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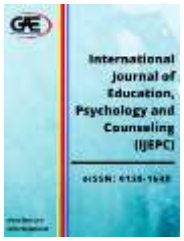

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FORMATION OF LITERACY AND SOCIO-EMOTIONAL CONSTRUCTS THROUGH BIBLIOMETRIC ANALYSIS FOR THE DEVELOPMENT OF IPLiPeD

Mazidah Ali[1], Ardzulyna Anal[2]*

[1]Faculty of Human Development, Universiti Pendidikan Sultan Idris, Malaysia
g-26111545@moe-dl.edu.my https://orcid.org/0009-0002-1819-917X
[2]Faculty of Human Development, Universiti Pendidikan Sultan Idris, Malaysia
Ardzulyna@fpm.upsi.edu.my https://orcid.org/0009-0006-8599-6303
*Corresponding Author

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Abstract:

This study examines global research trends in language literacy and socio-emotional development and identifies key constructions underpinning the formation of the Language Literacy Development Instrument for Remedial Pupils at Risk of Dyslexia (IPLiPeD) through a bibliometric analysis approach. A total of 405 peer-reviewed journal articles published between 2018 and 2021 were retrieved from Scopus and Google Scholar, curated using Mendeley Reference Manager, and analysed using VOSviewer (version 1.6.20). The findings indicate a steady increase in publication output, accompanied by a conceptual shift from a primary focus on foundational literacy skills toward the integration of socio-emotional and motivational dimensions in literacy education. Keyword co-occurrence mapping identified two dominant clusters, namely Early Literacy Skills and Socio-emotional Competence. High-frequency terms such as phonemic awareness, decoding, motivation, and self-regulation reflect the cognitive and affective domains of literacy learning. Cross-cluster analysis further revealed linking terms such as vocabulary and engagement, confirming the interdependence between linguistic proficiency and socio-emotional competence. Overall, these findings provide a bibliometrically grounded framework for construct formation, supporting the development of IPLiPeD as a comprehensive and context-sensitive literacy assessment instrument for remedial pupils at risk of dyslexia within inclusive education settings.

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Introduction

Language literacy forms the foundation of children's academic achievement and social development, particularly among pupils at risk of dyslexia enrolled in Malaysia's Special Remedial Programme. Prior research has shown that reading and writing skills are shaped not only by cognitive factors but also by affective elements such as motivation, self-efficacy, and emotional stability (Connor et al., 2019; Kim, 2021). However, literacy education in Malaysia continues to face challenges, especially in teaching approaches that focus heavily on technical reading skills while neglecting pupils' emotional needs and personality traits (Gunasegaran et al., 2021).

To address these challenges, the Ministry of Education Malaysia (MOE) has introduced several initiatives, including the Classroom-Based Assessment (MOE, 2019) and the Special Remedial Programme (Gunasegaran et al., 2021), aimed at strengthening foundational literacy skills. Despite these efforts, current assessment practices for pupils at risk of dyslexia have yet to incorporate socio-emotional components that significantly influence learning outcomes (Barry et al., 2022). This gap highlights the need for an integrated assessment instrument that combines cognitive and affective dimensions, in line with the goals of 21st-century holistic education (OECD, 2019).

Purpose and Research Questions

The primary aim of this study is to examine global research trends in the domains of language literacy and socio-emotional development, and to identify the key constructs that underpin the formation and design of the Language Literacy Development Instrument for Remedial Pupils at Risk of Dyslexia (IPLiPeD) through a bibliometric analysis approach.

To achieve this aim, the study addresses the following research questions:

1. What are the global research trends in language literacy and socio-emotional development between 2018 and 2021?
2. What are the key constructions identified through bibliometric mapping that support the construction formation and development of the IPLiPeD instrument?

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Literature Review

Literacy development progresses through multiple stages, beginning with phonemic awareness and advancing toward the comprehension of complex texts (Chall, 1983). This developmental model forms the foundation for the Early Literacy Skills construct within the IPLiPeD framework. Perfetti and Stafura (2014) further explain that literacy involves the interaction between phonological, orthographic, and semantic systems, which collectively shape reading comprehension. Supporting this view, Ehri (2020) emphasizes the importance of phonological decoding and word recognition in developing reading fluency.

In parallel, socio-emotional development plays a critical role in literacy achievement. CASEL (2023) outlines five core domains of social-emotional learning: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. These domains align with Erikson's (1950) psychosocial theory, which underscores the importance of balancing social competence and identity formation. Within literacy education, socio-emotional skills enable learners to cope with academic challenges and regulate stress associated with reading difficulties (Humphrey & Wigelsworth, 2016).

International studies have also highlighted the direct relationship between emotional factors and literacy performance. For instance, Lonigan et al. (2018) and García and Cain (2014) demonstrate that emotional stability and motivation significantly influence reading outcomes. These findings support the integration of literacy and socio-emotional competencies as a foundation for developing a holistic assessment instrument tailored to the needs of pupils in the Special Remedial Programme.

Recent Malaysian studies further reinforce the importance of integrating literacy and socio-emotional domains. Kong et al. (2024) found that preschool children from low-income families demonstrated strong readiness in both emergent literacy and socio-emotional development, highlighting the need for holistic assessment tools in early education. Similarly, recent scholarship in Southeast Asia underscores the significance of embedding social-emotional learning within educational psychology frameworks, advocating for instruments that address both cognitive and affective competencies (Journal of School Psychology in Southeast Asia, 2024).

Methodology

This study employed a quantitative bibliometric approach to systematically analyse research patterns and conceptual structures within the domains of language literacy and socio-emotional development. The methodology was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework, adapted for bibliometric studies adapted from Aidi Ahmi (2022), to ensure transparency, replicability, and methodological rigour throughout the data collection and analysis phases.

The publication window was limited to 2018–2021, a period that coincided with the developmental phase of the Language Literacy Development Instrument for Remedial Pupils at Risk of Dyslexia (IPLiPeD). This timeframe was chosen to capture contemporary developments in literacy and socio-emotional research, ensuring that the constructs identified were both current and coherent, while directly relevant to the instrument's design and application in remedial education.

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Data were retrieved from Scopus and Google Scholar using English and Malay search keywords related to language literacy, socio-emotional development, dyslexia, and special education. Scopus was selected for its rigorous indexing standards, while Google Scholar was included to broaden coverage of education-focused studies that may not be fully indexed in commercial databases. To manage duplication and indexing bias, records were curated using Mendeley Reference Manager, duplicates removed, and only peer-reviewed journal articles retained. Inclusion criteria comprised articles published within the specified period, written in either English or Malay, and directly related to literacy or socio-emotional development in educational contexts, with no restrictions on research design or country of origin to ensure global coverage.

A total of 405 articles were identified and organised using Mendeley Reference Manager. The dataset was exported in Research Information System (RIS) format and analysed using VOSviewer (version 1.6.20). The bibliometric analysis followed four key procedures: (i) metadata cleaning, (ii) keyword selection, (iii) threshold determination, and (iv) co-occurrence mapping. The threshold for keyword inclusion was set at a minimum occurrence of five to ensure analytical relevance and reduce noise. Bibliometric indicators employed included publication trend analysis, citation analysis, co-authorship clustering, and keyword co-occurrence mapping, with cluster visualisation generated using VOSviewer. These indicators strengthened methodological transparency and replicability, while providing a robust foundation for construct identification.

The identified clusters and keyword networks were directly translated into measurable constructs for IPLiPeD. For instance, clusters related to early literacy components informed items measuring phonological awareness and vocabulary, while clusters on socio-emotional learning guided dimensions assessing empathy, emotional regulation, and peer interaction. Beyond descriptive trends, the analysis highlighted the increasing integration of socio-emotional dimensions into literacy research, reflecting a global shift towards holistic education.

Figure 1 illustrates the systematic protocol employed, adapted from PRISMA (Ahmi, 2022), encompassing four stages: topic identification, keyword selection, scope and coverage, and screening and inclusion. This protocol ensured methodological transparency and traceability throughout the data collection and analysis phases, aligning with international best practices in bibliometric research (Donthu et al., 2021; van Eck & Waltman, 2021).

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Figure 1. PRISMA-Adapted Systematic Protocol for Bibliometric Analysis of Language Literacy and Socio-Emotional Development (2018–2021)

Source: Researcher's adaptation based on Aidi Ahmi (2022)

This methodological framework aligns with international best practices in bibliometric research (Donthu et al., 2021; van Eck & Waltman, 2021), enabling the identification of dominant keyword clusters and the mapping of conceptual relationships between literacy and socio-emotional domains. The use of VOSviewer facilitated visualisation of co-occurrence patterns, supporting the formulation of constructs for the IPLiPeD instrument.

Findings

The findings of this study were analysed to map the research landscape in the domains of language literacy and socio-emotional development, and to identify the key constructs

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underpinning the development of the Language Literacy Development Instrument for Remedial Pupils at Risk of Dyslexia (IPLiPeD) using a bibliometric analysis approach. The results are presented in alignment with the research questions formulated earlier.

Global Research Trends in Language Literacy and Socio-emotional Development (2018–2021)

The bibliometric analysis revealed a substantial increase in publications related to literacy and socio-emotional studies between 2018 and 2021. In the early years (2018–2019), research was primarily concentrated on cognitive aspects of early literacy skills such as phonemic awareness, phonological decoding, fluency, and comprehension. From 2020 onwards, however, the research focus progressively shifted toward socio-emotional dimensions linked to motivation, self-awareness, learner engagement, and psychological well-being in educational contexts.

This shift signifies a paradigm transition from purely cognitive orientations toward a holistic literacy perspective, consistent with the recommendations of OECD (2019) and CASEL (2023), both of which emphasize the balance between academic development and students' emotional well-being. Table 1 summarises the distribution of articles by year and dominant research focus.

Table 1. Distribution of Articles by Year (2018–2021)

Year	Number of Articles	Dominant Research Focus
2018	86	Early literacy: phonemic, decoding, and fluency
2019	94	Text comprehension and vocabulary mastery
2020	110	Integration of socio-emotional and motivational learning
2021	115	Holistic literacy and students' emotional well-being
Total	405	—

Source: Data based on coding from Scopus and Google Scholar searches (2018–2021).

The upward trend in publication volume reflects not only quantitative growth but also a broadening of research scope—from foundational literacy to the integration of affective and socio-emotional components. This trend suggests increasing scholarly concern for viewing literacy as a multifaceted process involving both linguistic competence and emotional resilience.

Figure 2 visualises the temporal patterns of keyword emergence, confirming the identified transition. Blue nodes represent early literacy terms that appeared earlier (2018–2019), while green and yellow nodes represent later-emerging socio-emotional concepts (2020–2021), based on VOSviewer mapping.

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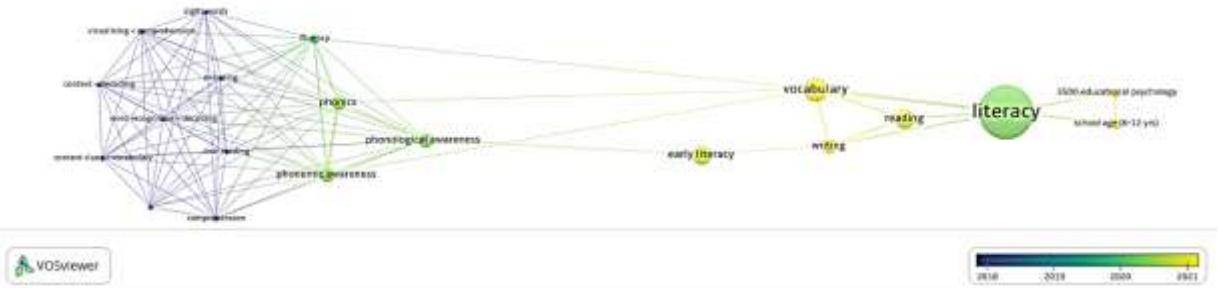

Figure 2. Keyword Mapping of Literacy and Socio-Emotional Studies Using Vosviewer (2018–2021)

Source: Researcher's analysis using VOSviewer 1.6.20 based on Scopus and Google Scholar data.

Main Constructs Supporting the Development of IPLiPeD

Cluster analysis identified two core domains underlying the development of the Language Literacy Development Instrument for Remedial Pupils at Risk of Dyslexia (IPLiPeD): Early Literacy Skills and Socio-emotional Competence.

Cluster 1: Early Literacy Skills

This cluster focuses on cognitive components of language learning, with dominant keywords including phonemic awareness, phonological decoding, reading fluency, and text comprehension. The findings indicate that global literacy research during 2018–2019 emphasized foundational reading skills, aligning with Chall's (1983) and Ehri's (2020) models. These elements directly informed the operationalisation of the first IPLiPeD construct, which assesses pupils' ability to decode and derive meaning from written text.

Cluster 2: Socio-emotional Competence

This cluster represents the affective dimension, which gained increased attention among researchers after 2020. Key terms include motivation, self-awareness, emotional regulation, and educational psychology. The mapping results revealed a strong relationship between socio-emotional factors and literacy achievement, indicating that pupils with emotional stability and high motivation demonstrate more significant progress in reading and comprehension (Humphrey & Wigelsworth, 2016; Barry et al., 2022). These elements directly informed the operationalisation of the second IPLiPeD construct, which assesses pupils' socio-emotional competence, including emotional regulation, motivation, self-awareness, and learning-related engagement.

Recent Malaysian studies further reinforce the importance of integrating literacy and socio-emotional domains. Kong et al. (2024) found that preschool children from low-income families demonstrated strong readiness in both emergent literacy and socio-emotional development, highlighting the need for holistic assessment tools in early education. Similarly, recent scholarship in Southeast Asia underscores the significance of embedding social-emotional learning within educational psychology frameworks, advocating for instruments that address both cognitive and affective competencies (Journal of School Psychology in Southeast Asia, 2024).

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Interrelationships Between Clusters

Cross-cluster analysis revealed connecting terms such as early literacy, vocabulary, and engagement, which reflect the natural integration between linguistic and emotional dimensions. These findings reinforce the argument that literacy is not merely a linguistic process but also an affective experience influenced by emotional states and social support. The interrelation between these two constructs forms the foundation of IPLiPeD's holistic and contextual design for remedial education in Malaysia.

Table 2. List of Main Terms per Cluster and Frequency of Occurrence

Cluster	Main Terms	Frequency (n)	Research Focus
1	*Phonemic awareness*, *decoding*, *fluency*, *comprehension*	142	Early literacy and text comprehension
2	*Motivation*, *self-regulation*, *emotional development*, *learning engagement*	127	Socio-emotional and motivational learning
—	*Vocabulary*, *reading*, *early literacy*	73	Linking terms between clusters

Source: Bibliometric analysis using VOSviewer 1.6.20 (Scopus & Google Scholar, 2018–2021)

The bibliometric analysis confirms that the two principal constructs, Early Literacy Skills and Socio-emotional Competence, are interrelated and serve as a robust foundation for the development of IPLiPeD, a comprehensive literacy assessment model tailored for remedial pupils at risk of dyslexia.

Discussion

The findings of this study reveal a clear conceptual continuity between the development of language literacy and socio-emotional competence. The first cluster represents the cognitive domain, grounded in reading and writing skills, while the second cluster highlights the affective domain, encompassing motivation, emotional regulation, and self-efficacy. The relationship between these two domains demonstrates that literacy is not merely a linguistic process but also a complex emotional experience shaped by learners' psychological states and social contexts (Lonigan et al., 2018; García & Cain, 2014).

These findings align with Vygotsky's (1978) sociocultural theory, which posits that language and thought development occur through social interaction and emotional scaffolding. In the context of pupils at risk of dyslexia, socio-emotional factors such as self-confidence, resilience, and engagement play a pivotal role in supporting literacy acquisition (Humphrey & Wigelsworth, 2016; Barry et al., 2022). Therefore, the construction of IPLiPeD, integrating both cognitive and affective constructs, is theoretically justified and empirically grounded.

The temporal shift in research focus, as visualised in the bibliometric mapping, further supports the movement toward holistic literacy education. From 2018 to 2021, there was a discernible transition from studies centred on phonemic and decoding skills to those exploring emotional well-being, motivation, and learner engagement. This evolution reflects broader educational priorities, as outlined by OECD (2019) and CASEL (2023), which advocate for balanced

models of learning that nurture both academic proficiency and emotional development. This trend is particularly relevant to Malaysia's remedial education policy, which emphasises inclusive practices and the provision of socio-emotional support for pupils at risk of dyslexia.

Moreover, recent Malaysian research reinforces the relevance of this integrative approach. Kong et al. (2024) demonstrated that preschool children from low-income backgrounds exhibit readiness in both literacy and socio-emotional domains, suggesting that early interventions must address both aspects simultaneously. Regional scholarship also highlights the importance of embedding social-emotional learning within educational psychology frameworks to enhance student outcomes (Journal of School Psychology in Southeast Asia, 2024).

Taken together, these findings validate the dual-construct foundation of IPLiPeD and underscore its potential as a comprehensive assessment instrument tailored to the needs of remedial pupils in Malaysia. By bridging cognitive and affective domains, IPLiPeD offers a more equitable and contextually responsive model for literacy evaluation. Through the systematic mapping of literacy and socio-emotional constructs, this study contributes original value to instrument development and addresses a critical gap in Malaysian remedial education literature, ensuring alignment with national education priorities.

Conclusion

This study concludes that research on literacy and socio-emotional development from 2018 to 2021 has demonstrated rapid and complementary growth. The bibliometric analysis confirms that the two principal constructs—Early Literacy Skills and Socio-emotional Competence—form a robust foundation for the development of the Language Literacy Development Instrument for Remedial Pupils at Risk of Dyslexia (IPLiPeD). The integration of these constructs reflects a global shift toward holistic education models that balance cognitive proficiency with emotional well-being.

The findings align with Malaysia's educational aspirations under the Ministry of Education, particularly in the context of inclusive and remedial programmes. The proposed IPLiPeD instrument offers a comprehensive framework for assessing pupils' literacy development by incorporating both linguistic and affective dimensions. This dual-focus approach is especially relevant for pupils at risk of dyslexia, who often face challenges not only in decoding text but also in managing emotional responses to learning difficulties.

Importantly, this study contributes to dyslexia-related assessment literature by providing a bibliometrically grounded framework for construct formation, supporting the development of a context-sensitive literacy assessment instrument tailored to remedial education in Malaysia. This contribution addresses a critical gap in existing assessment practices, which have traditionally emphasised cognitive skills while underrepresenting socio-emotional dimensions of learning

From a practical perspective, the study underscores the need for Remedial Education teachers to adopt instructional strategies that simultaneously support literacy acquisition and socio-emotional growth. By embedding these constructs into classroom practices, educators can foster more equitable and responsive learning environments. Furthermore, the development of IPLiPeD supports the creation of valid, reliable, and contextually appropriate assessment tools aligned with Malaysia's inclusive education goals.

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Ethics Statement: This study was conducted in accordance with ethical research standards. All procedures involving human participants were reviewed and approved by the Human Research Ethics Committee at Universiti Pendidikan Sultan Idris, approval number [RMIC/2022-0704-02]. Informed consent was obtained from all participants prior to data collection. Participation was voluntary, and respondents were assured of confidentiality and anonymity. The data collected were used solely for academic purposes.

Author Contribution Statement: All authors contributed significantly to the development of this manuscript. Mazidah Ali and Ardzulyna Anal were responsible for the conceptualization, methodology, and overall supervision of the study. Mazidah Ali handled data collection, analysis, and interpretation of results. All authors contributed to the literature review, drafting, and critical revision of the manuscript. All authors read and approved the final version of the manuscript prior to submission.

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