skills. It is vital to ensure children are thoroughly prepared for formal education before they start school. Lastly, the scale promotes sustainable educational practices, and the application of the RSPes supports the evaluation of early interventions, emphasising the necessity of measuring knowledge, attitudes, and behaviours to guide early childhood education towards methodologically sound and sustainable practices, especially from a Malaysian perspective.

Future Direction of the Study

This study recommends several specific avenues for future scholarly inquiry to strengthen the psychometric properties of the RSPes and build upon these initial findings. Foremost, the examination of inter-rater reliability indicates the uniformity of test scores by two or more

raters. Test-retest reliability evaluation, on the other hand, reveals the repeatability of test scores across time. A longitudinal study using RSPes can help determine the stability of the construct being assessed. Furthermore, the confirmatory factor analyses (CFA) will provide vital information about the scale's validity. The CFA is a multivariate statistical approach that assists in identifying the fitness and goodness of the measure's construct and its dimension. This study fundamentally demonstrated that the RSPes is a validated and reliable measure for assessing the RSP as an early intervention, emphasising the significance of knowledge, attitudes, and behaviours for counsel on early childhood education for sustainable practices, which are methodologically sound (Eryaşar & Özel, 2025; Kahrman Pamuk et al., 2026).

Conclusion

In summary, the reliability and validation of the RSPes are essential for verifying the programme's effectiveness as a preparatory intervention for the child's impending school age. The EFA procedures for psychometric properties analysis in assessing the RSPes provide a significant, valid, and reliable instrument for evaluating the effectiveness of the early childhood intervention programme (the RSP) by PUSTAKA Negeri Sarawak. Nevertheless, the results presented in this work demonstrate that the RSPes is valid and reliable for empirical research on the specified constructs.

Acknowledgement

Sincere gratitude goes to Mrs Aiza Johari, Mr Ts Abdul Ismail Mohd Jawi, and Dr Norseha Unin, a team of researchers; and PUSTAKA Negeri Sarawak for the research grant (ethical approval was received from the PNS's Research Ethics Committee on May 18, 2022; ref: PUSTAKA/800-1/2/1/JLD.2 (064); 100-TNCPI/GOV 16/6/2 (042/2021)), as well as members of PUSTAKA's PANDei team and enumerators for the study.

References

- Akubuilu, F., Okorie, E. U., Onwuka, G., & Uloh-Bethels, A. C. (2015). Reading readiness deficiency in children: Causes and ways of improvement. *Journal of Education and Practice*, 6(24), 38-43. <https://files.eric.ed.gov/fulltext/EJ1078814.pdf>
- Armbruster, B. B., Lehr, F., & Osborn, I. J. (2006). *Birth to preschool*. National Institute for Literacy.
- Beck, I. L., McKeown, M. G., & Kucan, L. (2002). *Bringing words to life: Robust vocabulary instruction*. Guilford Press.
- Braunger, J., & Lewis, J. P. (1997). *Building a knowledge base in reading*. Northwest Regional Educational Laboratory.
- Bronfenbrenner, U. (1994). Ecological models of human development. In *International Encyclopaedia of Education* (2nd ed., Vol. 3, pp. 37-43). Elsevier.
- Cartwright, K. B., Barber, A. T., Zumbunn, S. K., & Duke, N. K. (2023). Self-regulation and executive function in language arts learning. In *Handbook of research on teaching the English language arts* (pp. 312-332). Routledge.
<https://doi.org/10.4324/9781003334392-18>
- Clay, D., Ahlers-Schmidt, C. R., Benton, M., Engel, M., & Brown, M. (2019). Intention to read to newborns following a brief reading promotion intervention among low-income pregnant women. *Kansas Journal of Medicine*, 12(2), 50-52. PMID: 31191810; PMCID: PMC6527200. <https://pmc.ncbi.nlm.nih.gov/articles/PMC6527200/>
- Council on Early Childhood. (2014). Literacy promotion: An essential component of primary care pediatric practice. *Pediatrics*, 134(2), 404-409.
<https://doi.org/10.1542/peds.2014-1384>
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16(3), 297-334. <https://doi.org/10.1007/BF02310555>
- Cunha, F., Heckman, J. J., Lochner, L., & Masterov, D. V. (2006). Interpreting the evidence on life cycle skill formation. *Handbook of the Economics of Education*, 1, 697-812.
[https://doi.org/10.1016/S1574-0692\(06\)01012-9](https://doi.org/10.1016/S1574-0692(06)01012-9)
- Dimova, E. D., Roddick, K., Hunter, S. C., Delfmann, L., Morgan, A., McPherson, K., ... & McKendrick, J. H. (2026). The application of Bronfenbrenner's bio-ecological model in

- children and young people's mental health research: a rapid review. *Child Psychiatry & Human Development*, 1-13. <https://doi.org/10.1007/s10578-026-02019-1>
- Eryaşar, A. S., & Özel, R. (2025). Early education for a sustainable future: The perspectives of pre-service preschool teachers. *The Independent Journal of Teaching and Learning*, 20(1), 68–98. <https://doi.org/10.17159/9k7smc02>
- Formby, S. (2014). *Children's early literacy practices at home and in early years settings: Second annual survey of parents and practitioners*. National Literacy Trust. <https://files.eric.ed.gov/fulltext/ED560665.pdf>
- Gaur, A. S., & Gaur, S. S. (2006). *Statistical methods for practice and research: A guide to data analysis using SPSS*. Sage.
- Gong, X. (2016). Efforts to develop the reading interest of the people from children in Singapore libraries. *Science Journal of Education*, 4(6), 198-205. <https://doi.org/10.11648/j.sjedu.20160406.16>
- Guthrie, J. T., Wigfield, A., Barbosa, P., Perencevich, K. C., Taboada, A., Davis, M. H., Scafiddi, N. T., & Tonks, S. (2004). Increasing reading comprehension and engagement through concept-oriented reading instruction. *Journal of Educational Psychology*, 96(3), 403-423. <https://doi.org/10.1037/0022-0663.96.3.403>
- Ha, Y. M., & Kim, H. K. (2026). Infants' social behaviours toward peers and teacher support behaviours for peer interactions in South Korea. *Asia-Pacific Journal of Research in Early Childhood Education*, 20(1). <https://doi.org/10.17206/apjrece.2026.20.1.1>
- Hutton, J. S., Horowitz-Kraus, T., Mendelsohn, A. L., DeWitt, T., & Holland, S. K. (2015). Home reading environment and brain activation in preschool children listening to stories. *Pediatrics*, 136(3), 466-478. <https://doi.org/10.1542/peds.2015-0359>
- Joseph, L. M. (2002). Best practices in planning interventions for students with reading problems. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology IV* (pp. 803-816). National Association of School Psychologists.
- Joseph, L. M. (2008). Best practices on interventions for students with reading problems. *Best Practices in School Psychology*, 4, 1163-1180. https://www.academia.edu/download/41383395/Best_Practices_in_Planning_Interventions20160121-6995-15y3ky0.pdf
- Joyce, A. (2017, February 16). Why it's important to read alone with your kids, and how to

- make it count. *The Washington Post*.
<https://www.washingtonpost.com/news/parenting/wp/2017/02/16/>
- Kahrman Pamuk, D., Öztürk, N., Koşan, Y., Pamuk, S., Güler Yıldız, T., Elmas, R., & Haktanır, G. (2026). Sustainability literate preschool teachers: Exploring knowledge, attitudes and practices in early childhood education for sustainability - A quantitative model. *European Journal of Education*, 61(1), Article e70443.
<https://doi.org/10.1111/ejed.70443>
- Kalb, G., & Van Ours, J. (2014). Reading to young children: A head-start in life. *Economics of Education Review*, 40, 1-24. <https://doi.org/10.1016/j.econedurev.2014.01.002>
- Kaur, P., & Jawaaid, A. (2018). A comparative study of urban and rural reading habits. *Sarawak Library Journal: Publication of Pustaka Negeri Sarawak*, 1(1), 7-17.
- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30(3), 607-610.
<https://doi.org/10.1177/001316447003000308>
- Ledger, S., & Merga, M. K. (2018). Reading aloud: Children's attitudes toward being read to at home and at school. *Australian Journal of Teacher Education*, 43(3).
<http://ro.ecu.edu.au/ajte/vol43/iss3/8>
- Leung, S. L. T., Ho, W., & Tam, W. K. C. (2026). Professional development in enhancing teachers' cybersecurity awareness: Current status and future directions of media literacy training. *Education Sciences*, 16(2), 196. <https://doi.org/10.3390/educsci16020196>
- Ljungcrantz, L. (2026). The interaction of AI and early childhood education: A state-of-the-art review 2020–2024. *Early Childhood Education Journal*, 1-17.
<https://doi.org/10.1007/s10643-025-02079-3>
- Majzub, R., & Kurnia, K. (2010). Reading readiness amongst preschool children in Pekanbaru, Riau. *Procedia-Social and Behavioral Sciences*, 9, 589-594.
- Maylani, I., Putri, F. R., & Nihlah, A. K. (2026). Mediating digital narratives: Parental roles in enhancing multimodal literacy for early childhood. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, 10(1), 58-67. <https://doi.org/10.31004/obsesi.v10i1.7490>
- McMunn Dooley, C., & Matthews, M. W. (2009). Emergent comprehension: Understanding comprehension development among young literacy learners. *Journal of Early Childhood Literacy*, 9(3), 269-294. <https://doi.org/10.1177/1468798409345110>

- McGowan, J., Charlesworth, Z., & White, H. (2020). Supporting reading engagement and confidence in children: Findings from an evaluation of Reading Seeds. *Journal of Children and Media*, 14(4), 513-527. <https://doi.org/10.1080/17482798.2020.1814586>
- Moghadam, M. (2025). 60 years' development of research on sociocultural theory: a bibliometric analysis. *Current Psychology*, 44(8), 6592-6609. <https://doi.org/10.1007/s12144-025-07652-y>
- Nunnally, J. C. (1967). *Psychometric theory*. McGraw-Hill.
- Pallant, J. (2013). *SPSS survival manual*. McGraw-Hill Education.
- Pustaka Negeri Sarawak. (2018). *Reading seeds program 2018*. https://www.pustaka-sarawak.com/pages.php?do=reading_seeds&lang=my
- Pustaka Negeri Sarawak. (2019). *Laporan tahunan 2018* [Unpublished report].
- Rahmawati, Y. (2024). Reading habits and comprehension: A study of university students. *Borneo Educational Journal (Borju)*, 6(2), 196-211. <https://doi.org/10.24903/bej.v6i2.1762>
- Rajaratnam, R. (2013, August). *For the love of reading! New strategies to engage the next generation of readers* [Paper presentation]. IFLA WLIC 2013, Singapore. <https://library.ifla.org/71/1/105-rajaratnam-en.pdf>
- Roulstone, S., Law, J., Rush, R., Clegg, J., & Peters, T. (2010). *Investigating the role of language in children's early years educational outcomes*. Department for Education. <https://research.qmu.ac.uk/bitstream/handle/20.500.12289/2484/DFE-RR134.pdf?sequence=1&isAllowed=y>
- Rozaimie, A. (2018). Cultural variations and socio-ecocultural understanding on cross-cultural adaptation. *The Qualitative Report*, 23(10), 2538-2551. <https://doi.org/10.46743/2160-3715/2018.2900>
- Rozaimie, A. (2024). The dynamic of demographic characters on the Reading Seed Program of Pustaka Negeri Sarawak. *Southeast Asia Early Childhood Journal*, 13(1), 34-69. <https://doi.org/10.37134/saecj.vol13.1.3.2024>
- Saiful Farik, M. Y., Shaharom, S., Hasnah, S., Mansor, I., & Mirahida, M. (2014). Reading habits and reading activities: A bibliometric study. *Australian Journal of Basic and Applied Sciences*, 8, 163-170. <https://www.ajbasweb.com/old/ajbas/2014/Special%2013/163-170.pdf>

- Shrestha, N. (2021). Factor analysis as a tool for survey analysis. *American Journal of Applied Mathematics and Statistics*, 9(1), 4-11. <https://doi.org/10.12691/ajams-9-1-2>
- Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, 2, 53–55. <https://doi.org/10.5116/ijme.4dfb.8dfd>
- Teh, C. B. S. (2013). *Malaysia's reading habit*. <http://christopherteh.com/blog/>
- Tomopoulos, S., Dreyer, B. P., Tamis-LeMonda, C., Flynn, V., Rovira, I., Tineo, W., & Mendelsohn, A. L. (2006). Books, toys, parent-child interaction, and development in young Latino children. *Ambulatory Pediatrics*, 6(2), 72-78. <https://doi.org/10.1016/j.ambp.2005.10.001>
- Williams, C. (2021). *Social wellness: Family bonding through reading*. Heartland Therapy Connection. <https://heartlandtherapyconnection.com/social-wellness-family-bonding-through-reading/>
- Yana, F. (2024). The correlation between student reading habit and their ability of writing narrative text. *Bright Vision Journal of Language and Education*, 4(2), 173-183. <https://doi.org/10.30821/brightvision.v4i2.3877>
- Yang, P., Keary, A., & Saito, E. (2026). Enhancing early language and literacy development: A self-study of shared book reading strategies in a preschool context. *Journal of Early Childhood Teacher Education*, 1-14. <https://doi.org/10.1080/10901027.2026.2620999>
- Zawiyah, B., & Abrizah, A. (2018). Transformation strategies in community engagement: Selected initiatives by Malaysian libraries. *IFLA Journal*, 44(2). <https://doi.org/10.1177/0340035218778435>
- Zhang, C. (2024). The impact of parents' reading beliefs on children's reading interests: Possible influential factors and suggestions for promoting early reading development. In *SHS Web of Conferences* (Vol. 193, Article 02002). EDP Sciences.