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How Mobile ECCE Practitioners Leverage a Variety of Learning Materials in Resource-Scarce Communities

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Abstract. This study explored how curriculum policies support that Early Childhood Care and Education (ECCE) practitioners need to leverage a variety of learning materials in resource-scarce communities to enhance children's holistic development. Mobile ECCE practitioners face a challenge of limited resources especially in rural areas. Yet there is lack of professional training on the use of variety of learning materials in a resource-scarce communities. The study was underpinned by Vygotsky's sociocultural theory to understand the significance of how mobile ECCE practitioners scaffold children's learning experiences by using various materials and tools, considering the underprivileged sociocultural context. A qualitative phenomenological design was adopted to examine mobile ECCE practitioners leveraging of a variety of learning materials in resource-scarce communities. Semi-structured interviews were used to gather data from twenty mobile ECCE practitioners in the rural communities from two mobile ECCE units of the Free State Province, South Africa. Prolonged engagement was used to validate the results. Interpretative phenomenological strategy was used to analyse data with the help of Atlas.ti. This study found that mobile ECCE practitioners employed innovative methods to adapt and improvise the use of existing materials to improve children' holistic development. In light of this, it is recommended that practitioners need to integrate sociocultural context into their innovative methods improve the quality of ECCE in the face of resource constraints. Thus, novelty of this paper contributes to the curriculum and professional development in resource-scarce communities in rural areas.

Keywords: cultural context; learning materials; resource-scarce communities; scaffolding; Vygotsky's sociocultural theory

1. Introduction

Mobile Early Childhood Care and Education (ECCE) units provide flexible and accessible early learning opportunities for children in underserved areas. These services are provided within equipped vehicles with staff who deliver educational programmes, health check-ups, and nutritional support directly to underprivileged communities (Irwin et al., 2023; UNESCO, 2021). UNESCO addresses the barriers of geographic isolation and economic hardship to ensure children's holistic development and preparation for school readiness (UNESCO, Save the Children, 2020).

The mobile ECCE units regularly involve parents and community members in fostering a supportive and conducive learning environment that prioritises parental engagement in children's education (World Bank, 2019). This innovative approach is crucial for reducing educational inequities and promoting early childhood development (UNICEF, 2022).

The significance of the availability of relevant resources in ECCE cannot be overstated. This statement is supported by UNICEF (2022) that quality educational materials, trained practitioners and supportive ECCE environments are crucial for fostering early cognitive and social development. In addition, adequate resources ensure that children receive quality education which includes literacy, numeracy, and emotional and physical development (UNICEF, 2022). Resources such as books, play equipment and digital tools enrich the learning experience, thus making it engage, enjoyable and effective (UNESCO, Save the Children, 2020). Moreover, investment in ECCE resources yields long-term benefits by promoting school readiness and reducing future educational inequities (World Bank, 2019). Even though previous research has focused on the significance of learning resources in ECCE, our paper mainly examined how mobile practitioners leverage a variety of learning materials in rural areas.

Additionally, the National Curriculum Framework (NCF) (Department of Basic Education, 2015) stipulates the importance of using quality resources in ECD to promote children's holistic development. This includes providing age-appropriate books and recruiting and trained practitioners who can effectively utilise these resources and adapt teaching methods (and resources) to meet diverse needs (Ghosh, 2024). Yet there are still ECCE mobile units with scarce resources especially in rural communities. The aim of this paper was to examine how mobile ECCE practitioners leverage a variety of learning materials in resource-scarce communities.

Thus, this article asked: *How do mobile ECCE practitioners leverage a variety of learning materials in resource-scarce communities?*

2. Literature Review

There is evidence validating investment in ECCE which is a valuable contributor to breaking recurring poverty cycles (Naudeau et al., 2011). In present times, children from disadvantaged groups may have developmental delays if excluded from accessing early learning facilities. For countries experiencing the challenge of the widening gap between rich and poor, ECCE narrows the 'opportunity divide' by reducing poverty, bridging ethnic disparities, and mitigating linguistic disadvantages (UNESCO, 2023). Studies have shown how indispensable ECCE is in building the foundation for children's socioeconomic wellbeing and future success. In addition, ECCE programmes significantly influence children's holistic development, especially in rural areas where the challenges of accessibility are most severely felt (UNICEF, 2019). Increased cognitive stimulation, socialisation, and academic success are associated with access to quality early childhood programmes (Ejuu et al., 2022). Mobile ECCE facilities have recorded great strides in closing the gaps of limited access to early education and physical isolation in rural communities. This study's literature review discusses the functions of mobile ECCE units in communities, their services in resource-scarce communities, the impact of inadequate teaching and learning resources on educational outcomes, and innovations for dealing with the scarcity of teaching-learning resources.

2.1 Functions of the mobile ECCE units in communities

ECCE facilities assist with several critical functions in under-resourced communities. They play an essential role in ensuring that children receive the best support necessary for their holistic development (Karegysa, 2021). The main advantage of mobile ECCE units is to provide quality early childhood education in rural areas. In rural and isolated areas, these units deliver educational resources directly to children, thus circumventing barriers such as geographical isolation and limited educational facilities (García et al., 2021). This direct delivery of education in their vicinity ensures that children in remote and underprivileged communities are not left behind during their critical early learning stages which are essential for cognitive, social and emotional development (García et al. 2023). Mobile ECCE units not only support children's education, but also provide healthcare and nutritional support to marginalised communities. Specifically, mobile ECCE programmes incorporate medical check-ups and nutritional interventions such as providing healthy food: this recognises the vital link between health and educational outcomes (Harrison et al., 2024).

Furthermore, mobile ECCE units are critical in fostering community engagement and parental involvement. These mobile units are taxis that visit rural communities to connect practitioners and the community, thus creating a collaborative environment where parents/caregivers are actively involved in their children's education (Harrison, 2020).

2.2 ECCE provisioning in resource-scarce communities

According to Rao et al. (2019), mobile ECCE units provide a lifeline for young children in underprivileged communities which ensure that foundational educational and developmental needs are met, despite significant challenges. This

mobile delivery method of bringing education to the most vulnerable people living in remote areas addresses barriers such as geographical isolation and limited local educational facilities which safeguards children from the deprivation of essential early learning experiences that are critical for cognitive, social, and emotional development (Rao et al., 2019; UNESCO, 2021). This approach ensures that children are healthy and mentally ready to learn, thus addressing malnutrition and other health issues that impede educational engagement and achievement. In other words, nutritious food, health checks and a sound education are imperatives to attain academic success for a better life (Glewwe & Muralidharan, 2016). In this regard, the researchers understand that mobile ECCE units foster overall development and learning readiness among children by creating a holistic environment through both health and educational services. On the other hand, Gupta (2020) asserted that mobile ECCE units also adapt their educational strategies and materials to the local context by using locally available resources and incorporating culturally relevant materials into the curriculum. This local-support approach ensures that education is not only accessible, but also meaningful and socially-engaging for rural children (Gupta, 2020). By exhibiting actions reflecting local culture and traditions, mobile ECCE programmes promote learning to become more connected to communities, thus arousing children's interest and participation in educational activities (Ginsburg, 2007). Ginsburg (2007) added that culturally responsive pedagogy is important for maintaining children's connection to their heritage while providing a robust educational foundation. Moreover, mobile ECCE units demonstrate innovation by emerging with solutions to circumvent resource-scarcity, thus exhibiting how education can be effected outside traditional classroom practice. In other words, mobile ECCE practitioners display flexibility and adaptability in ECCE settings, in addition to contributing to valuable insights for developing inclusive and equitable educational policies and practices (Ikawa et al., 2020; Neuman & Okeng'o, 2019) .

2.3 Impact of inadequate teaching-learning resources on ECCE outcomes

Studies by UNICEF (2019) and Heckman (2020) indicate that the impact of inadequate teaching and learning resources on ECCE outcomes is profound as it affects multiple dimensions of children's development and learning. As such, the quality ECCE is crucial for laying the foundation for lifelong-learning and development, but the absence of adequate resources significantly undermines these efforts.

Firstly, insufficient teaching materials impede the cognitive development of young children (Heckman; 2020). Educational resources such as books, educational toys and digital tools are essential for stimulating young minds and fostering an environment of curiosity and creativity. When these resources are lacking, children are deprived of critical opportunities to develop literacy, numeracy and problem-solving skills. Studies by UNICEF (2019) and Heckman (2020) reveal that early exposure to diverse and engaging learning materials directly correlates with improved cognitive outcomes. In resource-scarce settings, the absence of such materials leads to delays in acquiring foundational skills which affect children's readiness for primary education.

Secondly, the shortage of learning resources adversely affects the quality of teaching. Teachers in ECCE settings rely on various learning materials to design engaging and effective lesson plans (UNICEF, 2019). Without adequate resources, practitioners struggle to implement diverse and interactive teaching strategies, and often have to resort to rote-learning and lecture-based methods that are less effective for young children. This limitation hampers the learning process and affects teachers' motivation and job-satisfaction (Ulferts et al., 2019). Hence, educators in under-resourced environments struggle to maintain high-quality instruction which obstructs children's learning experiences and performance outcomes.

According to Britto et al. (2017), inadequate resources exacerbate existing inequalities in education. Children from disadvantaged backgrounds are more likely to attend poorly resourced ECCE units, thus perpetuating a cycle of education inequity. These children already face numerous barriers to educational success, including poor health and nutrition – hence, the lack of adequate learning materials further exacerbates the already dire situation in disadvantaged areas. The disparity in resource availability between different socioeconomic groups leads to significant gaps in early childhood development regarding the attainment of quality learning outcomes which further widens the gap between the haves and the have-nots (Britto et al., 2017).

2.4 Challenges confronting ECCE Service Delivery in resource-scarce Communities

In resource-scarce communities, ECCE service delivery faces numerous challenges that hinder the provision of quality education and care for young children. This is supported by Aina and Bipath (2022) that the challenges arise from various factors including poor infrastructure, inadequate funding, socioeconomic disparities and cultural barriers. The researchers understand the extent and nature of these challenges is crucial for planning effective strategies to overcome them to ensure that all children access equitable ECCE services. Since resource-scarce communities often lack adequate physical infrastructure to support ECCE services, stakeholders should see the need for providing more purpose-built facilities such as preschools, day-care units and better playgrounds. In rural areas, the lack of transportation infrastructure can further exacerbate accessibility as it is difficult for children to reach far-off existing ECCE facilities (Aina & Bipath, 2022).

Furthermore, resource-scarce communities frequently struggle with insufficient funding. Limited government budgets and competing priorities mean that ECCE services may not receive sufficient and necessary financial resources to operate effectively and efficiently (Ngoasong, 2022). This results in a high staff turnover rate, low practitioner salaries, and insufficient funds for essential materials and resources (Ngoasong, 2022). Consequently, underfunded and under-resourced communities who often experience high levels of socioeconomic inequality, are disadvantaged in accessing quality ECCE services which lead to persistent gaps in attaining high level educational outcomes (UNICEF, 2022). Moreover, resource-scarce communities are often characterised by diverse cultural and linguistic backgrounds which pose challenges for ECCE service delivery; for example,

Language barriers can hinder communication between practitioners and children or caregivers; thus affecting the quality of interactions and learning experiences (Neupane, 2024; Panhwar et al., 2016). Also, the recruitment and retention of qualified early childhood practitioners is a significant challenge in rural underprivileged communities. Limited access to training and professional development opportunities, low salaries, and poor working conditions contribute to high staff turnover rates (Neupane, 2024). Lamentably, the shortage of trained practitioners affects the quality of ECCE services and undermines efforts to provide children with stimulating and supportive learning environments (Hentschel, 2023).

2.5 Innovations for dealing with the scarcity of ECCE teaching-learning resources

Digital resources can be tailored to different learning needs to reach children in remote areas where traditional teaching materials are unavailable (Cui et al., 2021). Ghosh et al. (2023) agree that Open Educational Resources (OER) are freely accessible teaching and learning materials that can be shared, adapted and reused. By exploiting the advantage of open licensing, practitioners can access a plethora of resources including lesson plans, worksheets and multimedia content without investing financially. The advantages of accessing resources that practitioners can access freely include the promotion of collaboration and resource-sharing among practitioners which allow practitioners to adapt materials to suit local contexts and different language groups (Ghosh et al., 2023; UNESCO, 2022). For example, UNESCO (2022) shows that collaboration with non-governmental organisations (NGOs) and the corporate sector can mobilise additional resources for ECCE. In this regard, NGOs often have expertise in developing educational materials and can provide funding and support for resource development and distribution. Similarly, partnerships with corporations can lead to corporate social obligation initiatives that support ECCE such as donations of books, toys and technologies (Hentschel, 2023; Shaik, 2023). Importantly, investing in teacher-training and capacity-building is essential for mitigating the impact of limited resources (Hentschel, 2023). Through ongoing professional development programmes, practitioners can be equipped with strategies for resource improvisation and optimisation such as the judicious use of low-cost materials and innovative resource adaptation techniques. Training programmes can also focus on developing practitioners' digital literacy skills; thus enabling them to leverage technology to enable quality teaching and learning (Matjokana, 2023; Oke et al., 2021; Srivastava et al., 2021).

3. Theoretical Framework

The study was underpinned by Vygotsky's (1978) sociocultural theory (SCT) which promotes an understanding of how mobile ECCE practitioners through mediation and scaffolding can use various materials and tools in under-resourced communities. The SCT elucidates how individuals' mental functions relate to their cultural, historical, and institutional contexts (Scott & Palincsar, 2013; Shabani, 2016). This theory espouses that learning is a product of social interactions involving adults and peers (Vygotsky, 1978); in this case, it entails mobile ECCE practitioners and children. It attends to the aspects relating to the broader social

system in which learning occurs and draws on the interpretations of individual thinking and development based on participation in culturally organised activities (Stott, 2016). For this study, the following SCT components were used: mediation of learning and scaffolding, culture and language and social interaction.

3.1 Mediation of learning and scaffolding

The mediation of learning and scaffolding are critical aspects in educational psychology that facilitate the acquisition of knowledge and skills. Mediation of learning refers to using cultural tools to achieve goals and make learning meaningful (Vygotsky, 1978). It comprises of the support of a more capable person, and collaborations that develop among the participants in the group (Eun, 2019). Specific to this study, mediation is relevant in understanding how mobile ECCE practitioners use available resources in under-resourced communities to scaffold children's development and learning through social engagement. Central to Vygotsky's theory (1978) is the notion that learning occurs through mediated interactions with more knowledgeable others (MKOs) such as teachers, peers and mentors. In sum, this study relates to how ECCE practitioners scaffold children's understanding of the materials to mediate learning. Both mediation of learning and scaffolding highlight the pivotal role of social interactions in education which promotes learning as an individual endeavour as well as a collaborative process supported by cultural tools and interpersonal dynamics (Eun, 2019; Van de Pol et al. 2010).

3.2 Social interactions

Social interactions are mediated by using cultural tools, symbols, and artefacts to promote language usage as a critical unifying tool (Morales, 2022). This is supported by Vygotsky (1978) who articulated that just as humans need tools to interact with their physical environment, they also require cultural tools and artefacts to mediate their understanding of the world through social interactions. These processes which are entrenched in sociocultural theories of learning enlighten us on social interactions and cultural tools that promote cognitive development (Panhwar et al., 2016). The mediation of learning is a concept derived from Vygotsky's (1978) sociocultural theory which emphasises the importance of using cultural tools and engaging in social interactions. In the context of this paper, mobile practitioners need to understand this theory and be able to apply it in leveraging learning materials in resource-scarce communities to enhance children's holistic development during teaching-learning situations.

3.3 Sociocultural Context

Mobile ECCE practitioners play a critical role in resource-scarce communities by adeptly leveraging various learning materials that align with the sociocultural contexts of their communities. In such contexts, practitioners can transform and improvise on limited resources to produce rich educational tools (Vygotsky, 1978). Since culture is a salient social factor in teaching-learning processes, it has a vital impact on influencing and shaping the development of children through knowledge and experiences constructed and developed in societal contexts (Vygotsky, 1978). In other words, personal development is influenced by the

cultural and social environments in which an individual lives (Silalahi, 2019). In sum, knowledge about cultural variation and diversity are imperative to meet inclusive educational needs (Harrison & Skrebneva, 2020; Mhakure & Otulaja, 2017).

4. Research Methodology

4.1 Paradigm

The philosophical assumptions of Vygotsky's (1978) SCT guided the researchers to select the interpretivist research paradigm for this paper. Vygotsky (1978) asserts that learning and development occur through social interaction, scaffolding and mediation within sociocultural contexts which affect the relationship between individuals and surrounding environments that are influenced by their values, beliefs, norms and social behaviours. Pervin and Mokhtar (2022) support interpretivism because it focuses on seeing social phenomena from the viewpoints of those experiencing them while recognising the subjective meanings and interpretations people give to their experiences.

4.2 Approach

The nature of interpretivist research encourages researchers to apply a qualitative research approach to collect data from social settings. Hence, this paper adopted a qualitative approach to collect in-depth and rich data from mobile ECCE practitioners in their natural settings (units) where social learning occurs. Kelly (2023) reiterates that qualitative research methods enable researchers to explore the sociocultural, historical and situational contexts in which phenomena occur.

4.3 Design

Within the qualitative framework, an phenomenological design was suitable for this study. This design facilitated the exploring of participants' lived experiences of the phenomenon under investigation (Frechette et al., 2020). This allowed researchers to obtain valuable insights into ECCE units' unique context and complexities by exploring practitioners' experiences in leveraging learning materials.

4.4 Sampling

Twenty mobile ECCE practitioners from two units in the Free State Province (RSA) were selected via the purposive sampling technique. Campbell et al. (2020) maintain that participants' experiences should directly relate to the aim of the study, which in this case involved eliciting mobile ECCE practitioners' experiences in communities with limited resources; thus, purposeful sampling was pursued. Following the perspectives of Sebele-Mpofu (2020) for this study, purposive sampling was executed to reach theoretical saturation, which denotes the point at which significant information emerges from additional data collection. Thus, 20 mobile ECCE practitioners were selected based on lived experiences of leveraging learning materials, knowledge of ECCE, working in a mobile ECCE unit, and being situated in a resource-scarce community. This enriched and strengthened the study's findings in line with the aim and research questions.

4.5 Semi-structured interviews

Through the interpretive phenomenological approach, the researchers engaged directly with mobile ECCE practitioners through semi-structured interviews to uncover the intricacies of their interactions with learning materials. Prolonged interview sessions were used to validate the results. An audio-recorder was used (with permission) to record participants' responses and to increase the credibility and authenticity of the study, in addition to verbatim transcriptions from audio-recordings. Prior to data analysis, the researchers transcribed interview data into text against each interview question. They repetitively read the collected data (verbatim transcriptions) to familiarise themselves with the content, to verify information, to check and correct anomalies, and to gain an incisive understanding of participants' lived experiences and perspectives on the phenomenon under study. By immersing in the natural settings of participants, the researchers engaged in interviewing participants to understand the influence of their behaviours and interactions in leveraging a variety of materials in an impoverished community in order to enhance children's learning.

4.6 Data analysis

Guided by Younas et al. (2023), an interpretative phenomenological analysis was used to explore how mobile ECCE practitioners leverage a variety of learning materials in resource-scarce communities. The role of the researchers was to interpret the data through the lens of the theoretical framework which allowed ideas and views to freely emerge from the participants. The credibility of this study was established because reflexivity and methodological rigour promoted sensitivity in understanding the complexities of participants' lived experiences of the phenomenon being investigated (Gregory, 2020).

The interview transcripts were imported into Atlas.ti for analysis. coding and co-coding was done of this qualitative software to assist with the credibility of data because it reduces biases. The codes were created using the keywords from the research question. Furthermore, the software also created categories guided by Vygotsky's (1978) sociocultural theory. Additionally, the researchers identified connections, relationships, implications for theory and topics for future research to expand this area of study. Subsequently, five themes were identified which assisted in interpreting, recording, presenting and discussing the findings.

4.7 Ethical considerations

Before the commencement of data collection, the General/Human Research Ethics Committee (GHREC) of the University of the Free State issued the ethical approval certificate, number UFS-HSD2022/0808/22. Next, the researchers obtained gatekeepers' permission from the mobile ECCE management to enable us to interact with and interview the practitioners. Consent forms were signed by practitioners after they were advised on the finer details of the study (written and verbally). Lastly, timeframes for interview sessions to be conducted at were negotiated with the participants at their various mobile units.

5. Findings and Interpretations

The findings from the semi-structured interviews revealed that ECCE practitioners in resource-scarce communities improvised to create and utilise

basic learning materials to enhance children's holistic development. This demonstrated that there is leverage in a variety of learning materials by mobile ECCE practitioners in underprivileged areas. The two ECCE units had a variety of learning materials; this assisted the researchers in exploring how mobile ECCE practitioners leverage a variety of learning materials in resource-scarce communities. Furthermore, it was found that there was a relationship between learning materials and structured learning environments in the ECCE mobile sector. Figure 1 generated from Atlas.ti illustrates the availability of learning materials in ECCE Units 1 and 2.

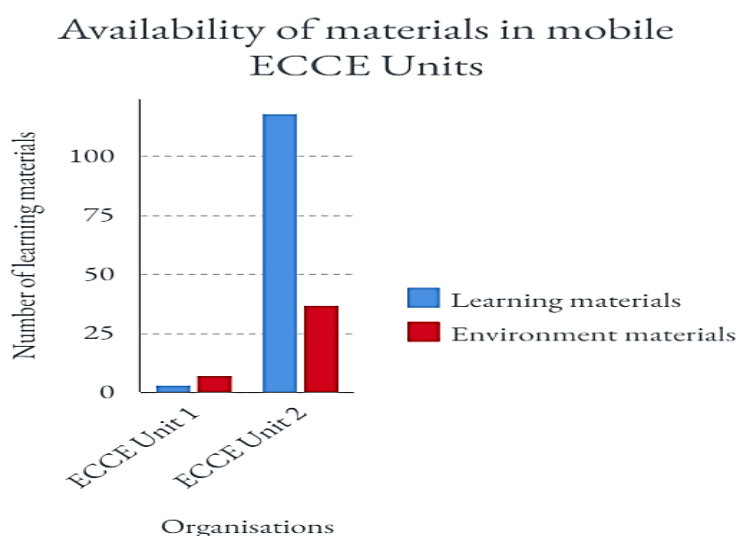


Figure 1: Availability of learning materials in two ECCE units
(Source: Atlas.ti)

Figure 1 above illustrates that both ECCE units had some access to learning and environmental materials which provided valuable insights into mobile ECCE practitioners' leveraging learning materials in resource-scarce communities in different organisational contexts. Mobile ECCE practitioners are instrumental in leveraging available resources effectively to support children's learning and development, even in resource-scarce communities. Although Unit 1 had limited resources compared to Unit 2, the mobile ECCE practitioners from this Unit (1) had lived experiences of leveraging a variety of learning materials. In the context of Unit 2, it was found that it had sufficient learning materials to promote children's holistic development. Interestingly, Unit 1 appeared to be able to offer a broader range of learning materials with fewer resources, compared to Unit 2.

5.1 Theme 1: Planning as a key strategy in managing a variety of learning materials

The data from the interviews indicated that mobile ECCE practitioners have access to a variety of learning materials. The practitioners indicated that they use the learning materials in the planning of activities.

“When I'm planning, I use the NCF material. I use the programme organiser and ladders of learning to reach all the children” (Practitioner 2).

The first question from the interview guide asked the practitioners about the availability of learning materials in their units. They revealed their lived experiences as they narrated how they used their ingenuity in leveraging a variety of learning materials. The following excerpts articulated participants' responses:

“Yes, the instructional materials we have are enough because we don't have plenty of children in our unit. So, the instructional materials are enough” . (Practitioner 18)

“Yes, the instructional materials are available, and they are enough. We have toys and other learning materials to support learning. We use toys, books and book corners for stories. We also have fantasy corners for children where they make fantasy and we have building blocks for children to build houses of their choice” .(Practitioner 19)

“Yes, we do have books that we give to children. I also give them toys. As I have mentioned, the unit operates for three days, so on the 4th day, I do home visits. If I give children materials this week, then the following week when I do a home visit, I can take back the materials from the children” . (Practitioner 5)

There is little evidence from the literature on the aspect of planning as a critical strategy in managing a variety of learning materials. However, UNICEF (2019) and Heckman (2020) indicate that the significance of leveraging a variety of learning materials in ECCE is to promote children's cognitive development. The absence of these materials could affect the planning of lessons in learning areas which may stifle the development of children's cognitive skills. This is supported by the theoretical framework which emphasises mediation and scaffolding in ECCE activities because they assist practitioners in developing children's holistic skills (Eun, 2019; Van de Pol et al., 2010).

5.2 Theme 2: Practitioners' reliance on the National Curriculum Framework (NCF)

This study found that mobile ECCE practitioners understood the significance of implementing curriculum policies in leveraging learning materials in resource-scarce communities. This finding suggested that the community context allows mobile ECCE practitioners to promote the holistic development of young rural learners. Practitioner 2, with working experience of four years in mobile ECCE settings, confirmed the use of learning materials by being guided by the NCF (DBE, 2016) document to plan teaching and learning activities:

“When I'm planning, I'm use the NCF material. I'm use the programme organiser and I'm using ladders of learning, and that one is helping me to reach all the children” (Practitioner 2).

The findings highlight the importance of using legislative guidelines that advise mobile ECCE practitioners about using learning materials. The literature from

Neuman and Okeng’o (2019) and Yoshikawa et al. (2020) corroborated that practitioners need to develop more inclusive and equitable educational policies and practices to leverage learning materials in mobile ECCE units. In light of this, resourcefulness, creativity and collaboration are essential in maximising learning opportunities for children. Additionally, policymakers and funders must be aware of the disparities in resource allocation between different organisational units and consider methods to ensure equitable access to learning materials across all settings.

5.3 Theme 3: Improvisation of teaching and learning resources

The second question from the interview schedule asked mobile ECCE practitioners about the strategies that they use when they have limited learning materials. They explained that their lived- experiences of leveraging learning materials were proactive and enjoyable because they improvised to create learning materials in their units. The following responses bore testimony to this:

“Yes, we also improvise. Okay, I can say they are sufficient to cover all the children because we bought others not so long ago. Also we can improvise and make sure that they are enough for all the children”.
(Practitioner 3)

A probing question was asked on how mobile ECCE practitioners improvised. Practitioner 2, with experience in teaching for 10 years with a level 5 teaching qualification in ECCE, explained how they use the improvised learning materials in their units.

“We are using bottle tops as some of our resources for mathematics so that they can learn counting skills, just like the abacus and building blocks. We have other resources for outside: skittles, big walls, small balls, water play and sea play”. (Practitioner 2)

This study also found that these practitioners may rely on improvisation, community resources and re-purposing existing materials to meet the unique learning needs of all children. In addition, it unearthed the importance of resilience and adaptability in resource-constrained environments. These findings corroborate the findings of Ghosh et al. (2023) and UNESCO (2022) that OER promotes collaboration and resource-sharing among practitioners, thus allowing them to adapt materials to suit local learners, contexts and languages. Similarly, the SCT encourages practitioners to manipulate learning materials related to cultural, historical, and institutional contexts (Scott & Palincsar, 2013; Shabani, 2016). Hence, this study suggests that ECCE practitioners can improvise on learning materials that incorporate cultural and indigenous elements.

For example, Photo 1 below illustrates the learning materials that ECCE practitioners improvised with in their units:



Photo 1: Improvisation: learning materials

Photo 1 above depicts a print-rich classroom or learning environment through pictorial charts. Also, mobile ECCE practitioners improvised by creating relevant age-appropriate flashcards and posters which they use to interact with the children. In addition, Photo 1 shows different learning spaces; for example, the practitioner brought clothes to school as learning materials which were displayed on the blue table. The practitioner assumed the mediator role to engage learners on the theme of clothes. This life skills topic fosters foundational knowledge regarding weather changes, and clothes for different seasons, among others. The teacher used accessible resources to support and supplement the information in the posters and pictures. The practitioner displayed one of the ways posters and/or pictures can be used as valuable learning resources.

5.4 Theme 4: Practitioners' skills in organising the physical learning spaces

The findings demonstrated that mobile ECCE practitioners understood that resourcefulness is critical to uplift the standards of academic performance at ECCE units. The practitioners' lived experiences articulated at interviews explained their leveraging of learning materials in organised physical learning spaces in mobile ECCE units which offered valuable insights into their practices and approaches:

“Inside we have a book area, a construction area, a concept area and a puzzle area. Sometimes to block the construction area; we add blocks. But the blocks we normally set-up outside”. (Practitioner 1)

“From there, we have outdoor equipment; children have wheels, hula-hoops, balls and skittles. Those are the materials that we use for children's growth.” (Practitioner 4).

Puzzles and books are the ones we use indoors. For outdoors, we use balls, hula-hoops, and skipping ropes.” (Practitioner 5)

“Like the blocks and the equipment that we need to use in the make-believe area, such as chairs and tables, we design them. Also, in the concepts area, we designed some toys. Even in the puzzle area, there are those materials that I have created myself. Some of the toys we design allow children to

practise hand-eye coordination to enable them to aim for holes."
(Practitioner 9)

These findings are consistent with those of other studies that mobile units in rural areas lack proper infrastructure and conducive learning environments (Aina & Bipath, 2022). This study revealed that mobile ECCE practitioners successfully integrated learning and environment materials to stimulate social interaction. The SCT framework supported social interactions facilitated by both teaching methods and the astute use of environmental materials (Morales, 2021). In the case of Unit 2 which was depicted as having sufficient learning materials to support children's holistic development, they could have fewer constraints in terms of resource availability, thus allowing them to focus more on curriculum development and programme implementation

5.5 Theme 5: Categorisation of age-appropriate learning resources

Given that there were limited resources in rural communities, the mobile ECCE practitioners' lived experiences demonstrated how committed and innovative they were to use age-appropriate learning materials to enhance teaching-learning in ECCE settings. Understanding children's developmental requirements, applying creative adaptation principles and promoting a holistic learning approach was given top priority in their methods of lesson delivery. The following extracts confirm this:

"Yes, we've got learning materials that are appropriate for children from birth to four. There are a lot of materials". (Practitioner 3)

"Inside the mobile bus, I have a fantasy place. In the fantasy place, like in a house, mother, father, everything. I have the construction area that they are going to build. They're going to build everything that they want. I have their puzzle area that is going to ... it is the puzzle that teaches them how to connect each puzzle to study, to teach them how to make a puzzle, the whole puzzle". (Practitioner 2)

The above evidence showed that practitioners demonstrated resilience, inventiveness, innovativeness and dedication to ensure that every child had access to high-quality early childhood education, despite daily challenges. The findings supported previous research conducted by Gupta (2020) and Vagh (2019) that categorise learning resources into age-appropriate components. Gupta (2020) explained that resources should not only be accessible but also meaningful and engaging for children of different ages. Vagh (2019) asserted that the resources should reflect culture and tradition and be related to real-life situations. Importantly, the theoretical framework emphasised the importance of mobile ECCE practitioners in recognising the influence of culture on children's learning by incorporating teaching materials compatible with sociocultural contexts (Harrison & Skrebneva, 2020).

6. Conclusion

The mobile practitioners leverage a variety of learning materials in resource-scarce communities by integrating innovative practices. The findings demonstrated that mobile ECCE practitioners employed innovative methods to

adapt, improvise and to create educational resources in underprivileged communities. In light of these findings, this study recommends that mobile ECCE practitioners need to recognise the influence culture has on learning so as to incorporate teaching materials compatible with the sociocultural context. In addition, active parental involvement is advised. This study has an implication on the curriculum design and professional development of practitioners in the leverage of a variety of learning materials in rural schools. The novelty of this paper contributes to the curriculum and professional development in resource-scarce communities in rural areas. The findings of this paper cannot be generalised because they are limited to the selected ECCE units in the Free State province, South Africa.

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