

FACILITATING TEACHERS' CONTINUOUS PROFESSIONAL DEVELOPMENT IN NIGERIA THROUGH MOBILE LEARNING

Mercy Odion IZOBO

Department of Educational Management, Faculty of Education, Ignatius Ajuru University of Education, Nigeria
odmercy49@gmail.com

Catherine Ogechi CHIORLU

Department of Educational Management, Faculty of Education, Ignatius Ajuru University of Education, Nigeria

ABSTRACT: Continuous professional development (CPD) is essential for improving teachers' competence, pedagogical skills, and overall effectiveness in delivering quality education. In Nigeria, the need for sustainable and accessible CPD opportunities is increasingly important due to rapid educational changes, curriculum reforms, and growing demands for improved learning outcomes. This paper examined the role of mobile learning (m-learning) in facilitating teachers' continuous professional development in Nigeria. The paper further explored how mobile technologies, including smartphones, tablets, and mobile applications, can support flexible, personalized, and cost-effective professional learning for teachers. It highlights the advantages of m-learning in enabling access to educational resources, online training modules, professional networks, and collaborative learning platforms regardless of time and location. Through these tools, teachers can continuously update their knowledge, improve instructional practices, and adapt to evolving educational demands. The paper also acknowledged the challenges affecting the effective adoption of m-learning for CPD in Nigeria, such as inadequate ICT infrastructure, limited digital literacy among teachers, high data costs, unreliable internet connectivity and insufficient institutional support. It additionally discussed strategies for overcoming these barriers, including government investment in digital education infrastructure, capacity-building programs, affordable connectivity solutions and supportive policy frameworks. Relevant literature served as the major source of information, the study concluded through literature reviewed that mobile learning offers a viable and scalable approach to strengthening teachers' professional development in Nigeria. It emphasizes that when effectively implemented; m-learning can enhance teacher quality, promote lifelong learning and improve student outcomes. The paper recommended stronger integration of mobile technologies into national teacher development programs to ensure sustainable educational improvement.

Keywords: Mobile Learning, M-Learning, Continuous Professional Development, Digital Learning, Teacher Education.

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INTRODUCTION

Mobile learning (m-learning) offers flexible and accessible opportunities for teachers' continuous professional development in Nigeria. By enabling access to digital resources, training, and collaboration anytime and anywhere, m-learning supports ongoing skill enhancement. It addresses gaps in traditional training systems and strengthens teaching quality in a rapidly changing educational environment. As such, the quality of any education system is

closely tied to the quality of its teachers, and the quality of teachers is inseparable from the quality of the learning opportunities available to them throughout their careers. Contemporary scholarship no longer treats teacher learning as a one-time event completed at the point of graduation; rather, it is increasingly understood as a lifelong, collaborative, and professionally embedded process. The 2024 Global Report on Teachers emphasizes that professional development should be reimagined as a lifelong learning ecosystem, with flexible formats and delivery methods that accommodate teachers' workloads and evolving classroom realities (UNESCO & Teacher Task Force, 2024). This position is especially important in Nigeria, where many teachers work under conditions that make regular attendance at centralized workshops difficult, costly, and often unsustainable.

Within this broader discussion, m-learning has gained attention because it aligns with the lived realities of teachers more closely than many traditional professional development models. UNESCO defines mobile learning as the use of mobile technology, either alone or in combination with other ICT, to enable learning anytime and anywhere. Importantly, UNESCO also warns that the educational value of mobile devices does not arise automatically from access to technology; rather, it depends on whether teachers receive the pedagogical and technical support needed to use these tools meaningfully. In other words, investment in teacher development may matter more than investment in hardware alone, because without professional learning, teachers may merely “do old things in new ways” instead of improving practice (UNESCO, 2013). Earlier scholarship likewise notes that mobile learning is especially suited to teacher professional learning because it supports reflection-in-action, collaboration, and the capture of learning moments within the immediacy of practice (Aubusson et al., 2009).

The Nigerian context makes this discussion particularly urgent. The Federal Ministry of Education's National Digital Learning Policy identifies capacity building, infrastructure and access devices, and content and platforms as core pillars of digital learning reform. The same policy acknowledges that teachers' digital skills remain a major implementation challenge and notes the importance of continuous, systemic, and sustainable capacity building. Recent federal initiatives also show growing institutional movement toward digital and mobile-enabled teacher development, including the National e-Learning Portal, the Ignite platform for teachers, Edu Revamp, and the Nigeria Learning Passport ecosystem. At the same time, UNICEF Nigeria reports that less than half of teachers are equipped with basic ICT skills, while digital infrastructure, electricity, and broadband remain uneven, especially in underserved communities. These realities make the question not whether Nigeria needs teacher CPD, but how CPD can be delivered more flexibly, equitably, and sustainably through tools teachers can actually use (Federal Ministry of Education, 2023; Federal Ministry of Education, n.d.; UNICEF Nigeria, 2025).

THEORETICAL UNDERPINNING

This paper is anchored on Connectivism Theory, advanced by George Siemens. Connectivism is particularly appropriate for a discussion of m-learning because it explains learning in the digital age as a process of building, navigating, and sustaining networks of knowledge, people, tools, and information sources. Siemens argues that learning now occurs through communities of practice, personal networks, and work-related tasks, and that the capacity to know more, make connections, and remain current is more important than merely possessing static knowledge. He further emphasizes that learning may reside outside the individual, including within digital

systems and databases, and that decision-making in fluid information environments is itself part of learning (Siemens, 2005).

Applied to teacher professional development, Connectivism suggests that meaningful CPD should not be confined to occasional workshops in formal venues. Instead, teacher learning should unfold through ongoing interaction with digital resources, colleagues, mentors, communities of practice, and context-specific classroom problems. M-learning fits this logic because it supports just-in-time access to knowledge, peer exchange, collaborative reflection, and professional networking across time and place. For Nigerian teachers, especially those in remote or underserved areas, mobile devices can become not merely communication tools but nodes within a wider professional learning ecology. In this sense, m-learning is not simply a delivery technology; it is a networked mode of teacher learning that can extend the reach, relevance, and continuity of CPD.

CONCEPTUAL CLARIFICATION

Mobile Learning (M-Learning)

Mobile learning, commonly referred to as m-learning, is a mode of learning that takes place through portable digital devices such as smartphones, tablets, and other handheld technologies that allow learners to access educational resources across different locations and time periods. Unlike conventional e-learning, which is often tied to desktop computers and fixed learning environments, m-learning is distinguished by portability, immediacy, flexibility, and context sensitivity. It enables learning to occur beyond the boundaries of the classroom or training centre, thereby making learning more personal, continuous, and embedded in daily life and work practices. Scholars have argued that the distinct value of m-learning lies not merely in the use of mobile devices, but in its capacity to support learning that is timely, situated, connected, and responsive to the learner's immediate needs and environment (Traxler, 2009; UNESCO, 2013; Crompton, 2013).

In the context of teacher development, m-learning represents more than a technological innovation; it is an alternative professional learning model that allows teachers to access training content, professional discussions, mentoring support, digital resources, and reflective tools without leaving their places of work. This is especially relevant in systems where teachers face constraints such as limited release time, geographical isolation, and irregular access to formal workshops. Through m-learning, teachers can participate in webinars, download lesson materials, watch short instructional videos, join professional discussion groups, complete modular courses, and receive ongoing support in a manner that is both flexible and scalable. Thus, m-learning is not simply the delivery of content through phones, but a broader ecosystem that supports continuous, networked, and workplace-relevant learning (Aubusson et al., 2009; Kukulska-Hulme, 2012; UNESCO, 2013).

Another important aspect of m-learning is its learner-centred nature. Because mobile devices are highly personal and constantly available, they allow users to control the pace, time, place, and sequence of learning. This aligns with adult learning principles, particularly for professionals such as teachers who benefit from self-directed and need-based learning experiences. Teachers are able to engage with learning content when they identify specific classroom problems or professional gaps, making the learning process more relevant and practical. In this sense, m-learning supports “just-in-time” learning, where knowledge is acquired

and applied in close proximity to actual practice. Such immediacy increases the likelihood that professional learning will influence classroom behaviour and instructional decision-making (Sharples et al., 2007; Traxler, 2009).

M-learning is also inherently interactive and collaborative. Mobile technologies enable communication through chats, online communities, collaborative platforms, and social learning networks. These features are particularly valuable for teachers, whose professional growth is often strengthened through dialogue, peer support, shared reflection, and exposure to communities of practice. Rather than learning in isolation, teachers can use mobile platforms to ask questions, compare instructional strategies, share experiences, and receive feedback from colleagues and mentors. This interactive dimension reflects the view that learning is socially constructed and strengthened by professional networks, making m-learning especially appropriate for continuous professional development (Siemens, 2005; Aubusson et al., 2009).

However, conceptually, it is important to note that m-learning should not be reduced to device ownership or internet access alone. The educational significance of m-learning depends on the quality of instructional design, relevance of content, ease of access, digital literacy of users, and the extent to which learning activities are linked to actual professional practice. Poorly designed mobile learning that merely transfers static documents to a small screen may have little impact on teacher growth. Effective m-learning, by contrast, is structured around purposeful interaction, contextual relevance, reflection, and follow-up support. Therefore, the concept of m-learning should be understood as the pedagogically meaningful use of mobile technology to facilitate flexible, continuous, and context-responsive learning (UNESCO, 2013; Crompton et al., 2017).

Continuous Professional Development (CPD)

Continuous professional development refers to the ongoing, intentional, and systematic process through which professionals update, deepen, and broaden their knowledge, skills, values, and competencies throughout their careers. In the teaching profession, CPD is essential because teaching is dynamic and constantly influenced by curricular reforms, changes in learner needs, assessment innovations, technological advancement, and evolving social expectations. A teacher's initial qualification, though important, is insufficient for sustaining long-term professional effectiveness. Consequently, CPD is widely regarded as a lifelong process through which teachers remain current, reflective, innovative, and responsive to the demands of their profession (Day & Sachs, 2004; Desimone, 2011; Darling-Hammond, Hyler, & Gardner, 2017).

CPD in teaching goes beyond attending occasional workshops or seminars. It includes all structured and unstructured learning experiences that contribute to professional improvement, such as in-service training, formal courses, peer observation, mentoring, action research, collaborative lesson planning, reflective practice, conferences, online courses, and participation in professional communities. The emphasis is on sustained learning that translates into better teaching practice and improved learner outcomes. Effective CPD is usually content-focused, collaborative, classroom-related, active rather than passive, and extended over time. Research consistently shows that when CPD possesses these features, it is more likely to influence teachers' beliefs, classroom practices, and student achievement positively (Desimone, 2009; Opfer & Pedder, 2011; Darling-Hammond et al., 2017).

A key conceptual feature of CPD is continuity. The word "continuous" implies that professional learning should not occur only at isolated moments or in response to policy

pressure. Instead, it should be embedded within the teacher's professional life as a recurring and developmental process. This continuity is important because professional competence develops gradually through repeated exposure, practice, reflection, feedback, and refinement. One-off training sessions may raise awareness, but they rarely produce lasting changes in practice unless they are reinforced through follow-up activities and professional support. For teachers, therefore, CPD must be understood as a developmental journey rather than a series of disconnected events (Day, 1999; Desimone, 2011).

CPD is also linked to professionalism and professional identity. Teachers who engage regularly in CPD are more likely to see themselves as reflective practitioners who are responsible not only for delivering curriculum content but also for improving their craft, responding to learner diversity, and contributing to school improvement. This gives CPD both an instrumental and a normative value. Instrumentally, it improves competence and effectiveness; normatively, it affirms teaching as a profession that requires ethical commitment to learning and improvement. In many educational systems, including Nigeria, CPD is increasingly tied to professional standards, certification, recertification, and career advancement, which makes it both a personal and institutional responsibility (Avalos, 2011; TRCN, 2010).

Teachers' Continuous Professional Development in Nigeria

In Nigeria, continuous professional development has become a critical issue because of concerns about teacher quality, uneven instructional standards, low digital readiness, and the persistent gap between policy aspirations and classroom realities. The Nigerian education system has long recognized the centrality of teachers in achieving national development goals, yet access to structured and sustained professional development remains uneven across states, school levels, and geographical locations. Many teachers, especially those in public schools and rural areas, have historically relied on infrequent workshops, irregular government-sponsored training, or self-initiated efforts for professional learning. This has limited the consistency and reach of CPD across the country (TRCN, 2010; Ogunode et al., 2020).

The Teachers Registration Council of Nigeria (TRCN) has attempted to institutionalize CPD through professional standards and continuing professional development requirements. The Professional Standards for Nigerian Teachers emphasize that teachers should engage in ongoing learning to improve subject knowledge, pedagogy, ethics, and professional effectiveness. In principle, this places CPD at the heart of professional teaching practice in Nigeria. In practice, however, implementation has often been constrained by inadequate funding, weak follow-up, poor coordination, limited infrastructure, and unequal access to opportunities. This makes the search for more flexible and scalable CPD approaches, such as m-learning, particularly important in the Nigerian setting (TRCN, 2010; Yusuf & Fashiku, 2016).

Furthermore, the Nigerian context gives special relevance to digital and mobile approaches to CPD because mobile phone penetration is far more extensive than access to conventional computing infrastructure. Even where schools lack fully equipped computer laboratories, many teachers possess or can access mobile phones. This creates a practical opening for mobile-enabled CPD, particularly if training content is designed for low bandwidth, asynchronous access, and relevance to local teaching needs. Thus, within Nigeria, m-learning can be conceptually understood as an approach that may reduce some of the structural barriers that have historically weakened teacher CPD, especially barriers related to time, distance, institutional centralization, and cost (UNESCO, 2013; Federal Ministry of Education, 2023).

Teacher Professional Development

Teacher professional development is a narrower but closely related concept to CPD. While CPD may apply broadly to all forms of ongoing professional improvement, teacher professional development specifically focuses on learning activities that improve teachers' knowledge of subject matter, pedagogy, classroom management, assessment, educational technology, inclusion, and professional judgment. It refers to the processes by which teachers grow from novice to experienced practitioners and continue refining their competencies throughout their careers. This development is not limited to formal instruction; it also occurs through reflection on practice, collaborative inquiry, coaching, mentoring, experimentation, and school-based learning communities (Avalos, 2011; Darling-Hammond et al., 2004).

An important conceptual shift in the literature is from viewing teacher development as transmission of information to viewing it as transformative professional learning. Under the older model, teachers were passive recipients of expert knowledge during workshops and seminars. Under the newer model, teachers are active participants who interpret, adapt, test, and refine ideas within their own classroom contexts. This shift is important for understanding why m-learning can be useful. Mobile platforms are well suited to the newer model because they can support repeated engagement, peer interaction, reflection, and incremental learning rather than one-directional knowledge transfer alone (Opfer & Pedder, 2011; Korthagen, 2017).

Facilitating Continuous Professional Development

The term "facilitating" in this topic implies enabling, supporting, strengthening, and making CPD easier, more effective, and more sustainable. It does not necessarily mean replacing all traditional methods of professional development. Rather, it suggests that m-learning serves as a catalyst or enabler that improves access, participation, continuity, and relevance in teacher learning. Facilitation can occur in several ways: by reducing the barriers of place and time, by making learning resources instantly available, by enabling communication and peer exchange, by supporting monitoring and certification, and by helping teachers connect learning directly to classroom practice. In this sense, facilitation refers to the role m-learning plays in improving the process and reach of teacher development rather than being the sole mechanism through which development occurs (UNESCO, 2013; Darling-Hammond et al., 2017).

Conceptually, this is significant because many professional development systems fail not because teachers reject learning, but because the systems are too rigid, infrequent, expensive, and detached from teachers' work realities. M-learning facilitates CPD by making professional learning more accessible and embedded in the everyday life of the teacher. A teacher no longer needs to wait for a formal event before engaging with new ideas or receiving support. Learning can occur through short modules, podcasts, discussion forums, demonstration videos, digital mentoring, and resource sharing that respond to immediate professional needs. Thus, facilitation here means enhancing the effectiveness, convenience, continuity, and inclusiveness of CPD through mobile-enabled structures (Aubusson et al., 2009; Kukulska-Hulme, 2012).

Relationship between M-Learning and Continuous Professional Development

The relationship between m-learning and CPD is fundamentally one of alignment between a flexible learning technology and a continuous learning need. CPD requires regular, sustained,

and context-sensitive learning opportunities, while m-learning provides a mode through which such opportunities can be delivered more flexibly and at scale. This makes m-learning particularly suitable for teacher CPD, especially in contexts like Nigeria where traditional in-service models often fail to reach all teachers consistently. Through m-learning, CPD can become more personalized, modular, collaborative, and evidence-based, rather than remaining centralized and episodic (Traxler, 2009; UNESCO, 2013).

This relationship is also pedagogical. Effective CPD is known to depend on relevance, active participation, collaboration, coherence, and duration. M-learning can support all these features if properly designed. It can provide content relevant to teachers' classroom problems, allow active engagement through quizzes and reflective tasks, support collaboration through peer networks, align modules with curricular and professional standards, and sustain learning over time through repeated access. Therefore, m-learning should be viewed not simply as a technological channel for CPD, but as a potentially transformative medium for organizing teacher learning in more dynamic and sustainable ways (Desimone, 2011; Darling-Hammond et al., 2017; Crompton et al., 2017).

Operational View of M-Learning for Teachers in Nigeria

Operationally, mobile learning in facilitating continuous professional development for teachers in Nigeria can be understood as the practical deployment of mobile devices, mobile applications, and mobile-accessible digital platforms to deliver, support, and sustain teacher learning beyond the limitations of conventional face-to-face training. In this sense, m-learning is not merely the ownership or casual use of smartphones by teachers, but the intentional integration of mobile technology into structured and unstructured professional learning processes. It involves the use of portable digital tools to provide teachers with immediate and continuous access to pedagogical content, curriculum updates, professional networks, assessment guidance, instructional videos, mentoring opportunities, and formal professional development modules that can be completed at their own pace or within scheduled learning windows. This operational understanding situates m-learning as an enabling mechanism for lifelong professional growth, especially in a context such as Nigeria where traditional in-service training is often irregular, centralized, and inaccessible to many teachers due to cost, distance, and institutional constraints (TRCN, 2010; UNESCO, 2013; Federal Ministry of Education, 2023).

In practical terms, m-learning for teachers in Nigeria may take several forms. It may involve self-paced learning through short mobile courses on classroom management, lesson planning, assessment techniques, inclusive education, and digital pedagogy. It may also include participation in WhatsApp groups, Telegram communities, teacher forums, and other professional learning networks where educators exchange ideas, discuss classroom challenges, and share instructional materials. In addition, it may involve digital mentoring through mobile communication between less experienced teachers and more experienced colleagues, as well as the use of mobile-based quizzes, reflective journals, podcasts, webinars, and downloadable teaching aids. In this regard, m-learning functions both as a content delivery system and as a communication environment through which teachers can interact with knowledge, peers, mentors, and institutions in real time or asynchronously. Such flexibility is particularly significant in Nigeria, where teachers often have heavy workloads and limited opportunities to leave their classrooms for centralized professional development programmes (Aubusson et al., 2009; Sharples et al., 2007; UNESCO, 2013).

The operational value of m-learning in Nigeria is also closely linked to accessibility and scalability. Because mobile phones are more widely available than laptops or desktop computers, mobile learning offers a more realistic pathway for expanding professional development opportunities to a larger number of teachers across urban, rural, and riverine communities. This is especially important in a country where disparities in infrastructure and institutional support continue to shape access to teacher training. Through mobile-accessible platforms, a teacher in a remote school can receive the same core professional content as a teacher in a major urban centre, thereby reducing some of the geographical inequalities that have historically affected teacher development. In this way, m-learning can function as a democratizing tool that broadens participation in CPD and helps ensure that professional learning is not reserved only for those who can attend workshops in state capitals or training hubs (Traxler, 2009; UNESCO, 2013).

Another operational dimension of m-learning is its responsiveness to the real conditions of teachers' work. Unlike many traditional CPD models that separate learning from teaching practice, m-learning allows teachers to access professional support at the point of need. A teacher preparing for a difficult lesson may consult a mobile resource immediately before class; another may revisit an assessment guide after marking students' scripts; another may watch a short demonstration video on learner-centred teaching strategies during a break period. This immediacy makes professional learning more functional and relevant because it is closely tied to everyday instructional problems. Operationally, therefore, m-learning supports just-in-time learning, where teachers acquire and apply knowledge in close proximity to practice. This characteristic increases the likelihood that CPD will influence actual classroom behaviour rather than remain theoretical or forgotten after a workshop has ended (Kukulska-Hulme, 2012; Desimone, 2011).

Furthermore, m-learning in the Nigerian teaching context can be viewed operationally as a blended support system rather than a purely technological substitute for conventional professional development. While mobile platforms can provide flexible access to content and networks, their greatest effectiveness may be achieved when combined with school-based mentoring, professional learning communities, and formal accreditation mechanisms. For instance, teachers may complete mobile modules independently and then discuss implementation challenges during staff meetings or cluster-based peer sessions. Similarly, mobile platforms can be used to track participation, award professional development credits, and provide digital evidence for recertification or appraisal purposes. This makes m-learning not only a mode of learning delivery but also a system for documenting, monitoring, and institutionalizing professional growth within the wider regulatory and policy framework of teacher education in Nigeria (TRCN, 2010; Darling-Hammond et al., 2017).

Operationally, the effectiveness of m-learning also depends on the quality of its design and the enabling conditions surrounding its use. The presence of mobile phones alone does not guarantee meaningful professional learning. For m-learning to function well for Nigerian teachers, the content must be professionally relevant, easy to navigate, low in data demand, adaptable to different levels of digital literacy, and aligned with curriculum needs and professional standards. Equally important are factors such as electricity supply, internet connectivity, affordability of data, institutional encouragement, and teachers' confidence in using digital tools. Thus, from an operational perspective, m-learning should be seen as a socio-technical arrangement involving devices, platforms, content, support systems, policies, and user competencies working together to facilitate teacher development. Where these elements are

absent or weak, m-learning may exist in theory but fail in practice (UNESCO, 2013; Federal Ministry of Education, 2023).

In the Nigerian environment, the operational significance of m-learning lies especially in its potential to overcome longstanding barriers to teacher professional development. It reduces dependence on infrequent seminar-based training, lowers travel and accommodation costs, accommodates teachers' schedules, and creates opportunities for continuous engagement rather than episodic exposure. It also helps connect professionally isolated teachers to wider communities of practice, making learning more collaborative and less dependent on physical location. Viewed in this way, m-learning is operationally valuable not simply because it is digital, but because it offers a practical, flexible, and potentially sustainable mechanism for embedding CPD into the daily professional lives of teachers in Nigeria. It therefore represents an important pathway for improving teacher competence, professional connectedness, and instructional effectiveness in a rapidly changing educational environment (Siemens, 2005; UNESCO, 2013; Federal Ministry of Education, 2023).

Mobile Learning in Facilitating Continuous Professional Development for Teachers in Nigeria

The most significant ways m-learning facilitates CPD are through:

Flexible Access to Professional Learning

One of the most significant ways m-learning facilitates continuous professional development for teachers in Nigeria is through flexible access to learning opportunities. Unlike conventional in-service training that often requires teachers to wait for annual workshops, seminars, or conferences, m-learning allows teachers to engage in professional development at any convenient time and place. Through mobile devices, teachers can access curriculum guides, lesson notes, teaching videos, policy updates, and professional learning materials before school, during break periods, after class, or while preparing lessons at home. This flexibility is especially important in Nigeria, where many teachers work in environments characterized by limited infrastructure, busy schedules, and inadequate access to centralized training opportunities. UNESCO has emphasized that mobile technologies can make educational resources more readily available to teachers and can serve as a practical and cost-effective means of supporting educators in remote and resource-constrained settings. In this regard, m-learning helps to remove the barriers of time and distance that often hinder teachers' participation in continuous professional development (UNESCO, 2013).

Just-in-Time and Practice-Embedded Professional Learning

Another important contribution of m-learning to teachers' continuous professional development is its capacity to support just-in-time and practice-embedded learning. This means that teachers can access professional support exactly when they need it and in direct relation to actual classroom challenges. For example, a teacher who is about to teach a difficult topic can quickly consult a short mobile module, watch a demonstration video, download an assessment guide, or engage with a peer group for clarification before entering the classroom. This differs sharply from traditional professional development models, which often separate training from classroom

practice and provide knowledge long before or long after it is needed. Since teacher development is more effective when it is linked to immediate pedagogical concerns and followed by opportunities for reflection and application, mobile learning becomes highly valuable when designed around real teaching problems rather than abstract content delivery. This view is supported by research on effective professional development and technology-enabled teacher learning, which shows that technology contributes most meaningfully to teacher growth when it promotes relevance, active engagement, collaboration, and direct application to practice (Darling-Hammond et al., 2017; Huang et al., 2024).

Professional Collaboration and Communities of Practice

M-learning also strengthens continuous professional development by supporting professional collaboration and the formation of communities of practice. Teachers do not develop professionally only by reading materials or completing modules; they also grow through interaction with colleagues, exchange of ideas, joint problem-solving, and reflective dialogue about teaching practice. Mobile technologies make such collaboration easier by enabling teachers to participate in messaging groups, online forums, peer-feedback networks, and digital professional communities regardless of location. This is particularly beneficial in Nigeria, where many teachers in rural and underserved areas are professionally isolated and may have limited opportunities for regular interaction with peers. Through mobile-accessed communities of practice, such teachers can ask questions, share teaching strategies, discuss learner difficulties, and receive encouragement and mentoring from wider professional networks. From the perspective of Connectivism, professional growth is deeply rooted in the ability to form and sustain connections with people, ideas, and digital resources. The global literature on teacher development also supports the argument that collaboration is central to meaningful CPD. In this way, m-learning helps shift professional development from a compliance-based activity to a culture of inquiry, collegial learning, and reflective practice (Siemens, 2005; UNESCO & Teacher Task Force, 2024).

Emerging Policy and Institutional Support in Nigeria

The relevance of m-learning for teachers' continuous professional development in Nigeria is further strengthened by the country's evolving policy and institutional landscape. Nigeria's National Digital Learning Policy already recognizes self-paced online learning, mentorship, school-based learning, content platforms, and capacity building as essential components of educational improvement. This suggests that the policy environment is gradually becoming supportive of mobile-enabled professional development. In addition, the Federal Ministry of Education has introduced digital platforms such as the National e-Learning Portal, the Ignite platform for teachers, and Edu Revamp, all of which can serve as important foundations for mobile-accessible teacher learning. Beyond this, collaborative digital initiatives involving UNICEF and the Federal Ministry of Education have reportedly trained thousands of teachers and education officers in digital skills, distributed devices, and expanded access to digital learning resources. Likewise, the teacher development initiative launched by UBEC and the Federal Ministry of Education in 2025 indicates increasing national commitment to large-scale teacher capacity building. These developments show that Nigeria is not beginning from a point of complete absence; rather, it already has the foundations upon which a more coherent and

sustainable m-learning strategy for teacher CPD can be built. What is required is better coordination, alignment, and strengthening of these existing efforts so that they function as part of an integrated system of professional learning (Federal Ministry of Education, 2023; Federal Ministry of Education, n.d.; UNICEF Nigeria, 2025; UBEC, 2025).

Operationalizing TRCN's CPD Requirements through M-Learning

Another major advantage of m-learning in Nigeria is its potential to support the operationalization of the Teachers Registration Council of Nigeria's continuous professional development requirements. Since TRCN already expects teachers to participate in ongoing professional learning and to provide evidence of such participation for recertification and professional recognition, mobile platforms offer a practical means of managing this process more efficiently. Through m-learning systems, accredited micro-courses can be delivered to teachers, participation can be digitally tracked, certificates can be automatically issued, and professional development portfolios can be built and stored electronically. This reduces the overdependence on physically centralized training events, which are often expensive, difficult to monitor, and inaccessible to many teachers. It also helps make CPD more systematic, transparent, and verifiable across a large and diverse educational system such as Nigeria's. In this sense, m-learning is not only a tool for delivering professional development content, but also an administrative and regulatory mechanism for documenting, monitoring, and validating teachers' professional growth in line with national professional standards.

CHALLENGES IN USING M-LEARNING FOR TEACHERS' CPD IN NIGERIA

In spite of its promise, m-learning should not be romanticized as a self-executing solution. The following are challenges in using M-Learning for Teachers' CPD in Nigeria

Digital Divide and Unequal Access

One of the major challenges in using m-learning for teachers' continuous professional development in Nigeria is the persistent digital divide. Although mobile learning is often presented as a flexible and inclusive approach, its effectiveness depends heavily on the availability of enabling infrastructure and teachers' ability to access and use digital tools. In Nigeria, many teachers still face poor internet connectivity, high cost of mobile data, irregular electricity supply, limited access to smartphones or tablets, and varying levels of digital competence. These problems are more pronounced in rural and underserved communities, where infrastructure deficits remain significant. As a result, the presence of a mobile platform does not automatically translate into meaningful access to professional learning. Teachers who cannot afford data, charge their devices consistently, or navigate digital platforms are likely to be excluded from the very opportunities that m-learning is expected to expand. This challenge shows that mobile learning, while promising, operates within broader socio-economic and infrastructural realities that must be addressed if it is to support CPD effectively (Federal Ministry of Education, 2023; UNICEF Nigeria, 2025).

Poor Pedagogical Design of Mobile CPD

A second challenge lies in the pedagogical weakness of poorly designed mobile professional development programmes. The mere transfer of training content onto a mobile device does not guarantee meaningful teacher learning or improved classroom practice. UNESCO has cautioned that mobile learning should complement, rather than replace, the forms of face-to-face support and professional interaction often needed to transform teachers' beliefs, skills, and instructional behaviours. This is important because many mobile CPD programmes risk becoming shallow repositories of uploaded documents, passive videos, or one-off quizzes that emphasize completion rather than genuine learning. Where mobile learning lacks opportunities for reflection, collaboration, guided application, and sustained follow-up, it is unlikely to produce significant changes in teaching practice. The real question is not simply whether teachers can learn through phones, but whether the learning experience is coherent, active, context-relevant, and connected to the realities of the classroom. Effective professional development still depends on sound pedagogy, regardless of whether the delivery medium is digital or physical (UNESCO, 2013; Desimone, 2011; Darling-Hammond et al., 2017).

Institutional Fragmentation and Weak Coordination

Another important challenge is institutional fragmentation within Nigeria's education and teacher development system. Although there are several digital learning and teacher development initiatives in the country, these programmes are not always well integrated into a unified framework for continuous professional development. Without proper coordination among the Federal Ministry of Education, the Teachers Registration Council of Nigeria, UBEC, State Universal Basic Education Boards, teacher education institutions, and school leadership structures, many m-learning initiatives risk remaining isolated interventions or pilot projects rather than becoming part of a sustainable national CPD system. This fragmentation can lead to duplication of efforts, inconsistency in standards, poor monitoring, and weak alignment between digital training opportunities and professional certification requirements. In such circumstances, mobile learning may appear innovative in policy terms but fail to become a routine and valued instrument of teacher growth in practice.

Low Incentive, Recognition, and Time for Participation

The challenge of participation is also linked to the issue of motivation, recognition, and workload. Even when mobile learning opportunities are available, teachers may not fully engage with them if they are not given incentives, professional recognition, or adequate time to participate. In many cases, teachers already work under considerable pressure, with large teaching loads and administrative responsibilities. If mobile CPD is added on top of these obligations without clear rewards, credits, certification value, or institutional encouragement, it may be perceived as an extra burden rather than a meaningful professional opportunity. This weakens participation and reduces the long-term sustainability of m-learning initiatives. For m-learning to function effectively in supporting teachers' CPD, it must therefore be linked to systems of recognition, appraisal, recertification, and professional advancement, so that teachers see it as an important and worthwhile part of their career development rather than an optional digital exercise.

Risk of Viewing Technology as a Complete Solution

A further challenge is the tendency to overestimate technology and assume that mobile learning by itself can solve the deeper problems of teacher professional development in Nigeria. M-learning is a useful tool, but it cannot independently overcome issues such as weak school leadership, poor policy implementation, inadequate funding, low teacher morale, and limited instructional resources. When policymakers or institutions treat m-learning as a quick substitute for broader investment in teacher development, the result may be superficial reform rather than meaningful change. Mobile learning works best when it is embedded within a wider support system that includes mentoring, school-based professional communities, monitoring, and opportunities for practical application. Without this wider support, m-learning may remain technically available but educationally ineffective.

STRATEGIES FOR EFFECTIVE INTEGRATION OF M-LEARNING INTO TEACHERS' CPD IN NIGERIA

Mobile-First and Teacher-Centred Content Design

For m-learning to facilitate continuous professional development effectively in Nigeria, one of the first requirements is a mobile-first design philosophy that places teachers' realities, classroom needs, and technological constraints at the centre of content development. This means that professional development materials should be short, modular, easy to navigate, and designed for low-bandwidth environments. Instead of long and abstract courses that may overwhelm teachers or discourage completion, mobile CPD should be structured into brief and practical learning units that address immediate professional needs such as lesson planning, formative assessment, classroom management, inclusive education, subject-specific pedagogy, safeguarding, and the use of digital teaching tools. Such a design makes learning more manageable and relevant, especially for teachers who must balance professional development with demanding teaching schedules. UNESCO has emphasized that curriculum materials, lesson plans, and educational resources should be made accessible through mobile devices and should be designed with usability, accessibility, and local relevance in mind. In the Nigerian context, this means that mobile learning resources must reflect the curricular demands, infrastructural realities, and teaching challenges that teachers actually face in schools, rather than simply importing generic content that may not fit local needs (UNESCO, 2013).

Blending M-Learning with Mentoring and Professional Communities

A second major strategy is to ensure that m-learning is integrated with mentoring, peer learning, and school-based or cluster-based professional communities. Mobile technology can widen access to knowledge, but its professional value becomes much greater when teachers are able to discuss what they have learned, test new ideas in the classroom, receive feedback from colleagues or mentors, and reflect on the outcomes of implementation. In this sense, m-learning should not be treated as an isolated activity that ends once a digital module is completed. Rather, each mobile-based learning experience should connect to broader professional conversations at the school or cluster level. Teachers might, for example, complete a short module on formative

assessment using their phones and then discuss how to apply the approach in subject meetings, peer review groups, or mentoring sessions. This strategy is important because the strongest models of professional development are those that combine active learning, collaboration, practical application, and sustained support over time. Mobile delivery should therefore function as an enabler of these established features of effective CPD rather than a substitute for them (Darling-Hammond et al., 2017; Huang et al., 2024; UNESCO & Teacher Task Force, 2024).

Linking M-Learning to TRCN Accreditation and Recertification

Another important strategy for strengthening the integration of m-learning into teachers' CPD in Nigeria is to connect mobile learning directly to the professional accreditation and recertification framework of the Teachers Registration Council of Nigeria. Since the teaching profession in Nigeria already operates with expectations for continuing professional development, credit accumulation, and evidence of professional growth, m-learning should be formally embedded within this structure. Mobile courses delivered through approved platforms can be accredited and assigned CPD value, allowing teachers to earn verified credits, receive certificates, and build digital portfolios that can support licence renewal, promotion, and recertification. This would move m-learning beyond the level of informal convenience and position it as a credible and recognized pathway for professional advancement. It would also encourage higher levels of participation because teachers would see a direct relationship between their engagement in mobile learning and their formal professional status. In a large educational system such as Nigeria's, this strategy is particularly useful because it allows CPD participation to be tracked more efficiently, reduces dependence on centralized physical workshops, and creates a more transparent and systematic method for documenting teacher development (TRCN, 2010; TRCN, n.d.).

Promoting Equity and Strengthening Enabling Conditions

The effective integration of m-learning into teachers' CPD in Nigeria also requires serious attention to equity and the enabling conditions that make digital learning possible. While mobile learning has the potential to widen access to professional development, it can also deepen existing inequalities if implementation does not deliberately address disparities in connectivity, electricity, device access, and digital competence. UNESCO's guidelines highlight the importance of expanding connectivity, considering subsidies for educational internet access, and ensuring that both teachers and learners can participate equitably in mobile-enabled education. In Nigeria, this would require practical measures such as partnerships with telecommunications providers to reduce the cost of educational data, development of offline-capable applications, provision of downloadable learning materials, support for device access among underserved teachers, and investments in school-level connectivity and charging facilities. It also calls for special policy attention to rural, riverine, and otherwise underserved communities where infrastructure deficits are most severe. Unless such enabling conditions are addressed, m-learning may benefit only already-advantaged teachers and fail to fulfil its promise as a mechanism for expanding CPD opportunities more equitably. Therefore, equity must be treated not as an optional consideration but as a core design and implementation principle of m-learning for teacher development in Nigeria (UNESCO, 2013; Federal Ministry of Education, 2023; UNICEF Nigeria, 2025).

Institutional Coordination and Policy Support

A further strategy is the strengthening of institutional coordination and policy support across the agencies and structures responsible for teacher development in Nigeria. For m-learning to become a sustainable component of CPD rather than a scattered set of pilot projects, there must be alignment among the Federal Ministry of Education, TRCN, UBEC, State Universal Basic Education Boards, teacher education institutions, school leaders, and relevant development partners. Such coordination is necessary to avoid duplication, harmonize standards, streamline content approval, and ensure that mobile learning initiatives are properly integrated into broader teacher development goals. When institutions work in isolation, teachers may be confronted with fragmented platforms, inconsistent standards, and unclear expectations. By contrast, when policy support is coherent and implementation is coordinated, m-learning can become part of a structured professional learning system that is easier to scale, monitor, and sustain. Institutional backing also signals to teachers that mobile learning is not an experimental add-on but a valued and legitimate part of their professional development pathway.

Continuous Monitoring, Feedback, and Improvement

Finally, the integration of m-learning into teachers' CPD should be supported by continuous monitoring, feedback, and evaluation. It is not enough to provide mobile content and assume that professional learning has taken place. Education authorities and implementing institutions need mechanisms for tracking participation, assessing completion rates, gathering teacher feedback, and determining whether learning is influencing classroom practice. This may include digital dashboards, reflective logs, assessment records, school-level follow-up, and teacher self-report or mentor review systems. Monitoring and evaluation are important because they help identify what types of mobile content are most useful, what barriers teachers encounter, and how programmes can be improved over time. Continuous feedback also strengthens accountability and ensures that m-learning remains responsive to teachers' actual needs rather than becoming a static or purely administrative exercise. In this sense, the long-term success of m-learning for CPD depends not only on access and design, but also on the existence of systems that support adaptation, quality assurance, and professional impact.

IMPLICATIONS FOR TEACHER PROFESSIONALISM AND EDUCATIONAL QUALITY

When properly designed and supported, m-learning can strengthen teacher professionalism in at least four ways. First, it can improve currency of knowledge by allowing teachers to update themselves continuously rather than periodically. Second, it can support instructional responsiveness, because teachers can learn in relation to immediate classroom problems. Third, it can deepen professional collaboration by connecting teachers to wider communities of practice. Fourth, it can enhance equity in access to CPD, especially for teachers who have historically been excluded from centralized opportunities. These outcomes align with both connectivist learning principles and current global thinking on teacher development as a lifelong, collaborative endeavour (Siemens, 2005; UNESCO & Teacher Task Force, 2024).

At the system level, the implications are equally important. Better-supported teachers are more likely to deliver stronger instruction, use more appropriate pedagogies, adopt digital tools

more meaningfully, and contribute to school improvement. Yet the critical point remains that mobile technology is only the medium. The true policy goal is not simply more apps for teachers, but more relevant, sustained, and professionally recognized learning for teachers. M-learning succeeds when it becomes part of a serious CPD ecosystem; it fails when it is treated as a symbolic digital add-on.

CONCLUSION

Mobile learning offers Nigeria a realistic and increasingly necessary pathway for strengthening continuous professional development for teachers. Its real promise lies in making CPD more flexible, accessible, collaborative, and professionally embedded, particularly in a system where centralized training often excludes those who need support most. Nigeria already has a policy base, regulatory structure, and emerging digital platforms that can support mobile-enabled teacher development. However, these opportunities will produce limited results unless they are tied to pedagogically sound design, TRCN-recognized accreditation, school-based support, and deliberate action on data costs, electricity, connectivity, and teacher digital competence. The most defensible position, therefore, is not that m-learning should replace traditional professional development, but that it should become a strategic complement that helps Nigeria deliver CPD more continuously, more equitably, and more effectively. In that sense, m-learning should be viewed not as a technological trend, but as a professional infrastructure for building a more adaptive, competent, and future-ready teaching workforce in Nigeria.

Suggestions

Based on the discussion on mobile learning in facilitating continuous professional development for teachers in Nigeria, the study suggests that:

- Government and educational stakeholders should adopt a deliberate mobile-first strategy for teacher professional development. This means that CPD content should be designed in short, practical, and low-bandwidth formats that teachers can access easily on smartphones and other mobile devices. Such content should focus on real classroom needs, including lesson planning, classroom management, assessment practices, inclusive teaching, and digital pedagogy.
- Mobile learning should not be implemented as a stand-alone intervention. Instead, it should be integrated with mentoring, peer collaboration, and school-based professional learning communities. Teachers are more likely to improve their practice when digital learning is followed by discussion, reflection, feedback, and classroom application. For this reason, m-learning platforms should be linked to professional support systems within schools and education districts.
- Teachers Registration Council of Nigeria and other regulatory bodies should formally recognize mobile-based CPD within the teacher accreditation and recertification process. When teachers are able to earn verified CPD credits through approved mobile platforms, participation is likely to increase, and mobile learning will gain greater legitimacy as a professional development pathway.
- Policy makers should address the infrastructural barriers that limit the effectiveness of m-learning in Nigeria. Special attention should be given to internet connectivity, electricity

supply, affordability of data, and device accessibility, especially in rural and riverine communities. Without these enabling conditions, mobile learning may widen inequality rather than reduce it.

- In addition, there is a need for stronger institutional coordination among the Federal Ministry of Education, TRCN, UBEC, SUBEBs, teacher education institutions, and school administrators. A coordinated framework will help ensure that mobile learning initiatives are not fragmented, duplicated, or weakly monitored, but are instead embedded within a coherent national strategy for teachers' continuous professional development.

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