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Children's literacy skills development through non-formal education: a scoping review

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ABSTRACT

The rapid advancement of technology in recent years has brought about profound changes in every aspect of our lives. Such technological advancement has impacted children in a digital age where technology permeates every facet of their existence, from education to entertainment and communication to socialization. The younger generations today appear deficient in motor, emotional, and social abilities. They appear to exhibit higher levels of aggression, anxiety, dependency, and reduced creativity. Integrating non-formal education into children's learning aims to maximize enjoyment and engagement by capturing children's interest and inspiring them to continue learning. Thus, non-formal education encompasses a spectrum of curricular activities in the natural environment outside of the school area. This scoping review aims to identify the focus skills development among primary school learners and how non-formal educational activities could boost learners' learning ability. Four databases, including Scopus, web of science (WoS), Education Resources Information Center (ERIC), and ScienceDirect, were used in this research, which found 36 articles for eligibility. Only 15 articles are eligible for analysis and reference after the exclusion and inclusion process for data collection. The findings show that non-formal education offers learners the opportunity to explore a multitude of interests beyond the structured confines of the classroom.

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1. INTRODUCTION

In today's educational landscape, the primary focus has shifted from simply imparting information to learners by preparing them to become critical thinkers for the 21st Century [1], [2]. With the introduction of 21st-century learning principles, Malaysia has made significant developments in enhancing access to formal education, and there is now greater scrutiny on the quality of education [3]. The central challenge currently revolves around elevating the quality of education, especially in fostering the development of higher-order thinking skills among learners, as emphasized by the Ministry of Education Malaysia [4]. To tackle this pressing issue, Malaysia's pivotal educational planning blueprint, as outlined by the Ministry of

Education Malaysia, explicitly underscores the importance of involving learners in educational experiences designed to nurture higher-order thinking abilities.

Although the concept's direction appears to be partially realized, it falls short compared to current teaching trends in Malaysia. The data regarding teachers' classroom practices in Malaysia deviates from the goal of stimulating students' critical thinking despite the official emphasis on nurturing thinking skills within a highly centralized national curriculum reform initiative [5]. The practices of teachers in Malaysian classrooms appear to be at odds with the requirements of an evolving knowledge-based society [6]. Consequently, traditional education continues to prioritize children's academic achievement and relies on standardized measures of success that are still in use. Learners are evaluated based on their performance within the existing educational system as they are encouraged to acquire skills such as working independently, maintaining quiet while listening to the teacher, and taking turns participating in discussions [7].

Furthermore, the COVID-19 pandemic has disrupted the conventional education system as a precautionary measure to mitigate virus transmission [8]. Moreover, the unpredictable nature of the pandemic has had a profound impact on formal education for children, underscoring the significance of informal learning, particularly when parental involvement is necessary to support children's learning at home [9]. This is crucial to ensure that children do not experience setbacks in their development. The COVID-19 pandemic has significantly reshaped the landscape of information-based learning [10]. Nevertheless, it is essential to recognize that family-related factors and cultural capital have demonstrated a substantial influence on children's informal learning with variations depending on their cultural and economic backgrounds [11].

Therefore, there is an increased demand for non-formal education in Selangor, Malaysia to counteract the negative impacts of learning setbacks among children in the region. Furthermore, activities and immersive learning environments offer children emotional experiences and independent learning opportunities [6], [12]. Learning outside the classroom facilitates a more natural connection with the environment, aids in emotional restructuring, facilitates rapid information absorption, encourages diverse learning approaches, and provides unique learning experiences distinct from traditional classrooms [13]. Outdoor settings also present opportunities for scientific exploration, including observation, measurement, and data collection [14]. Additionally, encountering unfamiliar objects in these settings can expand vocabulary acquisition. Therefore, it is necessary to establish a scoping study on the impact of non-formal education on children's learning outside of the school environment. Integrating non-formal education with out-of-the-classroom learning maximizes enjoyment and engagement by capturing children's interest and inspiring them to continue learning.

2. METHOD

This scoping review was observed by preferred reporting items for systematic reviews (PRISMA) guidelines. The present scoping review was carried out based on Arksey and O'Malley's [15] methodological framework: i) identifying research questions, ii) identifying relevant studies, iii) selecting relevant studies, iv) charting the data, and v) collating, summarizing and reporting the results. Despite notable efforts to enhance children's engagement and enhance their learning abilities, the results have not yielded satisfactory outcomes [16]. Consequently, the research inquiry driving this scoping review, which served as the guiding principle for this study, was formulated as follows: "What empirical insights can be gleaned from the existing body of literature regarding the influence of non-formal education on children's learning?" Table 1 presents an outline the core research questions formulated in alignment with the research objectives established within the population-concept-context (PCC) framework.

Table 1. Research questions created based on PCC

Research questions	Specific objectives
1. How are past studies on non-formal education distributed?	1. To explore the temporal and geographical relationship and the setting of past studies.
2. What research design was used by past studies on non-formal education?	2. To determine the research method used in past studies.
3. What is the research aims of past studies on non-formal education?	3. To analyse the research purpose of past studies on non-formal education to improve children's learning.
4. What skills of the study were found in past studies on non-formal education in children's learning?	4. To investigate the skills that have been researched in past studies.
5. What are the findings of past studies on the impact of non-formal education on children's learning?	5. To report the results of past studies on the impact of non-formal education on children's learning.

The search strategy was designed to cover all relevant studies as widely as possible. This entailed using relevant keywords related to the impact of non-formal education on children's learning as shown in Table 2. Study inclusion criteria are provided in Table 3. Protocols for scoping reviews are not eligible for publication in PROSPERO, but findings were presented according to PRISMA guidelines [17]. Two research team members independently assessed all articles' titles and abstracts based on predefined inclusion and exclusion criteria.

Table 2. Search string

Search directory	Search string
Scopus	TITLE-ABS-KEY ('non-formal AND education') AND (child* OR kid*) AND (learn* OR educat* OR proficienc*)
WOS	TS=(('non-formal education') AND (child* OR kid*) AND (learn* OR educat* OR proficienc*))
ERIC	(non-formal education) AND (children OR kids) AND (learning OR proficiency)
ScienceDirect	

Table 3. Inclusion and exclusion criteria

Inclusion criterion	Exclusion criterion
Article published from 2018-Recent	Article published before 2018
Related to children	Not related to children
Text in the English language	Other languages
Full text available	Without full text

The research team determined the attributes of the articles to be extracted for summary and analysis after using the Microsoft Excel-based data charting form with a representative sample of the studies to be examined. The completed data charting structure was designed to retrieve the following study elements: author, year of publication, country of origin, source of the study, the purpose of the study, research design, elements of the study, and findings [16], [18]. The research team summarized and reported findings from the charting process. Then, the team organized the findings by applying codes and keywords to minimize and narrow the data down into related content. Next, the codes and keywords are revised to ensure the data collected are relevant to the study and collated into predefined categories.

3. RESULTS AND DISCUSSION

The search identified 111 articles through four selected databases: Scopus, web of science (WoS), Education Resources Information Center (ERIC), and ScienceDirect. 35 titles were extracted from the Scopus database, while 23 were determined from the WoS database. A total of 12 titles were downloaded from ERIC, and 41 titles were found in ScienceDirect databases, respectively, during the identification stage. Of the 111 articles, three duplicated titles were excluded, leaving 108 to be screened for eligibility. Further, 72 titles were excluded from the screening by title and abstract. Thus, 36 titles were assessed for eligibility by data extraction. A total of 21 titles were eliminated as they did not meet the inclusion criteria. Therefore, 15 titles were identified to be included in this review as in Table 4 [19]-[33].

3.1. Distribution of past studies

The studies that were included in this review were published between the years 2018 and 2023. In 2018, three articles [21]-[22], [26] were found in research on non-formal education. In addition, two articles were found in 2019 [20], [27] from the four databases. In 2020, four articles were identified [19], [29]-[30], [32], while there were three articles [23]-[25] was found in 2021 respectively concerning non-formal education. As for 2022, two articles [28], [31] were related to the topic of study. There was only one study [33] on non-formal education found related to the study.

Distribution by region shows that Europe chalked the highest number of studies on non-formal education with n=9. On the other hand, there were n=3 studies conducted in the South American region. There was one study found in North American and African regions, respectively. As to the distribution by country, the highest number of studies were conducted in Portugal [20], [29], [30] and Brazil [24], [26], [33] with n=3 studies respectively. Meanwhile, nine countries, namely Finland [19], Costa Rica [21], Nigeria [22], Greece [23], Romania [32], Luxembourg [25], Ireland [27], Spain [31], and a combination of respondents from both Bangladesh and Pakistan [28] were recorded with one study each.

Table 4. Literature matrix

Distribution	Research design	Focus skills
Leinonen *et al*. [19]	Ethnographic Research	Creativity
Finland	Observation	Design thinking skills
	Non-formal interview	
	Reflective questionnaire	
Tomé *et al*. [20]	Action Research	Social skills
Portugal		Digital skills
Guzmán-Simón *et al*. [21]	Ex-post facto	Multiliteracies
Costa Rica	Survey	Communication skills
Bano [22]	Survey	Innate ability
Nigeria		Income-generation ability
Al-Jubeh and Vitsou [23]	Action Research	Self-expression
Greece	Observation	Bicultural identity
	Interviews	
	Identity texts	
dos Santos *et al.* [24]	Case Studies	Well-being
Brazil	Informal interviews	Digital skills
	Observation	
Kirsch and G. Aleksić [25]	Online questionnaire	Multilingual
Luxembourg		Communication skills
Calvente *et al*. [26]	Literature Search	Environmental skills
Brazil		
Bresnihan *et al*. [27]	Workshops	Coding skills
Ireland		Digital literacy
Pynnönen *et al*. [28]	Interventions	Digital skills
Bangladesh and Pakistan		
Faria *et al*. [29]	PMM	Words skills
Portugal	Drawings	
Veloso [30]	Interview	Musical skills
Portugal	Field notes	Artistic skills
Mata-Torres *et al*. [31]	Case Study	Content and language integrated learning (CLIL)
Spain		and inquiry-based science education (IBSE)
Petrovici [32]	Literature search	Creativity
Romania		Heritage awareness
do Amaral and Vargas [33]	Action Research	Physical
Brazil		Artistic
		Social skills
		Digital skills
		Communication skills

3.2. Research design used in past studies

From the accumulated 15 studies in Table 4, n=10 [20], [23]-[24], [26], [27], [29], [30]-[33] were qualitative studies, followed by n=3 [21], [22], [25] were quantitative studies. Meanwhile, n=2 studies [19], [28] used a mixed-method research design. There were n=3 studies conducted using action research [20], [23], [33] and survey [21], [22], [25] respectively. In addition, n=2 studies applied case studies [24], [31] and literature searches [26], [32] respectively. Other research methods found were workshops [27], personal meaning map [29], intervention [28], ethnographic [19] and field notes [30] with one study each.

3.3. Research aim of past studies

There were six categories of aims for conducting a study on non-formal education. Aims to cultivate active digital citizens recorded n=6 studies [19]-[20], [24], [27], [28], [33]. Moreover, there were n=4 studies which aimed to develop literacy capabilities [21], [25], [29], [31]. Two studies [26], [32] aimed to encourage environmental learning. Other studies involved entrepreneurship [22], character building [23] and artistic ability [30] with one study each.

3.4. Factors of study

There were eight main skills identified from the 15 articles. The highest-recorded skills focused were on Social and Communication skills [20], [21], [23], [25], [33] and digital skills [20], [24], [27], [28], [33] with n=5 studies respectively. There were n=3 studies focused on literacy skills development [21], [29], [31] and Artistic skills [30], [32], [33] respectively. In addition, thinking skills [19], [22] and environmental skills [26], [32], recorded n=2 studies each. Meanwhile, one study found Entrepreneurship skills [22] and character-building skills [24].

3.5. Findings of past studies

Based on this scoping review conducted, significant findings were identified from the 15 articles reviewed. The first findings were related to improving technical skills involved in n=9 studies [19], [21]-[22], [25], [27]-[29], [31], [33]. Results from n=4 studies [20]-[21], [25], [33] indicated that non-formal education increased children's social participation and communication ability. Meanwhile, the findings found n=3 [25], [30], [33] on children's musical and artistic interest development. While another n=2 indicated that non-formal education generated positive attitudes and well-being among children [23]-[24], and n=2 studies showed non-formal education could generate awareness of sustainability [26], [32], respectively.

3.6. Comparisons between formal, non-formal, and informal learning

3.6.1. Formal learning

Formal learning constitutes a deliberate, organized, and institutionalized form of learning accessible through public institutions and accredited private establishments [34]. When taken together, these components establish the state's formal education system. Consequently, formal education initiatives receive official recognition from the pertinent national educational bodies or their equivalent institutions [35]. For the most part, learning is done intentionally and is known consciously by both parties, the educators and the learners [36]. Other than that, formal education frequently leads to issuing certificates and official acknowledgement through accredited diplomas or credentials [37], [38].

3.6.2. Non-formal learning

UNESCO's definition of non-formal education encompasses any organized educational endeavor conducted outside the established formal educational system, whether it operates independently or is an integral component of a broader undertaking, intending to cater to specific learning groups and educational goals [39]. Conversely, non-formal education is characterized as a compilation of inventive and forward-thinking learning methods [40] and instructional techniques, innovative alternatives to conventional and traditional educational systems [41]. Non-formal learning signifies a transition from centralized control over knowledge, such as in schools, to individualized control and self-directed learning [42]. This way of learning encompasses a wider array of learning endeavors compared to formal education, resulting in a shift away from primarily emphasizing cognitive performance. Instead, it places a more equitable emphasis on learning's intellectual, emotional, social, and behavioral aspects [43].

3.6.3. Informal learning

Informal education is intentional or deliberate learning that lacks institutionalization. It is characterized by a lower degree of organization and structure compared to formal and non-formal education [35]. Informal education is said to be "a programmed which is not explicitly expressed in the formal curriculum but influences students' lives and contains the norms and values of the society" [44]. Thus, in order to have a clearer idea between formal, non-formal and informal education, Johnson and Majewska [45] presented the following comparison as seen in Table 5.

Table 5. Comparison between formal, non-formal, and informal learning

Formal learning	Non-formal learning	Informal learning
Learning is structured	Learning may be structured	Learning is not structured
Learning is promoted through direct teaching behaviors	Learning is promoted through indirect teaching behaviors	
Learning is intended by both educator and learner	Learning is intended by the learner	Learning may not be intended by the learner
Learning is recognized by the learner and educator	Learning is recognized by the learner	Learning may not be recognized by the learner
Motivation for learning may be extrinsic to the learner		Motivation for learning is intrinsic to the learner
Learning takes place in educational institutions	Learning can take place in educational institutions	Learning can take place anywhere
Learning has a mandated dimension	Learning has a voluntary dimension	
Learning may be recognized or measured through qualifications		Learning is not recognized or measured through qualifications
Learning may primarily focus on propositional knowledge	Learning may focus on both propositional and procedural knowledge	
Learning tends to have a cognitive emphasis	Learning involves cognitive, emotional, social and behavioral elements	

3.7. Children's literacy development

Acquiring literacy skills is a persistent endeavor, and studies emphasize that children predominantly attain literacy through informal instruction integrated into their daily routines [46]. This process unfolds in both educational settings, such as nurseries or schools, and the domestic environment. Parents whose children attended high-performing schools exhibited notable engagement in their children's literacy progression [47]. This involvement manifested through consistent communication with teachers, a strong trust bond between parents and teachers, and a collaborative approach. Conversely, parents with children in low-performing schools displayed lower levels of engagement, attributed to limited awareness of their children's literacy development and busy schedules filled with socio-economic activities [48]. Parents play a significantly pivotal role in children's literacy development compared to other family-related factors [49]. The instruction of literacy stands out as a frequently employed method to enhance children's language skills. The promotion of early childhood literacy predominantly relies on storytelling and writing. Concerning school support for early childhood literacy development, encompasses the provision of essential facilities and infrastructure, along with aiding teachers in creating published storybooks [50].

4. CONCLUSION

Beyond academics, non-formal education strongly emphasizes children's social and emotional development. Through collaborative projects, teamwork, and interactions with diverse peers and mentors, they learn valuable interpersonal skills, including effective communication, empathy, and cooperation. Such attributes enhance their relationships and prepare them for societal leadership roles and responsible citizenship. One of the most compelling aspects of non-formal education is its practical application of knowledge. Children participating in internships, apprenticeships, volunteer work, or experiential programs gain insights that transcend theoretical understanding. This bridges the gap between theoretical learning and applying it in practice, making education more meaningful and relevant to their lives.

Non-formal education is an integral part of a child's learning journey. It complements formal education by broadening horizons, developing lifelong learning skills, enhancing social and emotional development, and addressing diverse learning needs. The impact of non-formal education goes beyond academic knowledge, fostering a love for learning, encouraging civic engagement, preparing children for the future, and promoting inclusivity. In order to ensure a well-rounded education, it is essential to recognize and support the value of non-formal education in shaping the future of our children and society as a whole.

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