A SYSTEMATIC REVIEW OF EARLY CHILDHOOD EDUCATION AND PRIMARY SCHOOL READINESS FOR TRANSITION THROUGH PLAY-BASED PEDAGOGIES

Bibian Kalinde, Robinson Mambwe, Noah K. Sichula, and Collins Kaluba

Author Emails:bibian.kalinde@unza.zm/robinson.mambwe@unza.zm/noah.sichula@unza.zm/collins.kaluba@unza.zm

Abstract

This systematic review is based on studies that explored school readiness and transition through play-based pedagogies in Early Childhood and Primary Education. Relevant literature involved global literature whose search was conducted by independent researchers following the keyword string, which included among others, stakeholders' roles in school readiness, transition, and play-based pedagogies. The literature search was done from May to August 2022 following the Preferred Reporting Item for Systematic Review and Meta-Analysis Protocols (PRISMA). Twenty peer-reviewed studies were identified, appraised, and included in the review. Findings from international literature showed that teachers' implementation of play-based pedagogy revealed a significant and positive relationship to all domains of children's holistic development. Learner assessment for school readiness and transitioning from pre-primary to primary through play-based pedagogies included academic, social, and personal learning during periods of play. The types of play-based assessments for school readiness identified included: (1) withdrawal assessment, (2) observational assessment, (3) embedded assessment, (4) teacher questioning/interview, (5) Photographs/videos and (6) documentation walls. While literature showed a positive connection between parental involvement and a child's readiness for school including successful transition from preprimary to primary school, there was limited evidence pointing specifically to the influence of parental involvement in play-based pedagogies for school transitioning.

Keywords: Early Childhood Education, Learner Assessment, Play-based pedagogies, School Readiness, School transition

Introduction

Early childhood education has emerged as an important feature on the global education agenda, with increasing interest by development agencies, international organisations, and governments. Early Childhood Education (ECE) both as a concept and an education practice refers to a type of education whose purpose endeavours to lay an education foundation among young children from the age of 0 to 5 years, for shaping their development (Schachter, 2015). ECE establishes the foundation of children's learning and facilitates the acquisition of skills as they develop (Elango *et al.,* 2015). In many countries, the provision of ECE takes both formal and informal learning. Formal ECE relates to school-based learning through which children receive formal education usually guided by the teacher (Mak *et al.,* 2021). From this perspective, ECE programmes are often designed specifically for children of individual age groups and provided in settings such as nursery school, day-care, preschool, and kindergarten (Burger, 2010; Perlman, *et al.,* 2017). In the informal context, ECE is part of the everyday life of the child, within the family and community contexts. The family, especially parents and caregivers, play a primary role as first teachers to facilitate and support the development of a child. This is important because research by Ellenbogen, *et al.,* (2014) shows that positive parent-child attachments are essential for providing the foundations for building coherent internal working models of the social world of a child. By this, a conducive social foundation is built, upon which the child's social development and progress is anchored. The parent-child attachment is said to happen between the ages 0 to2 years, and this attachment phase has a significant impact on a child's future education (Ramsdal *et al.,* 2015).

On a pedagogical level, a considerable number of studies have recognised 'play' as fulfilling an important role in early learning (Danniels, and Pyle, 2018). 'Play' is a developmental appropriate pedagogic practice that holds a significant place in the classroom and the life of a child. It is a child-centered pedagogy that focuses on the social, emotional, and academic development of children, their abilities, and interests through engaging in play (Taylor, and Boyer, 2020). Thus, Early Childhood Education (ECE) curricula have embraced the concept of Play-Based Learning (PBL), and a number of countries have made it a mandatory pedagogy in early years' curricula (Pyle, DeLuca and Danniels, 2017). However, not everyone holds this view, the role of play to child development has been contested, and educators and researchers do not seem to agree on the role and value of play in the classroom (Lillard, *et al.*, 2013; Danniels, and Pyle, 2018). Despite this, literature shows a growing evidence endorsing the value of play-based learning towards early learning and child development. Fundamentally, The growing evidence on the value of PBL has earned it a status of a recommended pedagogy for ECE in many curricula. But some of the concerns around it, have somewhat remained unresolved. For instance, there is lack of consensus among researchers and scholars

on the definition of play-based learning and the nuances between play and learning, and learning and play thereby, attracting different opinions and controversy, which makes it difficult for ECE practitioners to effectively translate PBL into their professional practice (Bubikova-Moani *et al.,* 2019). Another area of difference is beholden by the two perspectives on the role and potential benefits of play towards developmental learning and academic based learning. Pyle, DeLuca and Danniels (2017), indicate that developmental learning researchers validate the use of free play and a passive role of a teacher, while researchers who focus on academic learning validate teacher-directed and mutually directed play where the teacher fulfills an active role in play. In their conclusion, they indicate a need to move away from a binary stance regarding play and towards an integration of perspectives and practices, with different types of play perceived as complementary rather than incompatible.

This shift and integration presents PBL as a continuum of varying levels of free play and guided play complementing each other – an innovative and creative pedagogy to foster developmental and academic learning. Crucially, this has the potential to effectively contribute to a successful preparation of a child for transition to primary school. School readiness through PBL in this sense, becomes necessary for reaching a desired behaviour and a level of maturity for the child to develop and learn new skills (Yalçın and Dondu, 2020). Despite the absence of a standard definition of school readiness, maturity of a child is an important element of school readiness as it brings in multiple developmental domains including cognitive, affective, psycho-motor, and social (Magdalene, 2014). By this, a child is able to display basic abilities and capacity to adapt to new school environment and function successfully.

Embedded in school readiness is the determination of how transitions from one level of education to the next are managed (Petriwskyj, 2013); Tokic and Borovac, 2020). The level of readiness of the child for school is important in achieving the desired goals in education as it involves many facets: a child being ready for school, the school being ready for a child and the family and community being able to provide the support for optimal early child development (Williams *et. al.*, 2019). Against this backdrop, quality school readiness of a child is a foundational key that unlocks successful school transition outcomes where a child moves from preprimary to primary school with health adjustments to the new context of learning. Therefore, aspects of learning considered important for 'school readiness' are best nurtured through play, rather than a formal, pedagogical approach (O'Sullivan and Ring, 2018).

While research evidence shows the importance of play in early learning, some studies are reporting missing play pedagogy in many early learning classroom contexts. For example, O'Sullivan and Ring (2018) report that while play is valued as a context for learning, acquiring academic skills through formal instruction remains common in pre-school contexts in Ireland. Similarly, Nicolopoulou (2010)

and Bubikova-Moan *et al.* (2019), acknowledge that for many countries, there is an alarming disappearance of play from kindergarten and preschool practice. For, O'Sullivan, and Ring, (2018), this situation is rather caused by the education policy changes such as a need for enhanced learning outcome delivery, greater educational accountability and improved academic standards. Although this is important for quality ECE, the consequence has been evidenced in many national contexts, greater concentration on direct, teacher-led instruction in early childhood classrooms and learning contexts as opposed to play embedded learning.

Against this background, this systematic review synthesises the existing literature and knowledge on the value and role of PBL in Early Childhood Education (ECE) for school readiness and transition. While many studies have been done on play-based pedagogies and school readiness in different contexts, this systematic literature review examined peer-reviewed studies of play-based pedagogies, school readiness and transition with the intention of highlighting the school and community's role in facilitating school readiness through PBL, the influence of PBL on school readiness for children's transition from pre-primary to primary school, and learners assessment for school readiness through PBL. This translates into the following research questions that guided the systematic review:

1. What are the school's and community's roles in facilitating school readiness through play-based pedagogies?
2. How do play-based pedagogies influence school readiness of children in transitioning from pre-primary to primary school?
3. How are learners assessed for school readiness through play-based pedagogies in transitioning from pre-primary to primary school?

Methodology

This systematic review involved collecting data and synthesising it for the purpose of generating meaning from the evidence as guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA, Moher et.al, 2015). The following methodical steps were adopted in conducting the systematic review: (1) identifying relevant studies and ECE documents (inclusion and exclusion criteria); (2) selecting studies; (3) charting the data; and (4) collating, summarising, and reporting the results. The succinct overview of each step that was followed in this review is shown below:

Identifying relevant studies

This step involved establishing the eligibility criteria. For inclusion and exclusion, the researchers adopted a similar procedure by Amukune, *et al. (*2022) by setting the inclusion and exclusion criteria as follows:

Inclusion Criteria

For the identified study to be included, it needed to be peer-reviewed research that assessed school transition and readiness through play-based pedagogies in children aged 3 to 6 years, be available in full-text, and be written in English. In addition, a study needed to be published in 2012 and onwards for the purposes of recency and relevance.

Exclusion Criteria

The following exclusion criteria was adopted:
1. Out of scope: journal articles earlier than 2012 were excluded.
2. Unsupported language: journal articles in languages other than English.
3. Duplicated: journal article already included from another database.
5. Off topic: assessments of ages other than children of the age range 3 to 6 years. Studies that were not peer reviewed were excluded.

Search Strategy

The databases that were searched included GOOGLE Scholar, ERIC, and SCINAPSE. Search strategies and key terms were guided by the research team, and language was restricted to English and studies involving children in Pre-primary. The researchers performed a Boolean search; using the following key searching words: "curriculum framework on school readiness and play-based pedagogies in early childhood education", "community role in school readiness" or "School roles in school readiness" and "parent role in school readiness" "community role in play-based" or "School roles in play-based", "play-based pedagogies" or "play based pedagogies and school transition" or "play-based pedagogies and school readiness" and "play-based" or "game-based", "play-based pedagogies and school readiness", "play-based pedagogies and school transition", "assessment for school readiness", "assessment of school readiness", "assessment through play", "Assessment in Play-Based Learning".

Selection of Studies and Articles

After identifying potential journal articles from Google Scholar, ERIC, SCINAPSE and UNZA Repository databases, journal articles were first excluded by assessing titles and abstracts for duplicates and then applying the inclusion criteria. Secondly, the remaining full-text articles were then read to ensure that they met the inclusion criteria. Thereafter, articles were then assessed for quality.

Quality Appraisal

An analysis of study quality for each study was conducted using the Joanna Briggs Institute critical appraisal tools (Joanna Briggs Institute, 2018). The tools were designed to assess the rigour of research designs. Each study that was included was read a second time with the aim of evaluating quality using a critical appraisal

tool consistent with the reported study design. To assess quality of each study, the researcher looked at the overall coherence between research aims, methods applied and the reported findings. Specifically, quality was appraised for inclusion and exclusion criteria. Based on the appraisal, it was determined that all the 20 studies were of sufficient quality to be included in this analysis.

Charting the Data and Extraction

Data extraction included the following broad categories: author, study title, study aims/objectives, theoretical models, research methods, study setting, sample characteristics, sampling methods, measurement tools used, play-based pedagogies assessed in each study, results of analysis, study limitations, and publication information. Each of these items were recorded in a table to help in later analysis. Categories of data that were missing were noted in the table.

Analysis Process

After extraction of data to a table, each category was analysed across studies looking for patterns. Play-based assessment strategies were identified as significant in children's readiness for transitioning from pre-primary to primary school. In addition, gaps in the findings were noted as presented in the following section.

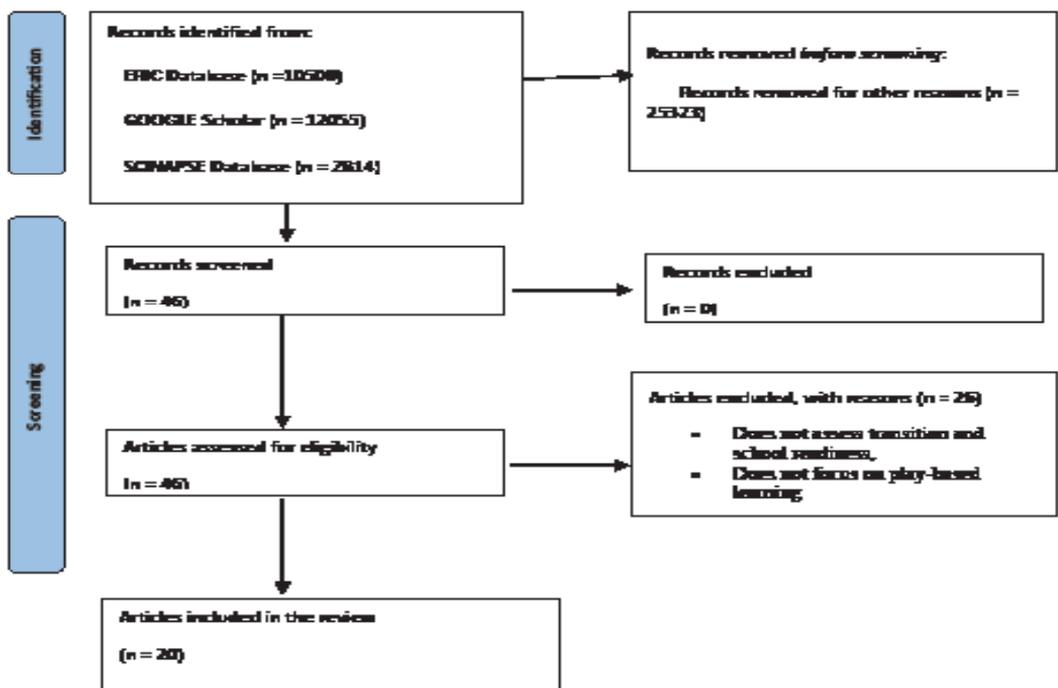**Figure 1 shows the detailed article selection process.**

Figure 1. PRISMA Flow Diagram

Table 1. Selected journal articles and sources (studies that met the inclusion criteria)

Item no	Search Engine	Study	Country study conducted	Journal source
01	ERIC	Kangas, Jonna; Harju-Luukkainen, Heidi; Brotherus, Annu; Gearon, Liam Francis; Kuusisto, Arniika (2020). Outlining play and playful learning in Finland and Brazil: A content analysis of early childhood education policy documents. *Contemporary Issues in Early Childhood,* (), 146394912096610–. doi:10.1177/1463949120966104	Finland and Brazil	Contemporary Issues in Early Childhood
02	ERIC	Munnik, E. and Smith, M., 2019, 'Contextualising school readiness in South Africa: Stakeholders' perspectives', *South African Journal of Childhood Education* 9(1), a680. https://doi.org/10.4102/sajce. v9i1.680	South Africa	South African Journal of Childhood Education
03	ERIC	Öngören Sema (2021). The Role of Parents in Children's School Readiness, *Educational Policy Analysis and Strategic Research*, V16, N3, 2021	Turkey	Educational Policy Analysis and Strategic Research
04	ERIC	Hatcher, B, Nuner, J. and Paulsel, J (2012). Kindergarten Readiness and Preschools: Teachers' and Parents' Beliefs Within and Across Programs	USA	
05	ERIC	Mungai David N. (2015). Relative Contribution of Different Levels of Parental Involvement to Primary School Readiness in Preschool Pupils in Nairobi County. *Journal of Education and Practice*, Vol.6, No.29, 2015	Kenya	Journal of Education and Practice

06	ERIC	Somolanji Tokic, Tijana Borovac (2020). Children's symbolic play during the transition to school. *International Journal of Early Years Education*, 28(3), 232–245. doi:10.1080/09669760.2020.1814210	Croatia	International Journal of Early Years Education
07	ERIC	Dannesboe, Karen Ida (2020). Academics as play and the social as discipline: school readiness in Denmark. International Journal of Early Years Education, 28(3), 246–261. doi:10.1080/09669760.2020.1806044	Denmark	International Journal of Early Years Education
08	ERIC	Youmans, Alexandra S.; Kirby, John R.; Freeman, John G. (2018). How effectively does the full-day, play-based kindergarten programme in Ontario promote self-regulation, literacy, and numeracy? Early Child Development and Care,188 (12), 1–13. doi:10.1080/03004430.2017.1287177	Canada	Early Child Development and Care
09	ERIC	Charara, Jeanane; Miller, Emily Adah; Krajcik, Joseph (2021). Knowledge in Use: Designing for Play in Kindergarten Science Contexts. Journal of Leadership, Equity, and Research.	USA	Journal of Leadership, Equity, and Research
10	ERIC	Zamzow, Jenna; Ernst, Julie (2020). Supporting School Readiness Naturally: Exploring Executive Function Growth in Nature Preschools.	USA	International Journal of Early Childhood Environmental Education

11	ERIC	Becker, Derek. R., Grist, Cathy L., Caudle, Lori A., and Watson, Myra K. (2018). Complex physical activity, outdoor play, and school readiness among preschoolers. Global Education Review, 5 (2), 110-122.	USA	Global Education Review
12	ERIC	Keung, Chrysa Pui Chi; Cheung, Alan Chi Keung (2019). Towards Holistic Supporting of Play-Based Learning Implementation in Kindergartens: A Mixed Method Study. Early Childhood Education Journal, 47(5), 627–640. doi:10.1007/s10643-019-00956-2	China	Early Childhood Education Journal
13	ERIC	Burgess, Eva and Ernst, Julie (2020). Beyond Traditional School Readiness: How Nature Preschools Help Prepare Children for Academic Success.	USA	International Journal of Early Childhood Environmental Education
14	GOOGLE Scholar	DeLuca *et al.,* (2020). New Directions for Kindergarten Education: Embedding Assessment in Play-Based Learning	Canada	The elementary school journal
15	GOOGLE Scholar	Amukune, S., Caplovitz Barrett, K., and Józsa, K. (2022). Game-Based Assessment of School Readiness Domains of 3-8-year-old-children: A Scoping Review	N/A	Journal of New Approaches in Educational Research
16	GOOGLE	Lumaurridlo, Retnawati and Kistoro (2021). School readiness assessment: Study of early childhood educator experience	Indonesia	Ilkogretim Online - Elementary Education Online

17	GOOGLE Scholar	Chairilsyah and Kurnia (2018). Teacher Assessment to School Readiness on the 5–6-Year-Old Children in State Kindergarten in Pekanbaru (Motoric Physical, Social Emotional, Moral, Language, and Cognitive Aspect)	Indonesia	Journal of Educational Sciences
18	GOOGLE Scholar	Lyncha and Anita Soni (2021). Widening the focus of school readiness for children with disabilities in Malawi: a critical review of the literature	Malawi	International Journal of Inclusive Education
19	GOOGLE Scholar	Pyle and DeLuca (2017). Assessment in Play-Based Kindergarten Classrooms: An Empirical Study of Teacher Practice	Canada	The Journal of Educational Research
20	ERIC	Pyle, Angela; DeLuca, Christopher; Danniels, Erica; Wickstrom, Hanna (2020). A Model for Assessment in Play-Based Kindergarten Education. American Educational Research Journal, (), 000283122090880–. doi:10.3102/0002831220908800	Canada	American Educational Research Journal

Results

This section describes the findings based on a number of perspectives. First, it provides the characteristics of the studies identified from the literature. Mainly in terms of the continent and country were the studies were conducted. Thereafter, it delves into the substantive details of the review using themes and sub-themes of the corresponding research questions.

General characteristics of the included studies

Following the inclusion and exclusion criteria, the review comprised twenty articles retrieved from three electronic databases. ERIC (n =11), GOOGLE Scholar (n =6) and SCINAPSE (n=3), as shown in Figure 2 below. From a continent and country perspective, four continents and twelve countries were represented. Africa (n=3) comprising South Africa (n=1), Kenya (n=1), and Malawi (n=1); and Asia (n=3) included China (1) and Indonesia (n=2). North America (n=9) included USA (n=5) and Canada (n=4); Europe (n=4) comprising Turkey (n=1), Denmark (n=1), Croatia (n=1) and Finland and Brazil (n=1)
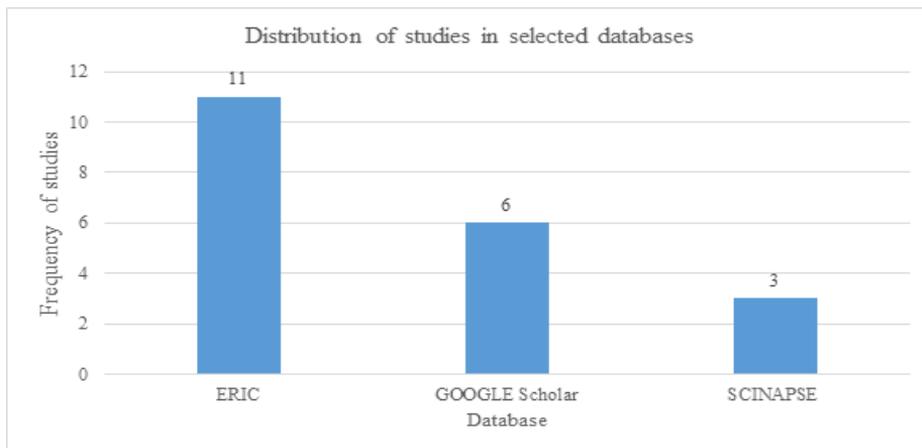
Studies in selected databases

Figure 2. Studies in selected databases

Consistent with the framework set out by Arksey and O'Malley (2005), the goal of presenting the results was not to assess the quality of the presented evidence but to present a thematic construction of the existing literature.

The role of the school and community in facilitating school readiness

In early childhood education, school readiness can be seen as a four dimensional concept that characterises aspects of readiness centred around teaching and learning towards child development, at family, child, community, and institutional levels (Nakajima, *et al.,* 2019). School readiness at the level of the family would involve parenting style and the support of all family members towards the positive

development of the child. Child level would include development of the domains for best academic performance. Community Level it would entail but not limited to provision of support for the optimal development of the child. While at school level, the creation of a supportive learning environment for child development of multiple domains (Kokkalia, *et al.,* 2019); Sema, (2021). This theme relates to our question on the role of the school and community in facilitating school readiness through PBL. The findings are presented in two sub-themes and categories: (1) the role of the school, and includes two categories; school administrators, and teachers in facilitating school readiness through PBL, (2) the role of the community and includes categories; role of parents/caregivers in facilitating school readiness through play-based, and community members. Out of the twenty articles retrieved, four examined schools and parents' roles in facilitating school readiness of children through play-based pedagogies.

The role of the school

In this review, the researchers the role of the school in facilitating school readiness at two levels: administrative and academic levels. Administrative level involves the provision of policies and practices that guide the provision of an environment that support PBL as a creative pedagogy for preparing children for primary school. On policy and PBL guidelines, many studies attest to their existence, though implementation remains a challenge (Bubikova-Moan *et al.* 2019; O'Sullivan and Ring, 2018; Lungu and Matafwali, 2020). On the academic front, teachers, and their pedagogic practices play an important role because the function of teaching in pre-primary schools more importantly relates to facilitating the acquisition of developmental and academic skills of learners through play. These incorporate cognitive, physical, emotional, and social skills, and literacy and numeracy skills (Hatcher, Nuner, and Paulsel, 2012). Different types of 'play' have been attributed to aiding school readiness (Vorkapić and Katić, 2020). However, Bredekamp (2004) argued in favour of sociodramatic play as the most effective in developing school readiness abilities in a child. The literature shows insufficient evidence to support this claim. The evidence on sociodramatic play relates to different aspects of school readiness such as social abilities (friendliness), cognitive abilities (problem solving) and other skills that may help a child to succeed later in life (Willis and Dinehart, 2014; Ursache, Blair, and Raver, 2012).

It is also noted that the quality of the relationship between teachers and children,and how teachers take up their role to facilitate school readiness is central (Munnik and Smith, 2019). In this context teachers are observers, managers, and co-players (Bredekamp, 2005), who during child directed play (Danniels, and Pyle, 2018) observe carefully to determine whether, when, how and with whom to intervene (Bredekamp, 2005: 20). These roles are synonymous to child-directed play - in which the role of the teacher is basically to observe the free play, and teacher-directed - involving managing, and co-playing. In some settings, the role

of teachers in shaping their influence on supporting PBL for school readiness has been associated with teacher beliefs. Hatcher, *et al.*. (2012), found that teacher's belief about their teaching programmes and use of play pedagogy as preparation of children for school, was linked to social and emotional development, and the attainment of literacy skills. Additionally, their beliefs about school readiness and the role of preschools in facilitating readiness was found to generally support play in the preschool curriculum. However, it is important to highlight that these findings are limited to the settings of the study conducted.

Role of Parents in Facilitating School Readiness through Play-Based Learning

The literature shows limited evidence of parental involvement in play based learning for school readiness. Confined to Head rather the parental role seems to be start role, provision of a learning environment, and support – emotional, social, and material. Nonetheless, the available evidence on parent-child relationship shows that increase in the parents understanding of play and ability to facilitate a child's learning, predicted positive school readiness outcomes which included increased independence and creativity as well as curiosity (Parker *et al.,* 1999). This resonates with a common thinking in education that collective effort by education experts and parents is essential in supporting learners in their learning efforts and the success of education provision in any context. To this effect, parents who are aware and knowledgeable of the value of play for creating a positive beginning of the educational course of a child, are more likely to be involved in facilitating school readiness for their children (Magdalena, 2014). And parental involvement during the first school years of a child has been linked to significant adaptability, and positive school achievement Henderson, and Berla, 1994).

Four studies examined parents' roles in facilitating school readiness of children (Hatcher, Nuner and Paulsel, 2012); Mungai, 2015; Munnik and Smith, 2019; Sema, 2021). Munnik and Smith (2019), found that familial factors such as parental support and caregiving, exert influence on school readiness. Parents were identified as role models – inspiring positive emotional and social skills for adaptability. Besides this evidence, Hatcher, Nuner and Paulsel (2012) show that parents identified the primary purpose of preschool as that of preparing children for formal school readiness. The implication of this is that some parents might relegate this role to the school to prepare children for primary school, and choose to confine their role to providing school requisites only.

Another study that looked at parental practices for supporting children's school readiness through play, involved parental practices in social, emotional, cognitive, linguistic and self-care domains (Sema, 2021). The social domain-practices involved friend relationships, educational, family interaction, and assigning responsibilities; emotional domain-involved providing emotional support through oral communication, spending time, and doing chores together; cognitive domain-

book reading, and games; linguistic domain - conversation, book reading, and games; self-care domain – habituation, assigning responsibilities, and being a role model (Sema, 2021). Notably, there are overlaps of parental practices in the domains investigated. Though games have featured, there is still missing information from this and the literature on how play is incorporated in these parental practices. Likewise, Mungai (2015) investigated the relative contribution of different levels of parental involvement to primary school readiness in preschool pupils in Nairobi County, Kenya and found that four of the six variables of levels of parental involvement had a positive correlation to primary school readiness. His findings showed that the volunteering level of parental involvement had the highest positive contribution to primary school readiness, this was followed by parenting level, communicating level, and collaborating with the community level in that order (Mungai, 2015). This evidence equally validated the relationship between parental support and involvement to school readiness of children, and did not show the influence of play-based parental involvement to school readiness.

How play-based pedagogies influence school readiness of children in transitioning from pre-primary to primary school

Of the twenty articles retrieved that examined the use of play-based learning in preschool, nine studies investigated how play-based pedagogies influenced school readiness of children in transitioning from pre-primary to primary school. The review shows a dearth of evidence on the connection between play-based pedagogies and children transitioning from preprimary to primary schools. The emphasis has been on play-pedagogy and school readiness. Evidently, Burgess *et al.*, (2020) report on the effect of time in nature preschools (in which children learned through child centered and play-based) on the development of children in terms of two components of school readiness: (1) peer play interactions and (2) learning behaviours. Overall, their results revealed that nature preschools had a significant positive influence on all dimensions of learning behaviours and peer play behaviours in both the preschool and home settings. Their findings suggested that the use of local outdoor environment and emphasis on unstructured play in nature preschools may have a positive influence on children school readiness' and when school readiness is defined more broadly, through the lens of holistic development, with a focus on each child's readiness to learn, interact and engage in positive learning behaviour. Similarly, Becker, *et al.,* (2018) explored connections among school readiness with outdoor play and participation in complex physical activity, their findings revealed that participating in complex physical activities moderates the relationship between outdoor play with school readiness, with a positive relationship found between school readiness with time spent in outdoor play. These findings offer insights limited to how outdoor play and participation in physical complex activities promote school readiness.

PBL includes playful activities taken as central in facilitating teaching and learning (Tokic and Borovac, 2020). Symbolic play is specifically noted as a means of facilitating language and activities that make it possible to gauge children's level of social and emotional development as they interact with other children. Through 'play', school readiness for transitioning can be determined Burgess and (Ernst, 2020) through displays of social maturity and language use in the course of play. (Charara, Miller and Krajcik, 2021). From literature reviewed, the relationship between PBL and school readiness is the basis of social emotional development that is developed through 'play'.

Pui Chi and Keung (2019), established that teachers' enactment of play pedagogy was significant and positively related to all four domains of children' development (i.e., physical, cognitive and language, affective and social, and aesthetic developments). The teachers' enactment of play pedagogy exerted the strongest direct effect on aesthetic development (Pui Chi and Keung, 2019). One ethnographic fieldwork study at three kindergartens in Denmark by Kjar, Bach and Ida, (2020) conceptualised school readiness with regards to how children handled themselves in social contexts. The researchers observed that achievement of social development was done in self-organised play among children. School readiness was seen in how one handled themselves in the social context as a pre-requisite for academic purposes (Kjar, Bach and Ida, 2020). Zamzow, and Ernst (2020), used nature preschoolers to explore the growth of executive function skills as a critical component of school readiness in six preschools that shared a child-centered, play-based approach towards supporting holistic development across the domains. The results revealed a significant growth of executive function skills among the learners in the nature preschools across the school year.

Assessment of learners for school readiness through play-based pedagogies in transitioning from pre-primary to primary school

This theme was divided into two segments, the first part discussed the school readiness domains assessed through play-based assessment and the second part looked at the types of play-based assessments.

School readiness assessment through play

Play-based assessment has proven to be successful in obtaining information about the child's strengths and areas of need which may directly aid the development of intervention strategies and program development (Dennis, Rueter, and Simpson, 2013). According to Dykeman (2008), cited in the works of Dennis, Rueter and Simpson (2013), play-based assessment is a developmental process that involves observing how a child plays alone, with other children, and with caregivers in free or structured play. This type of assessment uses play as a medium through which social and cognitive delays can be identified Garfinkle, (2004). This technique

allows for more authentic results when assessing young children for readiness to transition from ECE to primary school.

One of the focus of ECE in assessment is assessing the child's developmental areas such as general cognitive development, numeracy skills, literacy skills, motor skills, social-emotional skills, self-regulation abilities and adaptive skills. By observing learners at play, trained caregivers (ECE teachers) can evaluate social skills, cognitive and language skills, motor skills, and emergent academic skills (Mindes, 2011). For a child to be ready to transition from ECE to primary, they need to be ready in all these domains (Cognitive, motor, social emotional, and emergent academic skills). These are the indicators which determine whether the child is ready to transition from ECE to primary school. Assessment here entails finding out if the child is ready in all the developmental learning areas, which are assessed through the various play-based assessment practices.

Based on the empirical studies, this systematic review identified the school readiness domains assessed for transitioning from pre-primary to primary education. Cognitive development was assessed in five studies and included cognitive competency which involves the child's ability to use their intellect to process information. This domain is divided into two: subject-specific and general cognitive skills. The subject-specific cognitive domain is usually supported by teaching and learning through a particular curriculum (Amukune, 2022), while the general cognitive skills are not necessarily taught in a classroom situation, but they are essential in problem-solving (Suleiman *et al.,* 2016). The subject-specific cognitive skills featured in the studies were science (n=2), reading (n=1), letter and number recognition (n = 2), counting (n=1), English (n =1). The general cognitive skills assessed included planning (=1), decision-making (n=1), problem solving (n=3), and children's understanding and processing the concept of the cycle of seasons (1).

Social and emotional development was also assessed in five studies as shown in Figure 3. This involves children's experiences and understandings of basic and self-conscious emotions, as well as children's social skills, including cooperation, caring, helping, and empathy, which are all important for participating effectively in classroom activities. Physical well-being and motor development featured in five studies that assessed both fine motor and gross motor skills. Amukune *et al.,* (2022) emphasised the importance of this domain in early childhood because it facilitates children's writing and manipulative play (such as constructing puzzles) during teaching and learning. Four studies assessed literacy and language development. Other school readiness domains assessed in the empirical studies were emergent academic skills (n=2), moral and religious values (n=2). School readiness domains that appeared in one study included executive function, art and expression, and food and nutrition.

Assessment through School Readiness Domains

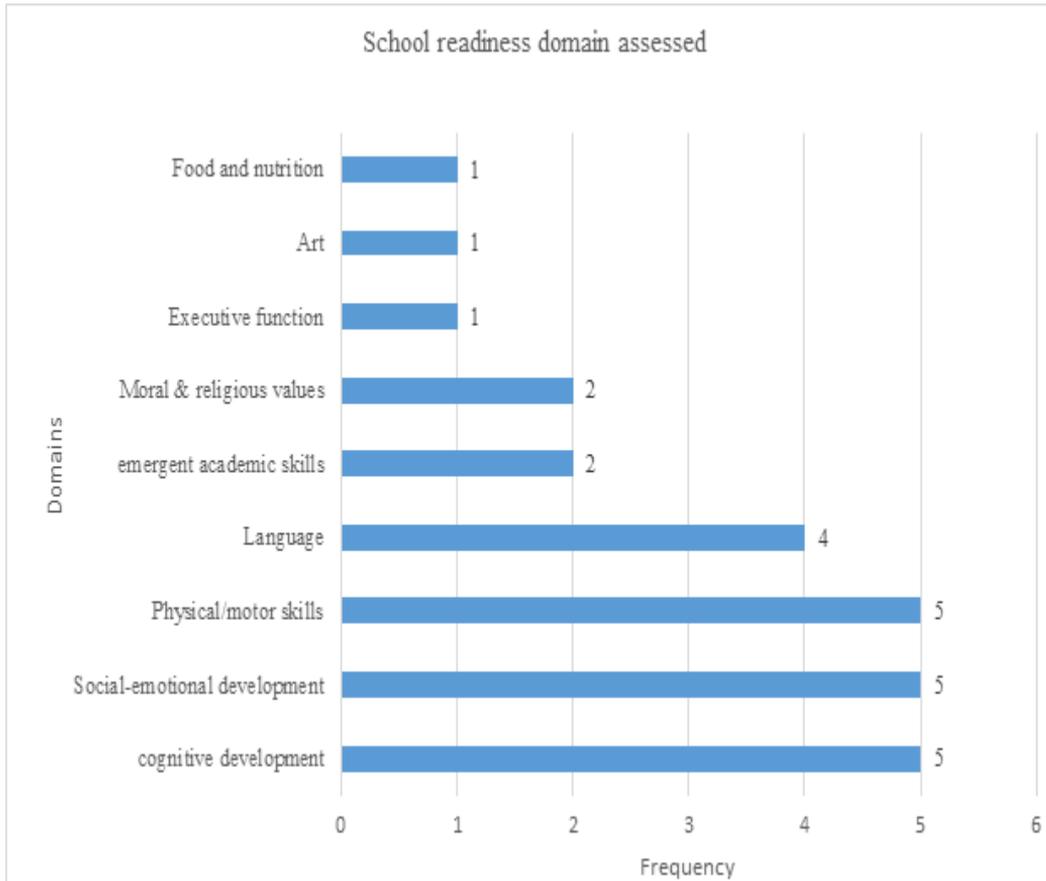There are several domains upon which assessment can be based as shown in the figure below:

Figure below content: bar chart titled "School readiness domain assessed" with axis "Domains" and "Frequency":

- Food and nutrition: 1
- Art: 1
- Executive function: 1
- Moral & religious values: 2
- emergent academic skills: 2
- Language: 4
- Physical/motor skills: 5
- Social-emotional development: 5
- cognitive development: 5

Figure 3. School readiness domains assessed for readiness to transition from pre-primary to primary.

Types of Play-Based Assessment

The assessment of school readiness domains as contained in the studies discussed above was conducted using various play-based assessment practices. From literature review, six types of assessments that were enacted within different types of play and were typically used to assess different developmental achievements and learning goals. These included: (1) withdrawal assessment, (2) observational assessment, (3) embedded assessment, (4) teacher questioning/interview, (5) Photographs/videos and (6) documentation walls. The findings showed that teachers conducted assessment of both academic as well as social and personal learning during periods

of play (Pyle *et al.,* 2020). The types of play-based assessments are discussed as follows:

Withdrawal Assessment

This assessment is teacher-directed and featured in two studies (Pyle and DeLuca, 2017; Pyle *et al.,* 2020) and was found to be mainly used to assess academic learning during free play. Withdrawing learners from periods of play was used to ensure that children learnt the essential academic skills (i.e., reading, writing, and numeracy). During withdrawal times, teachers usually conduct small group instruction and assess learners using more formal methods such as running records of reading, word knowledge, phonological and phonemic awareness assessments (Pyle and DeLuca, 2017; Pyle *et al.,* 2020).

Observational Assessment

Observational assessment involves the least teacher direction featured in three studies (Pyle and DeLuca, 2017; Chairilsyah and Kurnia (2018); Pyle *et al.,* 2020). This type of assessment was found to be predominantly used in assessing developmental learning within free play Pyle *et al.,* (2020). In observational assessment, teachers collect information while watching and listening in a passive manner as the children play, typically assessing facets of developmental learning. To facilitate observational assessment, the teachers used a range of assessment strategies, including anecdotal notes, photos, and teacher-created checklists (Pyle and DeLuca, 2017; Pyle *et al.,* 2020).

Embedded Assessment

Embedded assessment was featured in three studies Pyle and DeLuca, (2017); Pyle *et al.,* (2020); Amukune *et al.,* (2022) and was found to be used to assess both developmental and academic learning during play. In embedded assessment, the assessment event is directed by both the teacher and the learner, and it occurs while the child is engaged in play (Pyle *et al.,* 2020). The teacher becomes actively involved in the play to collect assessment data that relates to a learning goal (i.e., developmental, academic, or even both). This may include facilitating a play activity while recording assessment data, asking targeted questions during play to reveal learners' knowledge, and/or presenting learners with assessment data (such as photos or videos) collected during play to evoke their thinking. Assessment data is normally collected in the form of anecdotal notes or pictures, or through iPad applications. One study Pyle *et al.,* (2020) found that teachers utilised an iPad application to collect photo-quote-observation, which included a picture of the student engaged in the activity, a transcription of the student's verbal response, and the teacher's own anecdotal observations. The primary method of assessment for personal and social skills was the recording of anecdotal data based on teacher observations (Pyle and DeLuca, 2017). The data collected on the developmental

achievement is useful to the teacher in determining the school readiness of the child to transition from kindergarten/preschool to primary school.

Teacher Questioning/Interview

The other type of assessment for school readiness in play-based pedagogy which featured in two studies is teacher questioning/interview (Pyle and DeLuca, 2017). It was reported in one of the studies that teachers do recognise the importance of asking students questions during play periods to assess their learning (Pyle and DeLuca, 2017). Dialogue and playing alongside students were viewed as methods for integrating assessment and play. In addition, teachers also used documentation walls to assess school readiness in play-based learning. The primary method of assessment for personal and social skills was the recording of anecdotal data based on teacher observations. Teachers also photographed the students who were engaged in a playful learning activity (Pyle and DeLuca, 2017).

Play Based Pedagogies Influence on school readiness and transition

Nine studies investigated how play-based pedagogies influence school readiness of children in transitioning from pre-primary to primary school. Literature shows that pre-primary teachers and parents were found to play a significant role in ensuring that children transition smoothly from pre-primary to primary school (Hatcher, Nuner and Paulsel, 2012). Acquisition of social skills was done in self-organised play among children, whereas cultivating the academic skills was found in subcategories of numbers, letters, themes, projects, dialogical reading, and forms of language stimulation (Kjar, Bach, and Dannesboe, 2020). Overall, the role of the school is to provide an academic environment which can stimulate children's developmental areas through play and learning. In the literature, teachers were described as partners that support children to acquire the essential building blocks for academic, emotional, and social skills. Teachers play a supportive and corrective role (Munnik and Smith, 2019), and emphasised the importance of children's play experiences in pre-primary (Hatcher, Nuner and Paulsel, 2012). It was identified in the literature that parental support and involvement is crucial for ensuring school readiness of children. Parents performed various practices in the social, emotional, cognitive, linguistic and self-care domains to support children's school readiness (Sema, 2021).

Petriwskyj (2013), considers school transition as determined by three components: a) Preparation that includes developing a ready school; b) Continuity between play based and outcome based programmes means enacting gradual change that respects the rules, curricular focus and pedagogies of both programmes and c) Adults collaboration and relationship building amongst children that offer support and encouragement to children and families partnerships that extends beyond early years teachers to include families, communities, and other staff require consideration.

Implications

The implications of this systematic review relate to teacher practice, policy, and future research. With regards to practice, ECE teachers are required to be adequately prepared to implement and understand play as beneficial for development of children in all areas including cognitive development, social and emotional development, language development, physical development, and emergent academic development, among others. Previous studies have shown that many teachers struggle to integrate the concepts of play and learning, as well as endorsing play as an important component in the teaching and learning of young children in ECE (Baker, 2014). By highlighting the literature on school readiness transition from early childhood education to primary through play-based pedagogies, teachers can be shown how play is related to developmental and academic learning, while emphasising the significance of integrating several types of play that involve a variety of activities and teacher roles. This review emphasises that educators should move towards the integration of developmental and academic perspectives in the same environment.

The implementation of 'play' in early childhood education is in part informed by policy. In future, there will be need to consider forming policies that are more sensitive to various approaches to play and complement both developmental and academic functions. In order to engage in beneficial play-based learning activities, different approaches to play requires investment of time, physical space, human resource, and materials. Therefore, there is need for new policies to take into account these factors alongside research findings that support the use of play-based learning in ECE.

By examining the majority of research on early childhood education published on this topic since the year 2012, it was revealed that there is need for more studies with a focus on examining the implementation of play-based learning in preschool and how play-based pedagogies influence school readiness for transition from pre-primary to primary school. Future studies focusing on addressing the integration of the developmental and the academic perspectives are required to support teachers in implementing a balanced approach to play-based learning. Children can be supported across all areas of development and transition smoothly from preschool to primary schools.

Limitations of evidence

Although this systematic review examined relevant peer-reviewed articles on the topic of play-based learning in early childhood education, it was restricted to articles in education-focused journals that were published since 2012 to date. Hence, some relevant articles published in other contexts and earlier than 2012 were not retrieved and included in the current review. For example, only one study was retrieved on the topic of play-based learning and ECE curriculum. This may be due to lack of articles published on this aspect in early education journals.

Although this systematic review cannot be considered as an exhaustive retrieval of all potentially relevant publications, it includes a relatively large number of retrieved articles (20) and provides an in-depth summary of much of the relevant research on the topic.

Conclusion

The most important role of the school in facilitating school readiness through PBL, rests on two major functions - administrative and academic. The administrative role is crucial for ensuring policies and practices for the creation of an ideal environment for supporting PBL in school. Fundamentally, the academic function is essential for the actual inculcation of values and development of skills for early learning and subsequent transition to primary school. Besides the school, the involvement of the community in particular the parents is cardinal. While literature shows a positive connection between parental involvement and a child's readiness for school, including successful transition from preprimary to primary school, there is limited evidence pointing specifically to the influence of parental involvement in play-based pedagogies for school transitioning. It is also clear that the notion of school readiness remains contested. It varies based on who is using it and for whatever purpose and the context. SR has no universal definition and standard guide for determination, as such various domains, methods and play-based assessment practices are used. The dominant domains include the cognitive, physical, social, and moral. Play pedagogies are also found to be an important aspect in achieving school readiness. However, there is limited evidence to clearly link the influence of play pedagogies to school transition of children from pre-primary to primary school. This would suggest that school transition being influenced by school readiness. How well school-ready the child might be including other enablers, the better and successful the transition process.

Funding

References

Amukune, S., Caplovitz Barrett, K., and Józsa, K. 2022 Game-Based Assessment of School Readiness Domains of 3-8-year-old-children: A Scoping Review. *Journal of New Approaches in Educational Research, 11(1),, 11*(1), 146-167. doi:10.7821/naer.2022.1.741

Arksey, H., and Malley, L. 2005. Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology, 8*(1), 19–32. Retrieved from https://doi.org/10.1080/1364557032000119616

Baker, C. E. 2014. Mexican mothers' English proficiency and children's school

readiness: Mediation through home literacy involvement. *Early Education and Development, 25*(3), 338-355. Retrieved from https://doi.org/10.1080/10409289 .2013.807721

Becker, D. R., Grist, C. L., Caudle, L. A., and Watson, M. K. 2018. Complex physical activity, outdoor play, and school readiness among preschoolers. *Global Education Review, 5*(2), 110-122.

Bubikova-Moan, J., Næss Hjetland, H., and Wollscheid, S. 2019. ECE Teachers' views on play-

based learning: a systematic review. European Early Childhood Education Research Journal, 27(6), 776-800.

Burger, K. 2010. How does early childhood care and education affect cognitive development?

An international review of the effects of early interventions for children from different social backgrounds. *Early childhood research quarterly*, *25*(2), 140-165.

Burgess, E., and Ernst, J. 2020. Beyond Traditional School Readiness: How Nature Preschools Help Prepare Children for Academic Success. *International Journal of Early Childhood Environmental Education*, *7*(2), 17-33.

Chairilsyah, D., and Kurnia, R. 2018. Teacher Assessment to School Readiness on the 5-6 Year-Old Children in State Kindergarten in Pekanbaru (Motoric Physical, Social Emotional, Moral, Language, and Cognitive Aspect). *Journal of Educational Sciences*, *2*(2), 74-82.

Charara, J., Miller, E. A., and Krajcik, J. 2021. Knowledge in Use: Designing for Play in Kindergarten Science Contexts. *Journal of Leadership, Equity, and Research*, *7*(1), n1.

Ellenbogen, S., Klein, B., and Wekerle, C. 2014. Early childhood education as a resilience

intervention for maltreated children. *Early child development and care*, *184*(9-10), 1364-1377.

DeLuca, C., Pyle, A., Valiquette, A., and LaPointe-McEwan, D. 2020. New directions for kindergarten education: Embedding assessment in play-based learning. *The elementary school journal*, *120*(3), 455-479.

Danniels, E., and Pyle, A. 2018. Defining play-based learning. Encyclopedia on early childhood

development, 1-5.

Dennis, L. R., Rueter, J. A., and Simpson, C. G. 2013, August 25). Authentic Assessment: Establishing a Clear Foundation for Instructional Practices. *Preventing School Failure: Alternative Education for Children and Youth, 57*(4), 189-195. doi:10.1080/1045988X.2012.681715

Dykeman, B. F. 2008. Play-based neuropsychological assessment of toddlers. *Journal of Instructional Psychology, 25*, 405–408.

Elango, S., García, J. L., Heckman, J. J., and Hojman, A. 2015. Early childhood education.

In *Economics of Means-Tested Transfer Programs in the United States, Volume 2* (pp. 235-297). University of Chicago Press.

Finnish National Agency for Education. 2016. *National core curriculum for early childhood education and care. Regulations and guidelines 2017.* Helsinki: Finnish National Agency for Education.

Garfinkle, A. N. (2004). Garfinkle, A. N. 2004. In M. McLean, M. Wolery, and D. B. Bailey, *Assessing infants and preschoolers with special needs* (pp. 451-486). Upper Saddle River, NJ: Pearson.

Hatcher, B., Nuner, J., and Paulsel, J. 2012. Kindergarten Readiness and Preschools: Teachers' and Parents' Beliefs Within and Across Programs.

Henderson, A. T., and Berla, N. 1994. *A new generation of evidence: The family is critical to*

student achievement. National Committee for Citizens in Education, Washington, DC.

Joanna Briggs Institute. (2018). *The JBI Approach.* Retrieved from http://joannabriggs.org/jbi-approach.html

Kangas, J., Harju-Luukkainen, H., Brotherus, A., Gearon, L. F., and Kuusisto, A. 2020. Outlining play and playful learning in Finland and Brazil: A content analysis of early childhood education policy documents. *Contemporary Issues in Early Childhood*. doi:10.1177/1463949120966104

Keung, C. P., and Cheung, A. C. 2019. Towards Holistic Supporting of Play-Based Learning Implementation in Kindergartens: A Mixed Method Study. *Early Childhood Education Journal, 47*(5), 627–640. doi:10.1007/s10643-019-00956-2

KjÃ¦r, B., Bach, D., and Dannesboe, K. I. 2020. Academics as play and the social as discipline: school readiness in Denmark. *International Journal of Early Years Education, 28*(3), 246–261. doi:10.1080/09669760.2020.1806044

Kokkalia, G., Drigas, A. S., Economou, A., and Roussos, P. 2019. School readiness from

kindergarten to primary school. International Journal of Emerging Technologies in Learning (Online), 14(11), 4.

Lillard, A. S., Lerner, M. D., Hopkins, E. J., Dore, R. A., Smith, E. D., and Palmquist, C. M.

2013. The impact of pretend play on children's development: a review of the evidence. Psychological bulletin, 139(1), 1.

Lungu, S., and Matafwali, B. 2020. Play based learning in early childhood education (ECE) centres in Zambia: A teacher perspective. *European Journal of Education Studies*, 7(12).

Lumaurridlo, R., and Kistoro. 2021. School readiness assessment: Study of early childhood educator experience. *Ilkogretim Online*, Elementary Education Online.

Lyncha, and Anita, S. 2021Widening the focus of school readiness for children with disabilities in Malawi: a critical review of the literature. *International Journal of Inclusive Education*.

Mak, T. C., Chan, D. K., and Capio, C. M. 2021. Strategies for teachers to promote physical

activity in early childhood education settings—A scoping review. *International journal of environmental research and public health*, *18*(3), 867

Magdalena, S. M. 2014. The effects of parental influences and school readiness of the child.

Procedia-Social and Behavioural Sciences, 127, 733-737.

Mindes, G. 2011. *Assessing young children.* Upper Saddle River, NJ: Pearson Education.

Mungai, D. N. 2015. Relative Contribution of Different Levels of Parental Involvement to Primary School Readiness in Preschool Pupils in Nairobi County. *Journal of Education and Practice, 6*(29).

Munnik, E., and Smith, M. 2019. Contextualising school readiness in South Africa: Stakeholders' perspectives. *South African Journal of Childhood Education, 9*(1). Retrieved from https://doi.org/ 10.4102/sajce. v9i1.680

Nakajima, N., Hasan, A., Jung, H., Brinkman, S., Pradhan, M., and Kinnell, A. 2019. Investing

in school readiness: A comparison of different early childhood education pathways in rural Indonesia. *International Journal of Educational Development*, *69*, 22-38.

O'Sullivan, L., and Ring, E. 2018. Play as learning: implications for educators and parents from

findings of a national evaluation of school readiness in Ireland. International Journal of Play, 7(3), 266-289.

Parker, F. L., Boak, A. Y., Griffin, K. W., Ripple, C., and Peay, L. 1999. Parent-child

relationship, home learning environment, and school readiness. School Psychology Review, 28(3), 413-425.

Perlman, M., Fletcher, B., Falenchuk, O., Brunsek, A., McMullen, E., and Shah, P. S. 2017. Child-

staff ratios in early childhood education and care settings and child outcomes: A systematic

review and meta-analysis. *PloS one*, *12*(1), e0170256.

Pertriwsyj, A. 2013. Pedagogies on Inclusive transition to school. Retrieved at hhttps://journal.sagepub.com.

Pyle, A., and DeLuca, C. 2017. Assessment in Play-Based Kindergarten Classrooms:

An Empirical Study of Teacher Practice. *The Journal of Educational Research*.

Pyle, A., DeLuca, C., and Danniels, E. 2017. A scoping review of research on play-based

pedagogies in kindergarten education. *Review of Education*, *5*(3), 311-351.

Pyle, A., DeLuca, C., Danniels, E., and Wickstrom, H. 2020. A Model for Assessment in Play-Based Kindergarten Education. *American Educational Research Journal*, 10.3102/0002831220908800.

Ramsdal, G., Bergvik, S., and Wynn, R. 2015. Parent–child attachment, academic performance

and the process of high-school dropout: A narrative review. *Attachment and Human Development*, *17*(5), 522-545.

Schachter, R. E. 2015. An analytic study of the professional development research in early

childhood education. *Early Education and Development*, *26*(8), 1057-1085.

Sema, Ö. 2021. The Role of Parents in Children's School Readiness. *Educational Policy Analysis and Strategic Research, 16*(3).

Somolanji, T. I., and Borovac, T. 2020. Childrenâs symbolic play during the transition to school. *International Journal of Early Years Education*, 232-245. doi:10.1080/09669760.2020.1814210

Suleiman, I., Arslan, M., Alhajj, R., and Ridley, M. 2016. Te power of online genetic algorithm in stealth assessment for school readiness. *Journal of Computers In Education, 3*(2), 209–246. Retrieved from https://doi.org/10.1007/s40692-016-0054-5

Tatalović Vorkapić, S., and Katić, V. 2020. Literacy-related school readiness through play in

Croatia. *International Journal of Early Years Education*, *28*(3), 277-294.

Taylor, M. E., and Boyer, W. 2020. Play-based learning: Evidence-based research to improve

children's learning experiences in the kindergarten classroom. *Early Childhood Education Journal*, *48*(2), 127-133.

Ursache, A., Blair, C., and Raver, C. C. 2012. The promotion of self-regulation as a means of

enhancing school readiness and early achievement in children at risk for school failure. *Child development perspectives*, *6*(2), 122-128.

Williams, P. G., Lerner, M. A., Sells, J., Alderman, S. L., Hashikawa, A., Mendelsohn, A., ... and Weiss-Harrison, A. 2019. School readiness. *Pediatrics*, *144*(2).

Willis, E., and Dinehart, L. H. 2014. Contemplative practices in early childhood: implications for

self-regulation skills and school readiness. *Early child development and care*, *184*(4), 487-499.

Yalçın, B., and Dondu, N. B. 2020. Determining Children's Primary School Readiness Level. *European Journal of Educational Sciences, 7*(4).

Youmans, A. S., Kirby, J. R., and Freeman, J. G. 2017. How effectively does the full-day, play-based kindergarten programme in Ontario promote self-regulation, literacy, and numeracy? *Early Child Development and Care*, 1-13. doi:10.1080/03004430.2017.1287177

Zamzow, J., and Ernst, J. 2020. Supporting School Readiness Naturally: Exploring Executive

Function Growth in Nature Preschools. *International Journal of Early Childhood Environmental Education*, *7*(2), 6-16.