

Teachers' enactment of project-based learning within the Ecubed project in Grade Four life skills classrooms¹

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ABSTRACT

In response to the importance of preparing learners for the demands of living and thriving in a fast-changing world, this study explored how three Grade Four Life Skills teachers enacted project-based learning (PBL) in their classrooms following training as part of the Ecubed (E3) project on PBL. The aim was to understand how teachers implemented PBL in their classrooms and their experiences with applying PBL following training from E3 on effective PBL practices. Utilising semi-structured interviews, observations, and stimulated recall interviews, the study revealed that teachers grasped certain PBL elements and recognised factors enhancing its implementation, leading to improved learning outcomes. Nevertheless, challenges hindering successful PBL implementation were also identified. The findings underscore the potential of PBL, with appropriate intervention and motivation, to deepen learning, nurture an entrepreneurial mindset, and equip learners with competencies to live and thrive in a fast-changing world. This research contributes valuable insights to the ongoing discourse on effective teaching methodologies and their impact on learners' readiness for the challenges of a fast-changing world.

Keywords: Project-based learning; Competencies for a fast-changing world; Life Skills; Grade 4 teachers

INTRODUCTION

Reflecting on the global impact of the COVID-19 pandemic, one is reminded that thousands of people worldwide experienced devastating consequences on their livelihoods. The pandemic also prompted significant and sudden changes in society, particularly in the field of education. Educational institutions had to undergo swift adjustments to ensure the continuity of teaching

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and learning despite the lack of preparation (Reimers, 2021). These adjustments involved measures such as reducing curriculum content and transitioning to emergency remote online teaching, even though teachers were not adequately prepared for such a shift (Eadie et al., 2021).

Drawing parallels between the COVID-19 pandemic and the Fourth Industrial Revolution (4IR), a similar scenario emerges. The unprecedented advancements in industry, technology, and digitisation associated with 4IR will have a profound impact on the skills required for future employees (Schwab, 2016). This unprecedented nature of change underscores the importance of adapting teaching methodologies within the school system to prepare learners to live and thrive in a fast-changing world (Reimers et al., 2021). Eadie et al. (2021) contend that many South African schools are not preparing learners for success in a rapidly changing world. This is evident in the unequal educational standards across schools and demographics, marked by variations in resources, infrastructure, teacher pedagogical knowledge, and learning outcomes.

Reimers et al. (2021) argue that one way to adequately prepare learners to live and thrive in a world that is changing at a rapid pace is to develop the knowledge and skills they will need in ever-changing times from a young age, enabling them to engage and contribute to societal needs. This involves fostering their ability to solve problems and seek solutions to societal challenges. Research increasingly suggests that traditional content knowledge alone is insufficient to meet the demands of a fast-changing world (Fadel et al., 2015).

Given that teachers have the potential to shape learners' knowledge and skills, they must create opportunities for learners to develop the competencies they will require to live and thrive in a rapidly evolving landscape. Educational advocates like the Organisation for Economic Cooperation and Development (OECD) (2019) and Fadel et al. (2015) stress the explicit integration of competencies for a continuously evolving world into teaching and learning to prepare learners for life beyond school. The terms 'competencies for a fast-changing world', '21st-century competencies', and '21st-century skills' are often used interchangeably in the literature. OECD (2019) defines competencies as a holistic concept encompassing knowledge, skills, attitudes, and values, emphasising their role in deepening understanding. Similarly, the National Research Council (NRC) (2012) defines competencies as future skills that involve higher-level thinking and social skills, contending that their acquisition supports deeper learning.

One-way teachers can develop the competencies learners will require in a rapidly evolving world is through project-based learning (PBL). This teaching approach involves learners actively engaging with intricate problems or questions over an extended period, allowing them to acquire knowledge and skills (Buck Institution of Education (BIE), 2022). Through PBL, teachers can infuse the explicit development of the competencies learners will require to live and thrive in a fast-changing world.

While there are numerous studies on implementing PBL in international primary schools (Kaldi et al., 2011; Karaçalli & Korur, 2014; Cintang et al., 2011; Astawa et al., 2017; Markula & Aksela, 2022), there is a notable lack of research focusing on the implementation of PBL in South African primary schools. This gap in the literature highlights the need for local studies

that explore the diverse educational contexts and challenges faced by South African teachers and learners when it comes to PBL implementation. To address this gap, this study specifically investigated how Grade 4 teachers enacted PBL within the framework of the Ecubed (E3) project in Limpopo, South Africa. The study was guided by the following research question:

How do teachers enact project-based learning within the E3 project in Grade 4 Life Skills classrooms?

Our interest in understanding how teachers enacted PBL in their classrooms naturally extended to their experiences with implementing PBL in the same classrooms following training from E3 on effective PBL practices. By examining how teachers implemented PBL and their experiences with the process, this research aims to provide insights that can inform and improve the practice of PBL in South African primary schools.

The next section unpacks the literature on project-based learning. A description of the E3 project follows this. Next, the methods used to generate and analyse data are discussed. Lastly, the study's findings are presented and discussed.

LITERATURE REVIEW: PROJECT-BASED LEARNING

Project-based learning is a promising approach for developing the competencies learners require to live and thrive in a fast-changing world. Rooted in constructivism theory, PBL asserts that learners construct knowledge and understanding through engagement and reflection on experiences, essentially learning by doing (Duke et al., 2021; Ecubed, 2020; Krajcik & Shin, 2014; Larmer et al., 2015). The current literature on PBL lacks a unified definition, with various interpretations for project-based learning. Ecubed (2021) defines it as a learner-centred teaching method enabling learning through real-world projects. Others, such as Barron and Darling-Hammond (2010) and Kokotsaki et al. (2016), describe PBL as inquiry learning involving authentic questions and real-world problems that require solutions. Drawing from various sources, PBL can be defined as a learner-centred teaching method that involves inquiry-based learning through real-world projects, authentic questions and problem-solving.

PBL is characterised by key elements, including a challenging question or problem, sustained inquiry, authenticity, voice and choice, critique and revision, reflection, and a public product (Buck Institute of Education, 2022; Boss, 2015; Grossman et al., 2019; Larmer et al., 2015). Although these elements may be articulated differently in literature, utilising each as a guideline for implementation enhances learning outcomes. Notably, PBL involves group work, where learners collaborate, drawing on each other's contributions to produce an end product addressing a problem, often related to a societal need (Buck Institute of Education, 2022; Ecubed, 2021). Learning to collaborate effectively is a skill that will serve learners well in their current context and in the future. According to Fadel et al. (2015), learners who collaborate in groups can make better decisions as they consider issues and synthesise ideas from multiple viewpoints. The literature reveals that PBL involves key elements such as a challenging problem, sustained inquiry, authenticity, and collaboration, which collectively enhance learning outcomes and prepare learners for future decision-making by encouraging them to consider diverse viewpoints when engaging in group work.

Another key aspect of PBL is its emphasis on the learning process rather than solely on the final product (Condliffe et al., 2017). This implies that teachers should continuously create opportunities, such as tasks or assessments, to enhance knowledge and skill development throughout the learning journey. By involving learners in continuous tasks and assessments, teachers can deliberately create opportunities to enhance learners' competency in the 4Cs (communication, collaboration, critical thinking, and creativity). In PBL, learners express their thoughts and work through various means, including written tasks and presentations. According to Rusdin and Ali (2019), this can develop assertive and vocal learners who can express their thoughts and concerns. Collaboration is fostered as learners engage with peers, teachers, and other stakeholders to acquire and share knowledge during project work. The process also cultivates critical thinking and creativity as learners engage in tasks requiring problem-solving, resulting in the creation of solutions represented in the form of an artefact that addresses the identified problem. Coberly-Holt and Elufiede (2019) defined critical thinking as the capacity to go beyond the immediate context, discerning concepts, issues, or phenomena to make fair, logical, and unbiased judgments. They described creativity, or creative thinking, as the ability to introduce a new and innovative perspective. Encouraging the development of these competencies, as emphasised by Lathram et al. (2016), not only deepens knowledge of subject content and concepts but also enables learners to apply their acquired knowledge and skills in new settings. The literature highlights a focus on the learning process rather than the final product, aligning with current educational research that emphasises the importance of ongoing assessments and skill/competency development in PBL.

Prior research on the implementation of PBL suggests its successful application in primary schools, leading to improved learning outcomes. For instance, Kaldi et al. (2011) conducted a study in Greece, assessing the effectiveness of PBL on primary school learners' learning. The results indicated that those exposed to PBL demonstrated enhancements in content knowledge and collaboration skills. Similarly, Karaçalli and Korur (2014) investigated the impact of PBL on academic achievement, attitude, and knowledge retention in the context of 'Electricity in Our Lives'. Their findings revealed that PBL facilitated a deeper understanding of the content, increasing academic performance and knowledge retention. Additionally, Astawa et al. (2017) explored the influence of PBL on learners' English productive skills, noting positive effects on skills such as enthusiasm, confidence, creativity, self-directed learning, and collaborative learning. Mehmet (2005), in a study focusing on a 5th-grade social studies course, found that PBL not only elevated academic success but also instilled various skills in learners, making the learning process enjoyable, entertaining, and meaningful. We contend that these studies demonstrate PBL's effectiveness, thereby supporting our review with empirical evidence, enhancing its credibility, and aligning it with evidence-based practices.

Collectively, these studies underscore PBL as a promising teaching method that can enhance learners' comprehension of content, boost knowledge retention, and foster the development of competencies like collaboration and creativity. Furthermore, the positive impact on learner enthusiasm, motivation, and confidence emphasises the benefits of effectively implementing PBL in primary school classrooms.

The review of the aforementioned studies collectively supports the argument that PBL is a crucial approach for preparing learners to live and thrive in a fast-changing world. The competencies developed through PBL, such as critical thinking, creativity, collaboration, and communication,

are precisely those required to navigate and thrive in a rapidly changing world. The emphasis on real-world applications and problem-solving ensures that learners are not only 'receiving' knowledge but are also learning how to apply it in novel contexts. By engaging with real-world challenges, learners develop the flexibility and resilience needed to adapt to new circumstances, making them better equipped for the future world of work. Therefore, PBL not only addresses immediate educational goals but also prepares learners for lifelong learning and adaptation in an increasingly complex and fast-changing world.

THE ECUBED (E3) PROJECT

The E3 project, initiated by the South African Department of Basic Education (DBE), aims to address youth unemployment, economic challenges, and poverty in South Africa (Ecubed, 2020). Extensive research, including studies by Ecubed (2020) and Spaul (2016), highlights how societal factors such as high school dropout rates and the insufficient skills of high school graduates contribute to the high unemployment rate in South Africa.

Although the youth unemployment rate decreased to 32.6%, as reported by the Quarterly Labour Force Survey (QLFS) (Stats SA, 2023), a shocking number of young people remain unemployed. Ecubed (2021) contends that the education system is crucial in supporting economic change and addressing the persistent challenge of youth unemployment. They propose a contemporary approach to teaching and learning that aims to develop learners' competencies for a fast-changing world. This approach prepares learners to be solution-seekers and problem-solvers, essential skills in a world characterised by rapid change.

The E3 programme contends that teachers can reshape the current circumstances within schools and society, ultimately benefiting learners. E3 asserts that equipping learners with communication, critical thinking, collaboration, creativity, and an entrepreneurial mindset is crucial, especially in an ever-changing world (Ecubed, 2021). As a result, E3 considers the first step to be a shift in the mindset of teachers, encouraging them to embrace the explicit development of learners' skills and competencies. To support this, the E3 project provides comprehensive PBL training for teachers and creates communities where teachers can exchange ideas and learn from one another. To align with the Curriculum and Assessment Policy Statement (CAPS) requirements and alleviate the implementation burden on teachers, E3 schedules its projects during the third term.

E3 places a significant emphasis on PBL as a teaching and learning method. It is driven by the belief that it can activate and cultivate essential future competencies, fostering a mindset shift in learners through engaging in meaningful and purposeful projects (Ecubed, 2021). Through PBL, learners can work with content that directly addresses the day-to-day challenges they encounter in their societies. In this process, learners participate in long-term projects investigating and identifying societal problems, experimenting with solutions, and adapting their knowledge to address these issues.

The PBL intervention explored in this study focused on projects in the Grade 4 Life Skills subject within the CAPS in Term 3. The formal assessment required in the CAPS document in Term 3 is a project. Implementing PBL in Term 3 is not an add-on but instead builds on content already stipulated in the document.

RESEARCH METHODS

Using a qualitative research design (Merriam & Tisdell, 2016), this study investigated how teachers enacted PBL within Grade 4 Life Skills classrooms as part of the E3 project. Since the research aimed to explore the teachers' experiences with PBL and understand how they interpreted and applied the training provided by the E3 project in their classrooms, a qualitative approach was best suited for the study.

Guided by constructivist learning theory, which emphasises that learning is a dynamic process involving constructing meaning through interactions with the environment and the role of pre-existing knowledge (Gravett, 2016), the study explored how teachers understood and applied the training from E3. The research focused on how this understanding influenced their enactment of PBL in Life Skills lessons and whether their prior knowledge impacted their teaching practices.

The study was conducted at a primary school in the Waterberg District of Modimolle, Limpopo, which the Department of Basic Education (DBE) recommended for piloting. Three Grade 4 Life Skills teachers were selected to participate in the study: two had attended the E3 training, while the third received cascaded training from one of the trained teachers. The teachers were selected because they were teaching at the school recommended by the DBE for piloting and had completed the training. Consequently, the sample consisted of only three teachers.

An ethics application was submitted to the University of Johannesburg, detailing the study, researcher information, study type, and potential risks and benefits to participants. Following Merriam and Tisdell (2016), only participants who consented via E3 joined the training. Although participation was voluntary, the E3 team obtained consent from teachers who wished to take part, and permission was requested before observations and interviews, including consent to be recorded and filmed while implementing PBL. To ensure privacy, participants' identities were kept anonymous using pseudonyms, allowing teachers to express themselves freely

Data collection involved close observations of PBL lessons (September 2022), using an observation schedule and video recordings to *capture the implementation process*. Stimulated-recall interviews were conducted post-observation to facilitate reflection on the teachers' teaching practices. Additionally, semi-structured interviews were carried out before (in April 2022) and after (September 2022) the E3 project to gather insights into the teachers' experiences with the training and PBL implementation.

Data were analysed using the constant comparative method (Maykut & Morehouse, 1994; Merriam & Tisdell, 2016), which involved transcribing, coding, and categorising data to identify themes. The data were transcribed and analysed in Microsoft Word. To ensure trustworthiness, the study followed Merriam and Tisdell's (2016) and Lincoln and Guba's (1985) criteria, including credibility through triangulation of various data sources, transferability through detailed descriptions, dependability through an audit trail, and confirmability through rigorous data analysis and detailed description of the research design.

FINDINGS

Three themes were generated from the data analysis process to capture how Grade Four Life Skills teachers enacted PBL in their classrooms. The three themes are presented below.

Theme 1: Teachers gained a better understanding of some elements of PBL, which improved their ability to enact PBL in their classrooms effectively

Analysing the data showed evidence that indicated that teachers understood some key components crucial for the successful enactment of PBL in lessons. Specifically, teachers highlighted the importance of incorporating learner *voice and choice* in PBL projects. They acknowledged that incorporating these elements would enhance learner autonomy and hands-on learning, both of which are essential for the PBL process. An example is provided in the following quote from a semi-structured interview:

What I'm looking for is to see my learners do things on their own, initiating things. My teaching won't be teacher-based. It will be learner-based. The learners will be taking charge. The learners will be asking questions, coming up with ideas that we can discuss and explore as a class. (Teacher 2, semi-structured interview, September 2022).

The data also showed evidence that teachers understood the element of *reflection*. They prompted reflection on various occasions during enacted PBL lessons. The extract from field notes made during lesson observations gives an example:

The teacher asks learners to reflect on the COVID-19 pandemic. He asks his learners: Do you remember the Covid19 lockdown? Do you remember the time we had to come to school wearing masks and that these masks made people unrecognisable? Think about your experiences and share them... think about how they relate to this (*Fieldnotes, September 2022*).

Evidence indicates that teachers recognised the significance of group work in PBL. They understood that group work facilitates the sharing of ideas and allows learners to benefit from each other's insights. The teachers explained that to foster a collaborative and conducive learning environment, they grouped the learners. The excerpt provides evidence for this finding:

I have tried to arrange them in groups, if you see, in the other group ... So, if there is this one that I know is lagging behind, I'll put someone who will maybe try and motivate them in a way. (Teacher 2, stimulated-recall interview, September 2022).

Analysing the data provided evidence that teachers recognised the importance of having ample teaching and learning materials for the successful implementation of PBL. They stressed that the effectiveness of PBL implementation relies on access to sufficient teaching resources. An illustrative example of this observation is captured in the following statement from a teacher who highlighted the connection between the successful enactment of PBL and the resources provided by E3:

They assisted me a lot with the information contained. It was good enough for me to make the [PBL] project successful. So, I have been referring to those documents as sort

of guidance as to how to go about the project. (Teacher 1, semi-structured interview, September 2022).

Theme 2: Teachers believe that the implementation of PBL has a positive effect on learners' learning and are aware of various factors that influence the successful enactment of PBL in their classrooms

The results of the data analysis revealed teachers' beliefs regarding the factors contributing to successful PBL implementation in their classrooms. The evidence suggests that teachers recognise the importance of asking diverse questions in their lessons to engage learners in meaningful conversations. Specifically, using questions related to prior knowledge, as well as those aimed at probing for clarification and eliciting elaboration, fostered conversation and discussion - an essential element for the successful implementation of PBL highlighted by E3.

The findings also indicated that teachers believed that the successful implementation of PBL in their classrooms had a positive impact on fostering learners' entrepreneurial mindset, thereby enriching the overall PBL process. Furthermore, teachers acknowledged that to facilitate successful PBL implementation and cultivate an entrepreneurial mindset, it was crucial to integrate opportunities for learners to practice and develop competencies for a fast-changing world. However, the findings also revealed that teachers encountered challenges in effectively incorporating these elements into their lessons, as exemplified in a fieldnote excerpt:

Class 3 learners are seated in groups but do not collaborate or communicate amongst themselves. Also, the teacher assigns the different groups topics for creating the recipe book instead of allowing learners to do so themselves. The learners could engage more if presented with the chance to collaborate (Fieldnotes, September 2022).

Additionally, the findings revealed that teachers were aware that they must constantly research and seek information and resources to enhance and address challenges encountered during the PBL implementation process. The extract shows an example from the raw data:

I believe that I need always to ensure that I bring different materials. I don't focus only on books, or, you know, on only prescribed books. I need to do research and bring those things that I believe are going to make my teaching easier because the aim is to make learners understand whatever you are *teaching and saying as a teacher...* (Teacher 2, semi-structured interview, September 2022).

Theme 3: Some factors inhibit the successful enactment of PBL in teachers' classrooms.

Evidence from the data analysis indicates that teachers revealed some barriers that prevented them from successfully implementing PBL in their classrooms. Teachers expressed that one factor impeding successful implementation was the language barrier that impacted full learner participation. One teacher expressed that they used code-switching as a strategy to support learning. However, they indicated their concerns over the overuse of this strategy as they are aware that the Language of Teaching and Learning (LOLT) in Life Skills is English. Furthermore, they elaborated that although learners showed enthusiasm to learn, they often needed help putting their thinking into words due to the LOLT. The following extract from a stimulated recall interview shows evidence for this finding:

The language – the challenge is language and lack of participation from the learners. Of course, you realise that some of them want to learn. However, they do not understand what is being said. No matter what, I try to make my lessons interesting because some of the learners cannot read. They do not have the vocabulary and everything like that. So [...] they can hear what I am saying but putting it down into words or writing it down is difficult. (Teacher 2, stimulated-recall interview, September 2022).

Another challenge expressed by the teachers was the learners' lack of motivation and participation. An example from the field notes highlighted:

Learner engagement could be improved here as only selected learners are following the story and answering questions while others are working on other work. Giving learners a story to read with the teacher can grab learners' attention. (Fieldnotes, 2022).

Teacher 2 commented during the semi-structured interview that parental involvement also hinders the enactment of PBL:

...And the most important thing that I think is affecting our learners is parent involvement. Because most of our learners will stay at home as long as they want, they just come to school today, and it can be two weeks not coming to school. And when you try and get engaged, the parents cannot even come to the party. So, as a teacher, you find yourself being alone. They are getting no support from their parents. And you know what I mean? Though you try, it is kind of frustrating. As far as I'm concerned, it's frustrating because you try to do this, you try to engage them... (Teacher 2, semi-structured interview, September 2022).

The evidence indicated that teachers faced difficulties in effectively managing their time to complete PBL projects. According to Teacher 1, implementing PBL later in the term had a negative impact on his PBL experience. This timing created additional pressure, preventing him from implementing PBL to the best of his potential. The teacher disclosed that he could not fully engage with the E3 materials due to the time constraints required to complete the PBL project. The following quote provides an example:

Oh, the challenge that I faced during this project. The first is that I started this project late while we were still busy with formal assessment, you understand? I see that I was supposed to start this project before- as soon as possible, you understand. Without any pressure. Because I was under pressure at the time, when I was administering this [PBL] project, so it created challenges, you understand? Because I was supposed to balance this project together with the things that were supposed to be done for the curriculum. (Teacher 1 – semi-structured interview, 2022).

DISCUSSION AND CONCLUSION

Several conclusions can be drawn from the study's findings. First, the initial E3 teacher training at the onset of PBL implementation provided teachers with some understanding of what PBL involves and its components. These components encompass learner voice and choice, contributing to enhanced learner autonomy, reflection, group work, and the effective utilisation of teaching and learning resources. Larmer et al. (2015) asserted that incorporating these PBL elements in the classroom can foster the effective implementation of PBL. However, contrasting evidence emerged, indicating that teachers did not fully understand some elements.

One of the integral components of PBL is *critique and revision*, which is fundamental to the PBL project. Critique and revision play a crucial role in PBL, considering it is an activity-based pedagogy involving diverse tasks and continuous assessments (Aldabbus, 2018; Ecubed, 2021). Given the nature of PBL, which emphasises ongoing tasks, learners require frequent feedback for meaningful learning to take place. Therefore, incorporating critique and revision allows learners to address their strengths and weaknesses and refine their thinking through trial and error, as emphasised by Ecubed (2021). This process is vital for producing a meaningful end product. While there was evidence of group work and collaboration among learners, such as collaborative task marking and sharing of inputs, there were insufficient opportunities for teachers to provide feedback, instruct learners based on feedback, or design tasks that encouraged critique and revision.

Buck Institute of Education (2022), Larmer et al. (2015), and Grossman et al. (2019) have emphasised the significance of the end product as the final element in PBL. While PBL prioritises the learning process over the final product, in contrast to conventional projects, these sources underscore that crafting a public product allows learners to showcase their acquired knowledge. Creating a public product is a motivational factor, instils a sense of responsibility in learners, and helps them perceive themselves as active contributors to society (Larmer et al., 2015; Grossman et al., 2019). However, in this study, not all teachers could complete all the necessary steps for learners to bring their projects to fruition. While one participant successfully reached the final step, the other two teachers could not do so, resulting in learners being unable to finalise their projects. This implies that learners might have missed the opportunity to demonstrate their learning to peers, school staff, and the broader community. This also represents a missed opportunity for the researchers, as they were unable to study how teachers fully implemented their PBL projects.

The participants encountered difficulties that hindered the completion of their PBL projects. One contributing factor was that teachers initiated their projects later in term 3 instead of at the term's beginning. As a result, they found themselves under pressure to complete the implementation and conduct assessments in other subjects as per the prescribed Annual Teaching Plan (ATP) by the DBE. A suggested solution for addressing these challenges is effective time management. According to Cintang et al. (2018), teachers can design tools to help them navigate time-related challenges. This may involve creating a PBL programme that outlines time allocation, and the duration required for different learning tasks throughout the PBL process while taking into consideration other subjects. Implementing a structured approach could alleviate the pressure on teachers, ensuring they can complete their PBL projects more effectively.

The teachers in this study responded positively to the PBL resources provided by E3, noting that the materials guided them through certain steps when implementing PBL in their classrooms. However, they also expressed a need for clarification on how to utilise these resources effectively in the enactment of PBL. Specifically, teachers were unsure whether they should strictly adhere to all the provided steps or modify the project to suit their learners' needs. Additionally, there was uncertainty about whether they should use the marks learners received in the project as the final grade for the Life Skills subject. While teachers received some teaching and learning materials, concerns were raised regarding the school's lack of technical facilities and resources, such as printers. This limitation hindered their ability to print a sufficient quantity of learning materials for their learners.

To address the challenge of insufficient teaching resources, Yang et al. (2021) underscored the importance of teachers seeking cost-effective methods to create resources that are readily accessible. This involves substituting tools and materials that are hard to find or adapting to the project context (Cintang et al., 2018). The recommendation is to tailor tools and materials based on the natural resources available in the learners' environments. Additionally, maintaining easy access and regular communication with the programme support team can provide teachers with timely clarification and support during implementation.

The aim of this study was to understand how teachers implemented PBL in their classrooms and their experiences with applying PBL following training from E3. Drawing conclusions from the results, it is evident that PBL implementation can benefit teachers and learners. Teachers who received training from E3 on effective PBL practices shared how they approached challenges like time management, language barriers, and insufficient learner participation. They employed strategies such as structured planning techniques, collaborative tools, and varied instructional methods. These approaches have the potential to help teachers address these challenges in any context, leading to smoother PBL implementation and a more engaging learning environment. The results showed that learners, in turn, experienced deeper learning outcomes through hands-on, real-world projects that required critical thinking and problem-solving. The structured support from teachers helped learners develop an entrepreneurial mindset, essential for adapting to and thriving in a fast-changing world. The training provided by E3 played a crucial role in equipping teachers with the necessary skills and confidence to implement PBL effectively, thereby enhancing the overall learning experience and contributing to the development of the competencies vital for future success.

So, what are the implications of the study's findings? The results demonstrate that PBL can positively influence both learning outcomes and the development of key future competencies in learners. However, this impact is dependent on teachers' ability to implement PBL effectively in their classrooms. This suggests that teachers must be thoroughly prepared to use PBL, whether through pre-service teacher education or ongoing in-service development. Without this foundational knowledge and support, the potential benefits of PBL may not be fully realised, and the approach risks being underused or improperly applied, ultimately leading to ineffectiveness. Thus, the study highlights the importance of investing in teacher preparation programmes to equip teachers with the necessary skills and confidence to integrate PBL strategies into their classrooms successfully.

Given the limitation of having only three teachers in the sample, future research should involve a broader range of schools across South Africa. This will provide insights into how PBL is implemented and experienced by both teachers and learners, as well as the effects of its implementation.

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