

Systematic Review of Early English Literacy in ELL Children: What Do We Know from A Decade of Research

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ABSTRACT

Early literacy is an integral aspect of young children's learning. This review synthesizes existing empirical research evidence from the past decade, focusing on ELL children's (aged 4 to 6 years) early English language literacy learning and the prevailing trends in the published literature. They were sourced mainly from three prominent databases. Manual selection of highly-cited studies was used as a complementary technique. Systematic exclusion and inclusion were performed and yielded 31 credible studies. The results report on researchers' theorizing of early English literacy, dimensions of the body of knowledge, and research methodologies. The predictors and outcomes were examined within the lens of theoretical framework. To identify the emerging trends, the studies were analysed qualitatively. The findings were discussed in light of three main trends: (i) the apparent needs for an early English literacy model which captures both the concept of early literacy acquisition and second language learning, (ii) future research to acknowledge the multifaceted phenomenon of early literacy acquisition by employing nested research approach in a cross-discipline scope of research, and (iii) multiple ecological factors as important sources of individual differences. Despite the strength of the review approach to the past study identification, there are several limitations that should be considered. Among others, the representation of the children population in the selected studies which befalls heavily on certain geographical regions could cause bias in the coverage of knowledge.

Keywords: early literacy; English language learners; ELL children; systematic review

EARLY ENGLISH LITERACY IN ELL CHILDREN: CONCEPTUAL DEFINITIONS

The concept of early literacy, or also known as emergent literacy, has existed for around 50 years. An effort to promote the concept of emergent literacy during the 1950s came from the work of Marie Clay. Her work on the emergent literacy became an important indication of significance in children's development. Clay made the argument that students were attaining a higher level of literacy than predicted since 1930s. Her work on emergent literacy, which departed from the maturationist's view of early literacy development, became a major advance in early literacy development studies (Teale & Sulzby, 1980).

Literacy learning is known to be a developmental curve that begins subtly at a very young age and eventually progresses over time. Early literacy abilities are found to be a significant character trait for children, and it contributes to how much they can progress in their later academic trajectories. Traditionalism view literacy as a clear concept of reading and handwriting skills. Additionally, contemporary early childhood literacy scholars have extended the definition of primary literacy to include the abilities, processes, structures, and conditions that are presumed to be developmental prerequisites to achieve early proficiency (Goodrich et al., 2017). The research explores the evolutionary view of early literacy learning and considers the impact of social and children's factors which is in line with both Piaget's and Vygotsky's learning development processes.

The bulk of research on early literacy has mostly been performed on children of whom English is their native language. In his seminal work on second language acquisition in childhood, McLaughlin (1978; 1984) explains that children's L1 and L2 early literacy development patterns and rates could arguably close, and that the same general mechanisms are at the very foundation of all language acquisition. Nevertheless, the degree to which the current concepts and empirical research findings are readily applicable to second language learners remains inconclusive. It is the basis for why a majority of research on ELL children is based on the validated findings from the studies on native English speaking children (Chan & Sylva, 2015; Farver et al., 2013; Lonigan et al., 2013a).

JUSTIFYING THE NEED AND THE DIRECTION OF THE REVIEW

Despite some extensive research on children's early literacy development, limited studies have been carried out to investigate children in ESL settings (Chan & Sylva, 2015). The level of heterogeneity among ELL children is broad thereby making it more complex to draw general assumptions. There exists distinct variability depending on the factors such as their native language, dominant language used at home, proficiency in additional languages, and the exposure to those languages (Peña & Halle, 2011). Therefore, understanding ELL children's early literacy acquisition comes with a range of challenges that anticipate more inquiries and understanding.

In this review, children whose native language is not English is referred to as English language learners (ELL). The term, ELL, is often used in academia to refer to children who are learning English not as their first language, while, the term, ESL, is most widely used to describe the teachers, courses, and programs aimed at educating ELL students (Ferlazzo & Sypniewski, 2012; O'Brien et al., 2019).

The primary objective of the review was to systematically summarise literature relevant to preschool-aged ELL children's early English literacy. Hence, the first research question guiding this review was: What are the main empirical facets in studies on ELL children's early English literacy published from 2011 to 2020? The second objective was to identify the degree to which early English literacy studies was mapped on the current models of early literacy development. In order to address this, our second research question was: How were the outcomes of ELL children's early English literacy measured in the empirical literature?

METHODS

THE REVIEW PROTOCOL: PRISMA

This study adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses or PRISMA. It is a publication standard protocol for conducting a systematic review (Moher et al., 2009). PRISMA provides a systematic guideline starting from identifying relevant studies from a bulk of research to processing relevant information and evaluating the content. There is a number of past systematic reviews on the early literacy, language and biliteracy employed PRISMA as the review protocol (i.e., Hur et al., 2020; Sim et al., 2019).

RESOURCES

The data for this study was mainly derived from two resources: online database search as the primary source and manual search as a secondary source. The database search was conducted using three main databases, Scopus, Web of Science, and ERIC. By utilizing a specific search focus on early English literacy in ELL children, Scopus indexed 139 studies, while Web of

Sciences indexed a total of 180 studies, and ERIC indexed a total of 579 studies. To complement the database search, this study performed manual search on another two databases, Google Scholar and EBSCO.

STUDY SELECTION

For the selection of studies, three main systematic review processes were conducted. It first started with identifying potential studies using databases and manual searching. Then, the potential articles were screened using identified inclusion and exclusion criteria. The final stage is determining the eligibility of the studies (see fig. 1).

IDENTIFICATION

The identification process began with establishing the main keywords, then identifying related and similar terms using thesaurus and Boolean operators, and manual searching of potential articles. Upon determining all relevant keywords in October 2020, the initial search strings were developed. The initial searching of this systematic review was able to retrieve 898 studies from three databases. Subsequently, a manual search was carried out using similar keywords on two databases. This resulted in additional 31 studies.

TABLE 1. The search strings used in the database search:

Search String	
Scopus	TITLE-ABS-KEY(("early literacy" OR "emergent literacy" OR "early reading" OR "early writing") AND ("ESL learner*" OR "bilinguals" OR "dual learner*" OR "minority*" OR "second language learner*" OR "English language learner*" OR "ESL" OR "ELL") AND ("children" OR "preschoolers" OR "young children" OR "kindergarteners"))
WoS	TS= ("early literacy" OR "emergent literacy" OR "early reading" OR "early writing") AND ("ESL learner*" OR "bilinguals" OR "dual learner*" OR "minority*" OR "second language learner*" OR "English language learner*" OR "ESL" OR "ELL") AND ("children" OR "preschool children" OR "preschoolers" OR "young children" OR "kindergarteners"))
ERIC	TITLE-ABS-KEY(("early literacy" OR "emergent literacy" OR "early reading" OR "early writing") AND ("ESL learner*" OR "bilinguals" OR "dual learner*" OR "minority*" OR "second language learner*" OR "English language learner*" OR "ESL" OR "ELL") AND ("children" OR "preschoolers" OR "young children" OR "kindergarteners"))

SCREENING

The objective of this stage is to screen the identified articles according to a specific set of inclusion and exclusion criteria. The initial keyword searching in the three databases generated 898 studies and the manual selected generated 31 studies. All the studies were screened based on five exclusion criteria which are timeframe, duplication, type of article, publication index, and area of study (see figure 1 for details). Upon completing the screening stage, 787 articles were omitted, leaving another 142 studies.

ELIGIBILITY

At this stage, the remaining 142 studies were scrutinized to ensure their relevance. It is divided into two parts, abstracts analysis, and full-text analysis. First, the abstracts were thoroughly examined for their eligibility. 101 studies were omitted because they either examined (a) sample other than ELL/ESL children, e.g., English-only children, elementary or middle-school aged children, and children with unique characteristics - aboriginals, or disabilities, (b) irrelevant area of interest e.g., cultural status, and technology-related instructions, (c) not empirical studies.

At the second stage of eligibility, the remaining 41 studies were assessed through full-text reading. Based on full text reading another 10 studies were omitted due to the sample characteristics - upper grade and children with disabilities, and study focus which is beyond the interest of the present review.

DATA EXTRACTION AND ANALYSIS

Based on the searching process described above, 929 studies were identified. 898 articles were omitted based on the exclusion criteria priorly set for this review, and that they are irrelevant according to the scope of review. A total of 31 studies were retained for further review and data extraction based on the following characteristics:

- (a) sample selection,
- (b) outcome domains measured,
- (c) facets and sub-facets of early English literacy in ELL children studies and the theoretical underpinning,
- (d) type of data and level of analysis and the research design, and
- (e) emerging trends

The data from 31 studies were analysed thematically. The first section of the analysis discussed the main research concerns, the nature of the study and the extent to which they were mapped on past studies on early literacy. From a critical evaluation of the research, trends and categories emerged that are described as recurring themes. Via a rigorous process, the themes were generated with emphasis on representativeness and validity. Upon identification, the potential themes were reviewed and determined whether they answered the research questions. They were then refined and discussed by relating the analysis to extant literature. These analytical procedures were performed in accordance with the thematic analysis process presented by Clark and Braun (2014). The findings of the analysis identified three main themes.

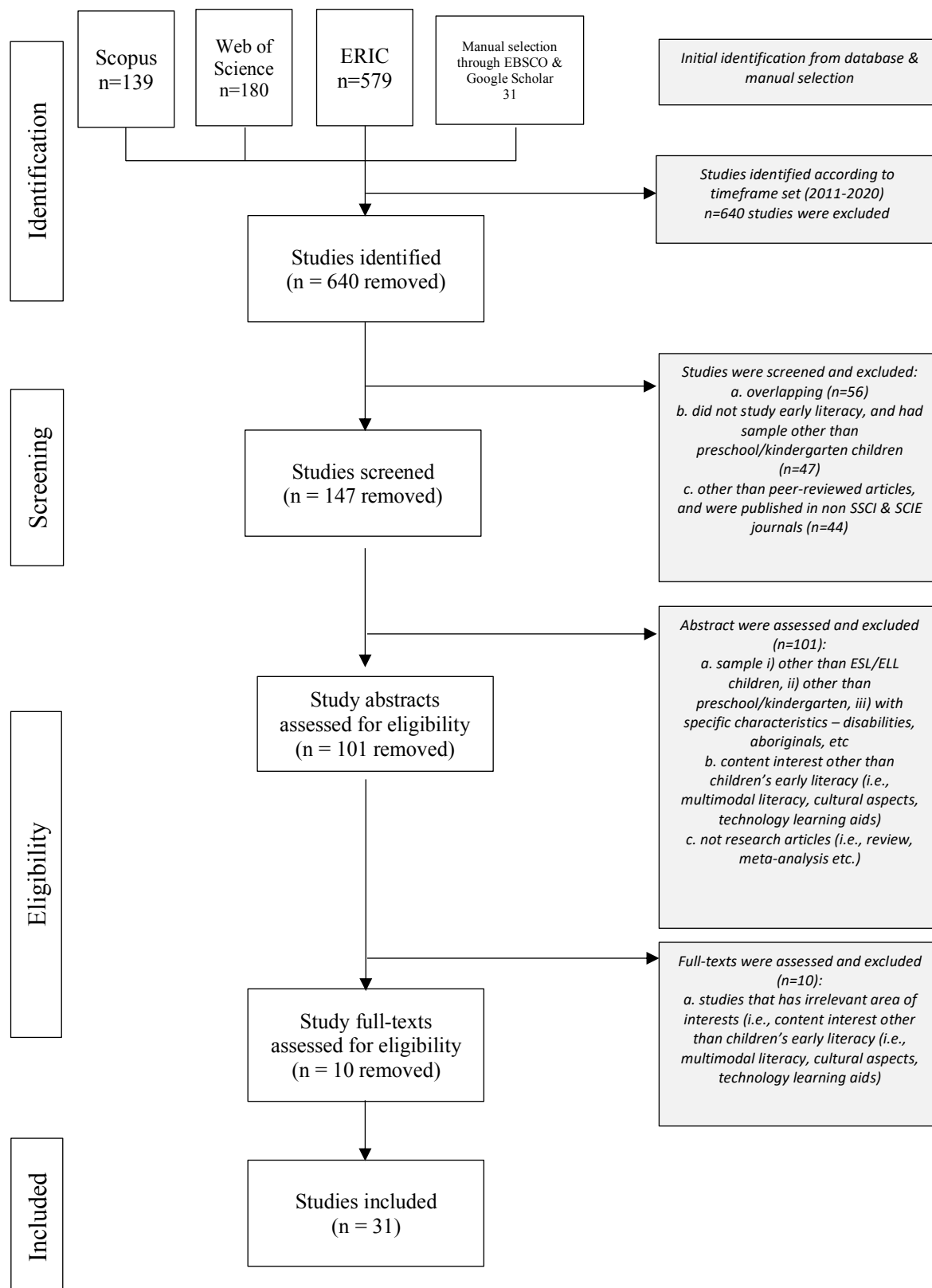


FIGURE 1. Search Process Flowchart

RESULTS

SAMPLE SELECTION AND GEOGRAPHICAL REGION OF THE STUDY

Studies selected in this review were conducted in the context where English is used and learned by non-native speakers either as an additional or instructional language as early as preschool or prekindergarten age. The sample group of reviewed studies is ELL children of age 4 to 6 years old (kindergarten or preschool age). There are also longitudinal studies which involved collecting data earlier from pre-kindergarten age (studies 3, 24 & 29).

Most studies have been conducted in the United States (see Figure 2), an English-speaking country, with four studies were conducted in other European countries. Only eight studies were conducted in Asia, non-English native speaking countries including, Hong Kong, Singapore and Malaysia.

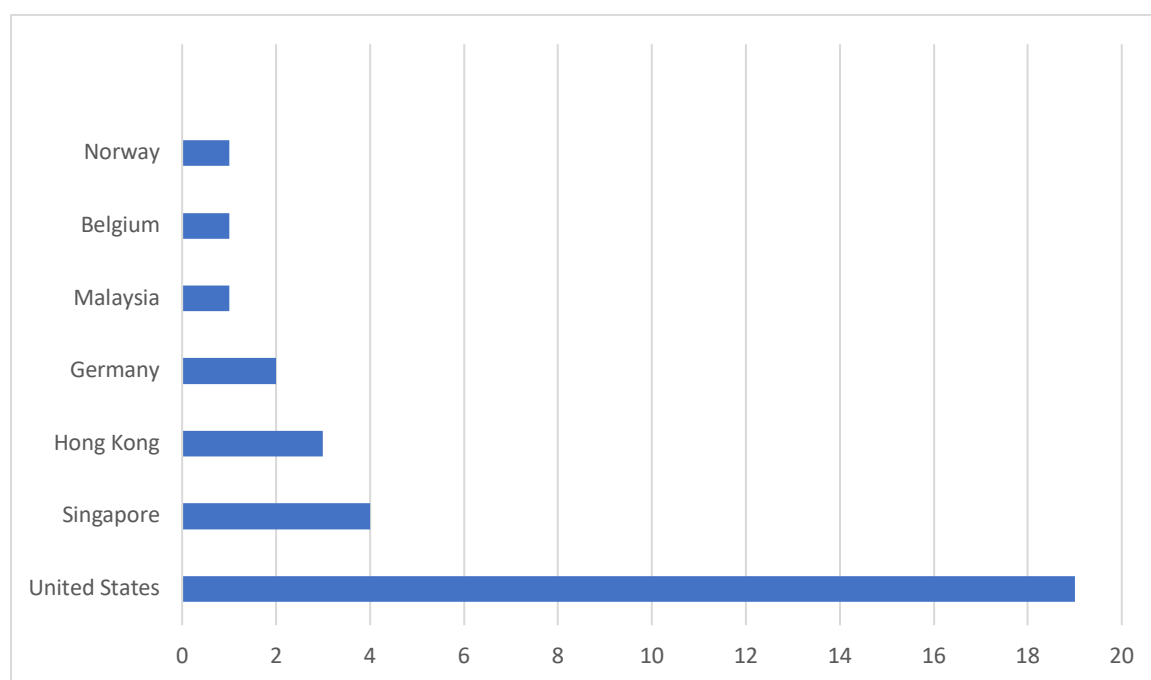


FIGURE 2. Geographical region of sample selection.

EARLY ENGLISH LITERACY DOMAINS AS OUTCOME MEASURED

In all 31 studies, early English literacy skills were tested as an indicator of children's progress. Their performance in the identified domains were treated as the outcome measure. However, there is a variability in which domains were measured. In 65% of the total studies (20 out of 31), both oral language and code-related domains were measured, while in six studies (studies 9, 18, 19, 20, 21 & 26), only oral language domain were measured, in four studies (studies 11, 12, 22 & 30), only code-related domain were measured, and one study measured children's literacy habit as the outcome.

In studies that used oral language domain as the outcome measure, 46% of studies (12 in 26) measured both receptive and expressive vocabulary skills. Another four studies measured receptive vocabulary skills only (studies 5, 6, 9, 15), another seven studies measured expressive vocabulary skills only (studies 2, 16, 18, 25, 28, 29, 31), and in two studies (studies 21 & 27), the outcome measured was on the general vocabulary size (study 27), and one study (study 4) was on sentence comprehension.

Among studies that reported code related skills, 52% of studies (13 in 23), researchers reported outcomes for phonological awareness, in 12 studies, researchers reported outcomes for print knowledge. 35% studies (8 in 23) used both phonological awareness and print knowledge as the outcomes measured (studies 1, 2, 3, 10, 17, 23, 25 & 29). In five studies, researchers reported outcomes for letter naming (studies 4, 11, 13, 15 & 23), another six studies reported word reading (4, 6, 7, 13, 15 & 22), two studies blending (studies 2, 11), three studies writing (studies 4, 30 & 31), and one study reported spelling as their outcomes measured (study 15).

FACETS AND SUB-FACETS OF ENGLISH EARLY LITERACY IN ELL CHILDREN AND THE THEORETICAL UNDERPINNING

Table 2 summarises the details of the reviewed studies including the theoretical underpinning and facets of the study. The analysis of 31 studies produced a total of 5 distinguished facets and 13 sub-facets. The five facets include conceptualizing early literacy (3 sub-facets), home literacy environment (2 sub-facets), within-child factor (4 sub-facets), classroom literacy environment (3 sub-facets), and early literacy assessment.

TABLE 2. Overview of 31 identified studies

Authors	Theoretical underpinning	Conceptualising early literacy			Home literacy environment		Within-child factor				Classroom literacy environment			Early literacy assessment
		<i>EEL</i>	<i>ED</i>	<i>CLTE</i>	<i>HCP</i>	<i>CLTH</i>	<i>CM</i>	<i>BM</i>	<i>SEM</i>	<i>SR</i>	<i>TLI</i>	<i>CEE</i>	<i>TF</i>	<i>VRA</i>
1. Lonigan et al. (2018)	Developmental interdependence hypothesis (Cummins, 1979)	√												
2. (Lonigan et al., 2013b)	Early Literacy Model (Whitehurst & Lonigan, 1998)		√		√									
3. (Goodrich et al., 2013)	Developmental interdependence hypothesis (Cummins, 1979; 1991; 1981)			√										
4. (O'Brien, Lim, et al., 2020)	Koda (2007) Typological distance hypothesis			√										
5. (Dixon, 2011)	Seymour (1997, 2006) Dual foundations of literacy	√												
6. (O'Brien et al., 2019)	1. Psychological grain size theory (Ziegler & Goswami, 2005) 2. Lexical Restructuring Hypothesis (Metsala Walley, 1998)			√										
7. (Yeung & Chan, 2013)	Cross-language transfer	√												
8. (Luo et al., 2020)	Cognitive distancing theory (Sigel, 1993) & Ecological system theory				√									

Authors	Theoretical underpinning	Conceptualising early literacy			Home literacy environment		Within-child factor				Classroom literacy environment			Early literacy assessment
		<i>EEL</i>	<i>ED</i>	<i>CLTE</i>	<i>HCP</i>	<i>CLTH</i>	<i>CM</i>	<i>BM</i>	<i>SEM</i>	<i>SR</i>	<i>TLI</i>	<i>CEE</i>	<i>TF</i>	<i>VRA</i>
9. (Malin et al., 2014)	B(ronfenbrenner & Moris, 2006) Vygotskian (1978) theoretical framework				√									√
10. (Farver et al., 2013)	Cross-language transfer (Koda, 2007)													√
11. (Mathis & Bierman, 2015)	Empirical data				√									
12. (Bava Harji et al., 2016)	Emergent literacy (Clay, 1966; Teale & Sulzby, 1988), Social interaction theory (Vygotsky, 1978)				√									
13. (Yeung & King, 2016)	Home Literacy Model (Se'ne'chal & LeFevre, 2002)				√									
14. (Howard et al., 2014)	Ecocultural Model of Antecedents of Reading Achievement (Reese et al., 2000)				√									
15. (O'Brien, Ng, et al., 2020)	Home literacy environment model (Farver, et al., 2006)				√									√
16. (Zhang & Malatesha Joshi, 2020)	Mutualism hypothesis of reading and VWM (Demoulin, & Kolinsky, 2016; Peng et al., 2018)							√						
17. (Lonigan et al., 2017)	Self-regulation & academic skills (McClelland et al, 2007; Blair & Raver, 2015) Early literacy model (Whitehurst and Lonigan, 1998)				√									√

Authors	Theoretical underpinning	Conceptualising early literacy			Home literacy environment		Within-child factor				Classroom literacy environment			Early literacy assessment
		<i>EEL</i>	<i>ED</i>	<i>CLTE</i>	<i>HCP</i>	<i>CLTH</i>	<i>CM</i>	<i>BM</i>	<i>SEM</i>	<i>SR</i>	<i>TLI</i>	<i>CEE</i>	<i>TF</i>	<i>VRA</i>
18. (Bohlmann et al., 2015)	Dynamic skill theory (Fischer & Bidell, 2006)				√					√				
19. (Hagan-Burke et al., 2016)	Empirical data							√						
20. (Rose et al., 2018)	Empirical evidence				√					√				
21. (Gottfried et al., 2016)	Social constructivist (Gredler, 1992; Vygotsky, 1978)							√	√					
22. (Yeung, 2016)	Cross-language transfer (Koda, 2007)						√							
23. (Thomas et al., 2020)	Emergent literacy model (Lonigan & Whitehurst, 1998) Interactive Reading strategy (Whitehurst et al., 1988)										√			
24. (Schick, 2015)	Early literacy model (Whitehurst & Lonigan, 1998; Storch & Whitehurst; Teale & Sulzby, 1986)											√		
25. (Goodrich et al., 2017)	Early literacy model (Whitehurst & Lonigan, 1998) Cross-language transfer (cummins, 1979; 2008)										√			
26. (Ramírez et al., 2019)	Bronfenbrenner's (2001) bioecological model within an ecocultural												√	

Authors	Theoretical underpinning	Conceptualising early literacy			Home literacy environment		Within-child factor				Classroom literacy environment			Early literacy assessment
		<i>EEL</i>	<i>ED</i>	<i>CLTE</i>	<i>HCP</i>	<i>CLTH</i>	<i>CM</i>	<i>BM</i>	<i>SEM</i>	<i>SR</i>	<i>TLI</i>	<i>CEE</i>	<i>TF</i>	<i>VRA</i>
27. (Sandvik et al., 2014)	perspective (Weisner 2002). Item Response Theory (IRT; Embretson & Reise, 2009)												√	
28. (Lehrl & Smidt, 2018)	Curriculum-based measurement, CBM (Fuchs, 2004; McMaster & Espin, 2007)										√		√	
29. (Goodrich et al., 2019)	Empirical data													√
30. (Keller-Margulis et al., 2019)	Early literacy model (Whitehurst and Lonigan, 1998)													√
31. (Rodríguez & Guiberson, 2011)	Emergent literacy model (Lonigan & Whitehurst, 1998)													√
Conceptualising early literacy		Home literacy environment			Within-child factor		Classroom literacy environment				Early literacy assessment			
<i>EEL</i> = English early literacy in ELL children		<i>HCP</i> = Home characteristics & practices			<i>CM</i> = Cognitive mechanism		<i>TLI</i> = Teaching & learning intervention				<i>VRA</i> = validity & reliability assessment			
<i>ED</i> = Early literacy domains		<i>CLTH</i> = Cross-linguistic transfer of home language			<i>BM</i> = Behavioural mechanism		<i>CEE</i> = Classroom early literacy environment							
<i>CLTE</i> = Cross-linguistic transfer of ELL children					<i>SEM</i> = socio-emotional mechanism		<i>TF</i> = Teacher factors							
					<i>SR</i> = Self-regulation									

FACET 1: CONCEPTUALIZING EARLY LITERACY

This review has identified seven studies that focus on conceptualizing early literacy in ELL children. In particular, they covered three sub-facets, including the development of early English literacy in ELL children, early literacy domains, and cross-linguistics transfer from L1 in the process of developing early English literacy. The range of publication from 2011 to 2019 indicate that this area of research is an emerging trend, still developing and much is yet to discover. Even though research on early literacy generally began as early as half a century ago, most studies have been focusing on the development of early literacy among English native children, with English speaking background. Nevertheless, much is not known with the development of early English literacy in ELL children. The selected studies in this review empirically explored whether models and theories develop for English speaking children is applicable for ELL (i.e., studies 1, 3, 4 & 5). Studies also looked into how L1 influence early English literacy learning; whether it supports or interfere (studies 3,4 & 7).

FACET 2: HOME LITERACY ENVIRONMENT

The second identified facet is the home literacy environment (HLE). Eight studies on HLE covering two subthemes; home characteristics and literacy practices and cross-linguistic transfer of home language. The selected articles were published from 2013 to 2020. Situated within the socio-cultural theoretical underpinning, home factors are an immediate environment in ELL children's English early literacy. The studies cover factors which include physical characteristics (i.e., income, SES, home language, availability, and access to literacy materials), parental characteristics (i.e., literacy habits, support, involvement in literacy practices) which acknowledge early literacy as a phenomenon that is influenced by their immediate ecological component.

FACET 3: WITHIN-CHILD FACTOR

Another facet surfaced in the review is the within-child factor (WCF). Seven studies were identified focusing on children's individual characteristics. This review observed four sub-themes including children's cognitive mechanism, behavioural mechanism, socio-emotional mechanism, and self-regulation. Early literacy studies that delved into this phenomenon were mostly recent (publication year from 2015 to 2020) which signals an emerging trend. Within-child factor points to the fact that early literacy development does not only account for the interplay of environmental components (such as home, demographic indicators, and classroom elements), but the child's interpersonal and intrapersonal determinants. They encompass factors such as intelligence, behavioural conduct, attentiveness, social and emotional conduct etc. Analysis also identifies that a few studies covered multiple facets (studies 17, 18 & 20). These studies observed the interplay between children's individual determinants and environmental influence in their development of early English literacy.

FACET 4: CLASSROOM LITERACY ENVIRONMENT

Six studies (published from 2014 to 2020) were pooled under one theme, classroom literacy environment (CLE). They were divided into three sub-themes including teaching & learning intervention (TLI), classroom early English literacy environment (CEE), and teacher factors (TF). The studies delved specifically into classroom related aspects such as early literacy teaching interventions, teachers' beliefs & practices, and classroom literacy material availability and access, and how these aspects influence children's early English literacy performance.

FACET 5: EARLY LITERACY ASSESSMENT

Another three studies stand out as their own facet, early literacy assessment (ELA). These studies focused on the reliability and validity of the existing assessment in measuring early English literacy among ELL children. Two studies were published recently in 2019, while the other study was published in 2011.

RESEARCH DESIGN & METHODOLOGICAL ANALYSES

The research design and methodological analyses used in most studies (77%) were based a single-level analysis, while others used multilevel paradigm (studies 2, 8, 9, 11, 19, 24 & 26). There is a fair distribution between cross-sectional and longitudinal studies (longitudinal: studies 1, 2, 4, 6, 11, 16, 18, 19, 20, 21, 22, 24, 26, 28 & 29) and another 15 studies are all cross-sectional. One study employed dyad research design (study 8).

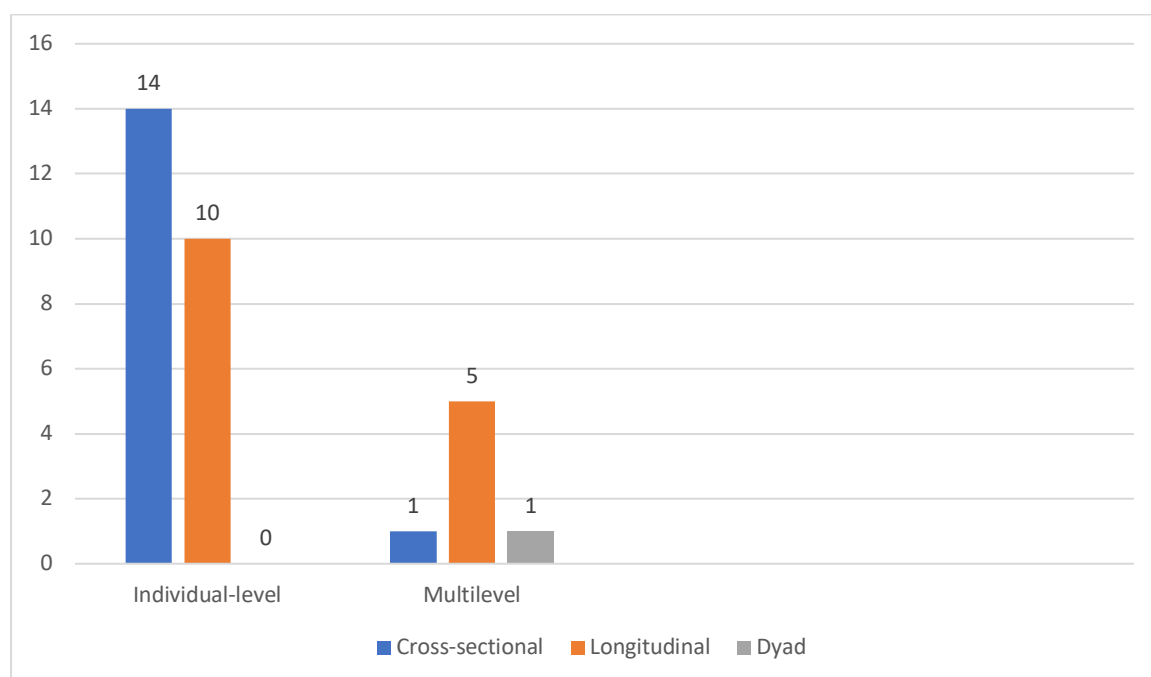


FIGURE 2: Summary of research design and level of analysis

In terms of the data reported, there is a variety in the type of data reported including subjective self-reported data (i.e., as survey questionnaire, interview), and also objective measurement (i.e., test results and behaviour assessment). Eight studies used multisource of data, gathered using multimethod paradigm of data collection (studies: 8, 9, 10, 11, 12, 13, 14 & 15), and it is interesting to note that all these studies are related to home literacy environment facet. Hence, despite most studies (77%) adopted cross-sectional research design, most studies applied multisource and multimethod type of data collection, which essentially reduce common method bias in the findings.

REVIEW AND DISCUSSION: REINFORCING WHAT IS KNOWN AND REGULATING FUTURE AVENUES

This review explores empirical literature on ELL children's early English literacy by concentrating on two research focuses: (1) facets and sub-facets and their theoretical underpinning covered in the existing studies in the past ten years, and (2) the extent to which studies were mapped on the existing early literacy models by looking at the early English literacy domains as the outcome measure. The results were qualitatively analysed and produced the following themes:

THEME 1: LIMITED STUDIES THAT INCORPORATE MULTI-DISCIPLINARY RESEARCH PARADIGM AND NESTED ANALYSIS

Findings from the review on ten years of studies on ELL children's early English literacy indicate that single-disciplinary research paradigm and single level analysis are more dominant. However, of the 31 studies reviewed, 20 were designed within the constructs of socio-cultural paradigms, for example Vygotsky's social-constructivism theory (Vygotsky, 1978), ecological theory (Bronfenbrenner, 1979; 2006), cross-language transfer (Cummins, 1979, 2008) and early literacy theory (Whitehurst & Lonigan, 1998) (see Table 2). Three studies were theorized using language specific domains such as typological distance hypothesis (Seymour, 1991, 2006) and lexical restructuring hypothesis (Metsala & Walley, 1998), while another 3 were based on assessment models (refer Table 1 for the details on the theoretical framing), and the rest were based on empirical data from the previous studies and reports.

The overall trend denotes that these studies dominantly acknowledged early literacy development as a process which is nested within the influence of multiple aspects in the development setting (e.g., parents' demographics, home characteristics, parental involvement, teacher factors, resources, classroom environment, community etc.). Nevertheless, the analysis of the individual facets and sub-facets (see Table 2) indicate preference towards mono-disciplinary approach in the empirical research, with a very minimal intersecting facets and sub-facets. Only six studies measured children's early English literacy as an interplay of multiple factors. Looking at this from the socio-cultural perspective, despite the advantage of focussed research, mono-disciplinary approach may be argued as narrow-scoped and provide simplified representation of the phenomenon. Alternatively, researching the phenomenon as an interplay of conjoint facets (e.g., within-child factor, classroom factor, and home factor) would give the advantage of capturing a more comprehensive inquisition as explicated by the theory.

Further, it appeared protruding that the majority of the identified empirical literature in this review adopted a strongly quantitative orientation. The deductive methods which were guided by larger theoretical constructs were employed using a single-level of analysis. A few studies (e.g., Marsh, et al., 2012; Downer, et al., 2015) have indicated that one of the most prevalent trends in the research on children's learning associated with situational context is the shift from single-level analysis to multilevel or nested analysis.

The multilevel techniques allows simultaneous analysis for the nested phenomenon of children's early literacy learning which involves hierarchical development structure, such as class level context (teachers, peers, classroom literacy characteristics) and individual or lower-level (children and parents) influences, as well as their interactions (De Pauw et al., 2019). To date, no review has been undertaken to examine whether any variations are observed at the single versus group or nested level assessment of development predictors. However, in the educational and psychological research, a number of multilevel studies have shown that children's literacy development is strongly associated with a number of contextual factors such as socioeconomic status (e.g., Hemmerchts et al., 2017) and parental involvement (e.g., Ma et

al., 2016). Hence, this review argues the need to further explore the nested properties of the phenomena.

THEME 2: CONSISTENT FRAMING OF ENGLISH EARLY LITERACY THEORETICAL CONSTRUCT IN ELL CHILDREN

The second main trend found noted in the corpus of examined studies is the outcomes measured of ELL children's early English literacy. It is important to first determine the degree to which there is consistency in how the studies measured "early English literacy" and whether the outcomes measured are mapped on the existing early literacy models.

The literature on non-native language reading acquisition and developmental literacy has not completely discussed early literacy in the context of early childhood ESL classrooms (Chan & Sylva, 2015). In a study on language-minority children, the National Literacy Panel on Language-Minority Children and Youth study states that no definitive initial abilities will forecast later literacy growth (August & Shanahan, 2006). While findings were largely consistent with English-speaking children, it is apparent that ELL children are affected by a range of intervening stimuli unique to their L1 proficiency.

The current review revealed that there is consistency in the framing of early English literacy in the context of ELL children. 71% of the studies reviewed framed early English literacy according to the two-domain emergent literacy model proposed by (Whitehurst & Lonigan, 1998). This model put forward two distinct domains: inside-out skills (code-related domain - e.g., phonological awareness, letter naming etc.), and outside-in skills (language domain - e.g., vocabulary knowledge, conceptual knowledge etc.).

Whitehurst and Lonigan's emergent literacy model points to early literacy as a componential domain, and can be measured at pre-kindergarten (Whitehurst & Lonigan, 1998). The code-related domain includes print conventions, beginning styles of writing, knowledge of graphemes, grapheme-phoneme correspondences, and phonological understanding, while oral language skills include semantic, syntactic, and conceptual knowledge as well as narrative discourse (Storch and Whitehurst, 2002). This domain describes children's knowledge of the rules involving recognizing sounds and letter or words (for example, turning written words into sounds and sounds to written word), while oral language domain demonstrates is associated to semantic abilities and knowledge that promote comprehension (such as vocabulary knowledge and conceptual knowledge).

Despite being originally developed based on L1 early literacy development, the seminal work by Whitehurst and Lonigan (1998) on the two-domain model has been used substantially to frame many ELL studies (see Table 2). It has been used in a number of scholarly journals ascribed to its strong methodological strength which has simpler two-domain structure of interdependent skills: code-related skills and oral language skills (Chan & Sylva, 2015; Storch & Whitehurst, 2002). Essentially, the model is aligned with the idea of bilingual growth based on the work of leading theorist of bilingualism, Bialystok (2007). This theory explains that children's L1 and L2 literacy are associated with three precursors: oral competence, conceptual development, and language-related cognitive awareness.

Nevertheless, ELL children often have little English-speaking experience before reading instruction starts. Hence, their English reading growth will likely to be hindered by "poor linguistic control" (Grabe, 2010; Koda, 2007). On contrary, from the neurolinguistic theory of bilingualism, Paradis (2007) argues that such a gap can be brief and quickly overcome, as these children are typically able to learn vocabulary more rapidly the second time round since they are more cognitively advanced as the process starts and with the existing L1 lexicon to rely from for insights into conceptual-lexical mappings.

Hence, to a certain degree, there is correspondence in the acquisition of early English literacy among the native and ELL children. Thus, the existing early literacy model in L1 may

be employed in the context of ELL children with deliberation, such as it has to be made known that the development of early English literacy by ELL children bring alongside additional variations.

THEME 3: MULTIPLE ECOLOGICAL FACTORS AS PIVOTAL SOURCES OF INDIVIDUAL DIFFERENCES

Overall, the corpus of examined studies in this review suggests a consistent tendency towards determining the significance of proximal and situational factors as causes of individual differences. For ELL pupils, one of the external factors is classroom instructions – both structured and informal instructions. Various teacher variables such as teacher knowledge and teacher efficacy, and instructional interventions were studied. Factors such as these, when independently tested have demonstrated statistically important correlations with child's learning performance (Goodrich et al., 2017; Thomas et al., 2020).

Nevertheless, despite the fact that all ELL children receive similar amounts of classroom input, there are also substantial individual variations in children's early literacy development (Chan & Sylva, 2015). Home effects have received greater attention as influential factors in children's early English literacy. While few ELL studies have concentrated on the influence of home and family factors, there is a rich literature which were carried out on English-native children to draw upon. It is grounded in the belief that the home is usually the environment in which children first observe language and literacy practises, and an area in which literacy opportunities are experienced engaged. Studies have consistently shown close links between parents' interactive literacy interventions and children's language development, even for children from low income families (Inoue, 2020; Sénéchal, et al., 2017; Hoff, 2013).

Apart from situational factors, increasing study explores the link between children's individual factors and their early learning experiences. It incorporates multiple within-child constructs including cognitive, behaviour, and social skills. These factors underlie children's ability to self-regulate or self-control, which is known to contribute to overall academic achievement. They are associated to children's focus and accepted conducts that help them to respond accordingly to the given instructions and remain consistent in the classroom (McClelland & Cameron, 2012).

Empirical studies found that the children's factors are sources of individual differences which go hand in hand with the learning of early literacy which requires a degree of attentiveness and self-regulation (Robson et al., 2020; McClelland, et al., 2014; Day et al., 2015). In particular, this ability – which requires exercising control over their thoughts, and feelings, and regulating behaviours appropriately – is positioned as the foundational ability intertwined children's learning potentials. These abilities are predictive of early language and vocabulary development (Puranik et al., 2019; McClelland, et al., 2019; Blair & Razza, 2007). More importantly, they have been identified as core contributors to children's general school success (Robson, et al., 2020; Welsh, Nix, Blair, Bierman, & Nelson, 2010; Blair & Razza, 2007).

On contrary, children who struggle with self-regulation appear to exhibit problem behaviours and are less emotionally confident (Montroy et al., 2014). The behaviours not only obstruct their capacity to learn, but also hinder the learning of other children, and disrupt classroom instruction (Montroy et al., 2016), which consequently affect their potential to excel in school (Blair & Diamond, 2008). For this reason, children individual factors play a significant role as sources of children's individual differences.

DISCUSSION : LIMITATIONS AND FUTURE DIRECTIONS

It is important to note that early literacy has become of interest to the research areas across disciplines (e.g., reading intervention, children development, and development psychology), and cross-culturally (e.g., western, and eastern culture). For this reason, there could be variations in the research approach and methodology. Hence, the outcomes of the studies must be assessed with deliberation in order to avoid contextual bias.

In this review, we highlight that early English literacy acquisition is a multidimensional process. Some measures investigated tend to be contextual and involves cross-disciplinary area of research. This suggests the nested essence of the phenomenon. Hence, there is a need for multi-disciplinary studies to consider the nested environment and its interconnectedness with multiple dimensions in children's early English literacy acquisition. However, a relatively limited studies examined the interactions and influences of the multiple attributes.

The extent to which the research findings are typically applicable for ELL children is uncertain at present although some findings data suggests that early first and additional language acquisition trends may be similar. It is important to note that, while parallels exist, it is not suggesting that early English literacy is a direct representation of early literacy acquisition in the native language, but the models and principles may be extended to ELL context cautiously without compromising the potential effects of bilingualism and cross-linguistic transition.

Further, since quantitative research predominates the research trend, there is a lack of emphasis on the 'why' and 'how' dimensions. It is also interesting to note that the studies reviewed were dominantly quantitative, with a handful studies employed multi-method design. One could infer that these studies are sturdily deducted from robust theoretical underpinning. However, as discussed earlier, early English literacy is a field that is yet to be fully understood and only logical conclusions based on studies in L1 children. Hence, the details of 'why' and 'how' are critical to better understand the ELL children's early English literacy phenomenon.

Another significant limitation of the study is the representation of children population in the selected studies. Despite not restricting the geographical region or specifying the native language, the studies yielded are dominantly conducted in the Western countries. Further, although rigorous searching methods were employed, time and resources only allow for electronic databases searching and manual searching. A more detailed search (e.g., 'snowballing' references, or citation tracking) may yield more comprehensive results.

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