

ICT Integration and Teaching / Learning Practices in Secondary Schools in Cameroon: An Approach to Generate Critical and Creative Minds

Theresia ATEH NGONGBA* & Peter NGWA

The University of Yaoundé I

E-mail : ateh.theresia@gmail.com; peterprinceson@gmail.com

*Corresponding author: Theresia ATEH NGONGBA; ateh.theresia@gmail.com

ABSTRACT

ICT had been adopted to facilitate the teaching-learning process in Cameroon. This paper investigates the investigate ICT integration vis-à-vis teaching and learning practices in Cameroon secondary schools. To achieve this objective, the exploratory method has been adopted, which is both qualitative and quantitative. Using a purposive sampling technique, 532 teachers were selected for the study. The Statistical Package for Social Sciences (SPSS) was used for data analyses and the following results were obtained: digital pedagogies on teaching/learning practices in Cameroon secondary schools where is positively significant. This is based on the fact that the level of significance is 0.00 thus lesser than 0.05 which is the alpha which is the standard error margin. Alternatively; the correlation coefficient (0.07) is a positive value and is situated within the normal range. The results reveal that we have no chance of making an error if we accept that the association between the variables exists. We can therefore conclude that digital pedagogies significantly influence teaching/learning practices in Cameroon secondary schools.

Keywords: ICT integration; teaching; learning practices; secondary school; generate critical; creative minds.

INTRODUCTION

In developing countries, teachers increasingly feel the need to integrate ICT into their practices to ensure quality learning. Sze that reality where ICT use was one of the main factors in ensuring *emergency remote education* (Valverde-Berrocso, Fernández-Sánchez, Revuelta Dominguez & Sosa-Díaz, 2021). Hence, teachers were called upon, especially during the period of lockdown, to exploit the opportunities offered by technology. The latter gives the possibility to use new methods and learning pedagogies (Louhab, Bahnasse & Talea, 2018). Moreover, the ubiquity of technological tools in teachers' daily lives has been a major factor in their familiarity with the new technology. Nevertheless, the question remains as to how much of an impact this has had on their professional practice. However, to fully benefit from these new ICT opportunities, teachers must have the necessary skills. A well-trained teacher has a greater chance of integrating ICT effectively into his practice (Hsu, 2010). The Ministry of Education has made considerable efforts over the last few years to generalize the use of ICT. The use of ICT in the professionalization of teaching and teachers themselves are, thus, expected to develop their competencies along their professional career in order to improve innovative pedagogical practices (Nejjari & Bakkali, 2017). Nonetheless, despite all these efforts, the integration of ICT in teaching\learning practices remains very limited (Ngwa, 2023).

The presence of change knowledge does not guarantee success but its absence ensures failure. In the past two decades, ICTs (technology) has become pervasive, impacting virtually every aspect of our daily lives. New technologies are having an impact on society at an unprecedented rate. Information distribution is now instant, unfiltered and free. Ubiquitous Internet access has radically changed notions of knowledge, expertise and access to information. We must bring 21st century technology into learning in meaningful ways to engage, motivate, and inspire learners of all ages to achieve, we must change what and how we teach to match what people need to know, how they learn, and where and when they learn. The pending question is how can teachers provide learners with effective instruction? According to the National Educational Technology Plan (2010): The challenge for our education system is to influence technology to create relevant learning experiences that mirrors our today' students' daily lives and the reality of their futures. In line with the above statement, the Cameroon Educational Plan 2013 to 2020 on the professional development in expanding the use of ICT in education and training of teachers arrived at the following solutions:- Education and training will be modernised through the integration of ICT; It will strengthen the capacity of teachers and support staff to use computer tools and digital teaching resources;

Promote new opportunities and new training tools (e-learning, distance learning, tutorials etc.); Improve the learning environment in schools. Based on our observations the integration of ICTs in Cameroon is short of the above just like any innovation.

Unfortunately, teachers hardly use digital pedagogies in their teaching and learning practices thus providing learners less opportunities for them to select from their environment digital pedagogies of importance to them, also teachers perceptions to integrate ICTs in their teaching and learning practice is negative as such, learning experiences are not contrived in a manner that necessitate practice for learners to arrange their ideas technologically, again, access to technological resources is inadequate providing limited opportunities for teachers to transpire meaningful interactions between their students and technological resources. Finally, constructive learning environments (video mediated lessons) are hardly provided to students, thus preventing them from critically and creatively constructing their own knowledge or experiences technologically.

THEORY AND CONCEPTS

The Technology Acceptance Model (TAM)

What teachers know, believe and think about ICT influences their acceptance of such technology and ultimately its use. According to Yates (2009), 70% to 80% of all ICT related projects fail not because of technical issues, but due to lack of user acceptance. Similarly, Davis (1989) notes that user acceptance is pivotal in determining the success or failure of any technology. These two authors (Yates, 2009 & Davis, 1989) highlight that it is therefore important to look at issues of user acceptance of technology before looking at ICT use.

Various technology acceptance theories have been tested and refined over the years. These include, but are not limited to, the Theory of Diffusion of Innovations (DIT) (Rogers, 1995), Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975), Theory of Planned Behaviour (TPB) (Ajzen, 1985) and Decomposed Theory of Planned Behaviour, (Taylor & Todd, 1995). One of the most authoritative is the Technology Acceptance Model (TAM), which focuses on the perceptions that influence technology use.

Fred Davis developed the Technology Acceptance Model in 1986. TAM was his adaptation of Fishbein and Ajezen's (1975) Theory of Reasoned Action (TRA). TAM describes technology adoption behaviour, that is, how users accept and use technology based on the theoretical beliefs-attitude-intention behaviour causal relationship initially established by TRA. Davis, Carbonaro, Kendal and Beauchamp (2003) note that TAM is based on the premise that when users are presented with new technology a number of factors influence their decision of whether, how and when they use it. Over 100 researchers (Abdullah & Ward, 2016, p. 8 for a comprehensive list) have suggested several external variables to understand "the impact of outside factors on users' two main perceptions, perceived ease of use (PEOU) and perceived usefulness (PU)" (Abdullah and Ward, 2016, p.3). PEOU directly influences PU. These perceptions affect users' positive or negative attitudes towards using the technology. Attitude towards using the technology influences behavioural intention to use the technology. PU also directly influences behavioural intention to use. Behavioural intention to use technology then determines actual use.

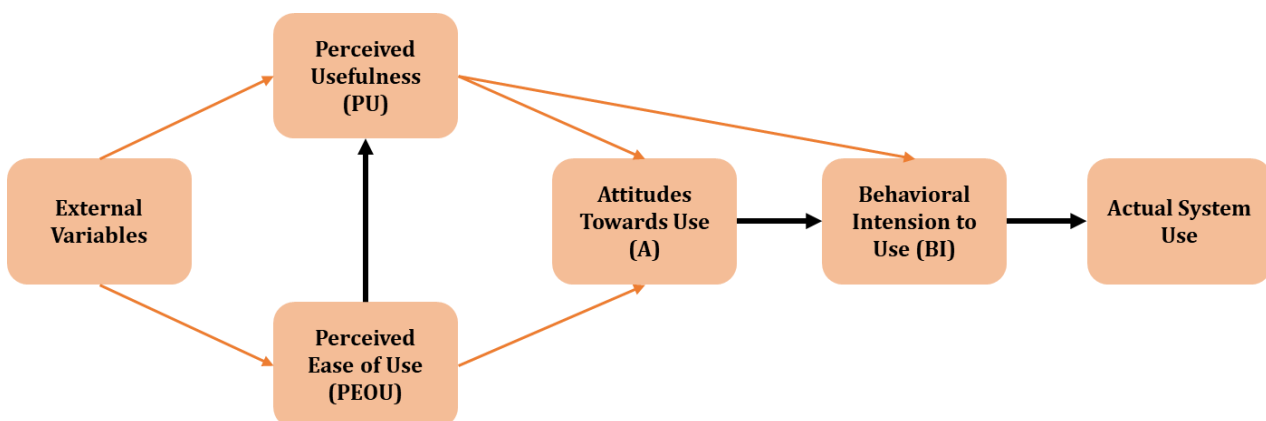


FIGURE 1: Technology Acceptance Model (Davis, 1989).

TAM views the users' attitudes and perceptions towards technology as an important determinant of the kind of experience a user will have while using that technology (Elwood, Changchit & Cutshall, 2006). This model maintains that external variables influence technology adoption and traces the impact of external variables on internal beliefs, attitudes, and intentions (Davis, 1989).

Perceptions around the usefulness of ICT and their ease of use led the discussion in this study as these two are the main determinants of whether a teacher decides to use ICT or not and to what extent. The perceived ease of use and perceived usefulness of technology (Elwood et al., 2006; Stols, 2008) are the two main components of TAM. Perceived ease of use is the degree to which technology is regarded as easy to use/understand and operate.

The perceived ease of use is a direct determinant of attitude and perceived usefulness. Perceived usefulness refers to the degree to which a person believes a technology will enhance their performance. Perceived usefulness is an especially strong determinant of technology use and it is impacted upon by various factors including “social influence and cognitive instrumental processes” (Venkatesh & Davis, 2000, p. 186). Various dimensions of TAM provide explanatory tools of why a participant perceives technology as easy to use or useful. I relied on TAM dimensions such as fit between task and technology (Dishaw & Strong, 1999), technology characteristics (Lederer, Maupi,

Sena and Zhuang, 2000), computer anxiety and computer playfulness (Venkatesh, 2000), prior experience (Agarwal & Prasad, 1999) and self-efficacy (Agarwal, Sambamurthy and Stair, 2000) to explain teachers’ behaviour change (or no change) and what influences that change.

Figure which follows shows the relationships between these dimensions in the present study. The internal variables influence perceived ease of use and perceived usefulness of ICTs and form part of the data gathered and analysed. Only selected external variables relevant to this study were incorporated and used in the data generation and analysis stage.

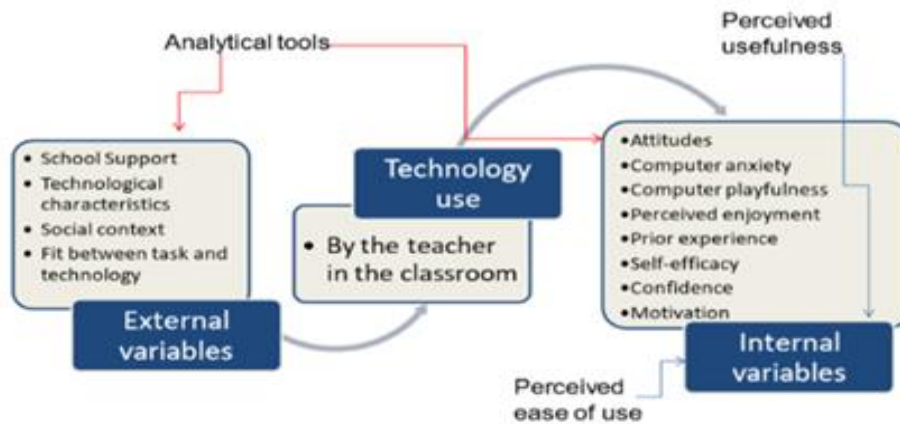


FIGURE 2: Technology Acceptance Model (Adapted from Venkatesh & Davis, 2000, p. 186).

Bagozzi (2007) acknowledges TAM as a useful model that has informed how a number of studies have been conducted; however, he found it “unreasonable to expect that one simple model could explain decisions and behaviours across a wide range of technologies, adoption situations and differences in decision making” (p. 244). He goes further to claim that TAM “seduces researchers into overlooking the fallacy of its simplicity – that is, by using TAM researchers have overlooked the omission of essential determinants of decision making and turned a blind eye to the inherent limitations of TAM” (Bagozzi, 2007, p. 244). TAM does not help to understand what happens in the classroom when ICT is used and/or why it happens as noted by critics of the model. Critics of TAM note that analysis of empirical research using the model shows that results are not consistent or clear (Legris, Ingham, & Collette, 2003). Legris et al. (2003) also conclude that “significant factors such as organisational and social factors are not included in TAM and that though it is a useful model, it has to be integrated into a broader one which would include variables related to both human and social change processes” (p. 191). TAM is a framework for explaining individual decision-making, but “this framework has not considered group, cultural and social aspects of decision making and usage” (Bagozzi, 2007, p. 247).

TAM has been extended to TAM 2 in an attempt to account for social and cognitive determinants and to understand how these factors can change in different

circumstances when user experience increases (Bagozzi, 2007, pp. 187-188). TAM 2 predicts that the importance of social influences will decrease as experience increases, as one’s own considerations and experiences take precedence over the thoughts/ideas of others. External influence is particularly relevant for teachers such as the ones considered in the present study, whose experience with ICT is relatively limited. However, cognitive functions such as job relevance (which is whether or not the system will support one in executing tasks necessary to the fulfilment of one’s job), output quality (which is the degree to which the system is able to complete the task), result demonstrability (which is whether or not one will be able to identify how the system is benefiting him/her) and perceived ease of use (the less effort it is to use a system, the more likely people will use it) also play an important role in the acceptance of technology, but do not decrease in importance as experience increases.

Teaching and Learning Practices in the 21st Century

It is the ability to apply learning in novel situations that makes for a successful student and, eventually, a successful member of the 21st -century workforce. Research has suggested that students learn more when engaged in meaningful, relevant, and intellectually stimulating work and that using technology increases the frequency of this type of learning (Lambert & Cuper, 2008).

Teaching that integrates ICT ensures that students are actively engaged and allow them to practice their learning in novel situations by relating, experiencing, applying, cooperating, and transferring (Dyer, Reed & Berry, 2006). The start of the new millennium was marked by a ground-breaking digital innovation. We currently live in a complicated, globally connected, and increasingly diversified media-saturated culture. Martinez (2022) asserts that this revolutionary transition has a greater impact on society than the shift from an oral to a written civilization. Due to this advancement in technology, students now need to actively participate in the generation and use of information, as well as be able to communicate effectively and function both locally and globally. Learning technology for the digital era is just one of the changes brought about by this technological innovation in our daily lives. Today's learners must continually deal with a variety of computer and social networking applications, like those offered by web 2.0 tools. The learner's behaviors and requirements are changing as a result of the new technology, but so are the theories and principles underlying learning processes, instructional design, and application development. Once more, Uştuk (2022) emphasized that the learning group is portrayed in the Connectivism model as a hub that is constantly a part of a larger system.

A study carried out by Martinez (2022), stated that ***the three r's of education (reading, writing, and arithmetic) have been replaced with rigor, relevance, and real-world skills for the 21st-century learner.*** It is therefore imperative that teachers alter their instruction to focus on what their students need. To Martinez (2022), it is not enough to simply teach in the same manner in which we were taught because the skills necessary for success in society have changed. In order for students to be competitive in the workforce, they must possess 21st-century skills such as global awareness, scientific literacy, the ability to collaborate, and leadership abilities, where technology literacy is the foundation of all of these skills. He equally states that cultural awareness and social responsibility are key components of the skills a student must possess given that much of their work constitutes communication on a global scale (Vallera & Harvey, 2022). According to their study on how teachers used technology resources, Lei found that social communication technology use had a significant positive association with student development and a moderate positive association with student achievement. It was even found that entertainment-exploration use of technology improved student learning habits (Lei, 2010). Research has also suggested education that integrated technology had a positive effect on student achievement. According to Dyer et al., (2006) a study, in particular, sought to determine if students involved in an illustration and design technology course would perform better on the mathematics Standards of Learning (SOL) test, which is Virginia's standardized test. In this study, it was found that those students who participated in the illustration and design technology course had a statistically significant higher passing rate on the

SOL than those students who did not participate in the technology course (p. 9).

Another study also suggested that merely using technology as a learning tool on a regular basis does not automatically result in higher student achievement; rather, it is through high-quality and purposeful utilization of technology that students will perform better. Lei found out that when time spent using technology was the only factor analysed, there were no significant differences in student achievement. When general technology use was examined, as a factor, only technology proficiency increased while subject-specific technology uses impeded technology proficiency (Lei, 2010). Social communication technology use, or ICT, had a significant. Positive association with student development and a moderately significant positive effect on student achievement. It is as well observed that students who learn in a technology-enhanced environment not only increase their motivation and achievement but also improve their self-efficacy levels (Hsieh, Cho, Liu & Schallert, 2008), Studies have also shown that students with higher perceived self-efficacy are more persistent, motivated, and experience greater achievement (Bandura, Freeman & Lightsey, 1999). The greatest catalyst for increasing self-efficacy in students is the self-directed learning that takes place when a student is using technology as a learning tool. Bandura and Schunk found that when students pursued self-directed learning with proximal sub-goals, they achieved substantial mastery of mathematical operations and developed a strong sense of mathematical efficacy (Bandura & Schunk, 1981).

On the other hand, not all studies have found ICT as a catalyst for improved student achievement. Merrill for example, found no difference in student achievement for students taught using technology when compared with those students who were taught using traditional methods (Merrill, 2001). Other researchers have even suggested it is debatable that technology-infused teaching can enrich student learning and cautioned educators to plan purposefully and not assume student achievement is inevitable simply because technology is being used (Mathiasen, 2004). Schofield warned that the shift from a teacher-centred to a student-centred learning environment may have unanticipated consequences (Schofield, 1995). In their work, Garthwait and Weller (2005) outlined the technical problems that arose in their study when the teacher (Susan) used technology in the lesson.

"One of the first laptop activities Susan planned was for students to practice scientific note-taking and upload their work to the school server. She saw this as an effective way to assess students' ability to select key points and paraphrase. Much to her distress, only half of the students had been taught how to access the server, so Susan had to rededicate time to teaching the others ... this inefficiency was frustrating (p. 11).

An increasingly complex society and a rapidly changing technology-based economy have posed new and demanding challenges to schools and communities alike. School systems worldwide are being asked to develop frameworks emphasizing developing the skills, knowledge, and attitudes necessary for success in the 21st Century. In Cameroon, for example, policymakers have argued that Cameroon's high schools are not producing the twenty-first-century graduates needed to compete and succeed after high school in an increasingly complex and interconnected world (Achieve, 2010, p. 7). There is ample evidence that too many young people in American education system graduate from high school poorly prepared for university, careers (Achieve, 2016).

Conceptualizing 21st-century teaching as a mode of education through which learners collaborate, construct interdisciplinary knowledge, take responsibility for their own learning, solve real-world problems, and innovate (Wood and Sithamparam, 2021, p. ix), the authors argued that teachers need to engage in action research to make sure that their students achieve such outcomes. That contemporary role of educators makes them adopt the critical role as the *agents of change* (Watson, 2014) and makes them participate in various practitioner inquiries such as lesson and/or learning studies. The authors of this book discuss that *the soul of lesson study* (2021, p. 26) is to present professional learning opportunities for teachers so that they can be empowered to make decisions regarding their own classroom practices. This way, they can raise an understanding of their learners' needs and critical aspects of learning. Crucially, the authors oppose the conventional top-down approaches to teacher professional development in which experts present certain *best practices* and tell teachers what they should teach and how they should teach it.

School, Teacher, and Student in the 21st Century

Schools are required to implement problem-based instructional initiatives that consistently entice students to gravitate toward important questions and challenges that are crucial to humanity. Schools progress far beyond the actual buildings to the *nerve's centers* with permeable and transparent partitions that give everyone access to the wealth of knowledge that exists on the planet and enable a platform for the stakeholders to communicate with one another from all over the world. Thus, the shift from a wholly teacher-centred learning system of a textbook, chalk, and blackboard-driven, to a student-centred educational system is significant. The teacher's primary role as a knowledge dispenser is currently being replaced by that of a facilitator of learning, assisting students in turning knowledge into learning and data into information (Subashini, Udayanga, De Silva, Edirisinghe & Nafla, 2022). A 21st-century student, according to Hover & Wise (2022), is one who studies or collaborates with classmates and other peers from around the world in a global classroom. As opposed to in the past, when students were thought of as individuals who attended school, spent a certain amount of time

taking the prescribed courses, received passing grades, and eventually graduated (Subashini et al., 2022).

The existence of globalization cannot be avoided as a global process, all parts of the world appear to be one, transparent and interdependent on global life. Globalization is marked by the rapid development of information and communication technology and affects everyone in aspects of national life, such as ideology, politics, economy, socio-culture, as well as national security. Globalization brings universal values (individualism) which undermines national values (cooperation, tolerance, and politeness) and society, especially students (Gillan, 2020). The actual state of deviant behaviour among young people is now widespread, where the atmosphere of globalization has an impact on young people who tend to be less interested in activities related to patriotism and nationalism (Moskos & Burk, 2019). On the other hand, young people are more interested in lifestyles that come from western culture, both in diet and clothing (Wahdani & Abi Aufa, 2021). Fights among students, drug abuse, and the proliferation of free sex activities show that the value of national understanding, especially among students, begins to disappear, which is very ironic with a country that has good values (Goh, Bong & Kananatu, 2020). What a role technology is very prominent in supporting reform efforts.

The government and society have recognized that the function and role of technology are indispensable in the world of education. The impact of technology on modern society is forcing it to begin with an educational climate so that learning activities must be balanced and in harmony with the needs, aspirations, and norms of society. Although technology has an important role in educational activities, especially during difficult times such as a pandemic, which has a tremendous impact on the scope of education. The estuary of globalization, which is synonymous with modernization, shows changes in all aspects of life. The change follows the rapid advancement of technology, where technology is one of the most attractive propositions for everyone today and is a renewal process that covers all aspects of life by using technology as the main vehicle (Wu, 2021). As the main media, technology plays an important role in all developments, including in the field of education. The implementation of education is designed so that humans can according to their abilities when educators must be able to understand the reality of their opportunities and ideals and educators must know how to bring about the desired changes. So, education has an important role in the progress of the nations, both developed and developing countries. The development and progress of a country are seen by how education is able to form quality human resources (Shaturaev, 2020).

When science and technology are developing very rapidly, the learning process is no longer monopolized by the presence of educators in the classroom. Students learn anywhere and anytime to

access knowledge. A learning designer is required to be able to design learning by utilizing various types of media and appropriate learning resources so that the learning process takes place in a fun, effective, and efficient manner as a form and effort in the pattern of educational resilience (Chen & Wu, 2020). In the current era of globalization, students are more familiar with technology, especially smartphones and on the other hand, a fair attitude from both educators and society, in general, is needed, which shows the identity and character of educators as professionals and educative members of society (Nicolaou, 2021). The learning process becomes more familiar when students use smartphones using search engines (Google Chrome, Mozilla, Opera, and other web browsers) or use Android-based learning applications that are easily available through the Play Store and App Store. This technology allows students to be happier and more knowledgeable about learning through online learning applications than learning in a regular classroom (Tekinner, Acar, Uluagac, Kirda & Selcuk, 2021). So that the above phenomenon is to see whether there is a big influence in the world of education with the existence of technology that is developing massively.

Effective and Quality learning

Despite this remarkable progress in expanding educational opportunities over the past decades, however, access to high-quality education remains incomplete and inequitable. Exclusion from educational opportunities remains stark. Illiteracy rate in low-income countries remain high as approximated one out of four youths today can't understand what they read. This is evident as UNESCO (2021) reports that even in middle-income and upper-income countries; the OECD Programme for International Student Assessment (PISA) has shown that a sizable portion of the populations of 15-year-olds in school are unable to understand what they read beyond the most basic levels. This situation is more serious in Cameroon as a report by WES (2021) on the state of education in Cameroon depicts that the gap between urban and rural populations is unprecedentedly wide in terms of literacy. This report further contends that even by conventional definitions, adult literacy rates are less than 75% in lower-middle-income countries and just over 55% in lower-income countries. While gender gaps in adult literacy have also narrowed since 1990, they remain significant, especially for the poor.

This is confirmed by UNESCO (2021) as it comments that in low-income countries, more than 2 out of 5 women are not literate. One in five children in low-income countries and one in ten across the globe. There has also been a significant increase in participation in pre-primary education around the world, across all regions and country income groups, especially since 2000. Global participation rates went from just over 15% in 1970 to 35% in 2000, reaching over 60% in 2019. In high and middle-income countries, participation rates are converging, with near universal pre-primary participation expected by 2050. It also suffices to mention that expansion of participation in education has led to a

steady increase in youth and adult literacy rates between 1990 and 2020 across all countries regardless of development status. Youth literacy rates in lower-middle-income and middle-income countries have now converged with those observed in upper-middle-income countries above 90percent.

Moreover, projections based on trends since 1970 indicate that high-income countries could reach 100% participation rates as early as 2034, while middle-income countries will be reaching between 60% and 80% participation rates in 2050. On the other hand, higher education participation rates in lower-middle-income countries will only reach some 35% by 2050, and less than 15% in low-income countries (UNESCO, 2021).

Also, important to note is that while gender gaps in adult literacy have also narrowed since 1990, they remain significant, especially for the poor. In low-income countries, more than 2 out of 5 women are not literate. One in five children in low-income countries and one in ten across. Despite considerable advances in gender parity in schooling in Cameroon, chances of schooling for the girl child in rural zones remain blunt.

Beyond access and participation, the completion of school cycles is another dimension for quality measures. Worldwide, more than one in four lower secondary level students and more than one in two in upper secondary do not complete the cycle of study. Close to 60% of secondary school students in lower-middle-income countries and almost 90% in low-income countries leave school before completing the secondary cycle. The conventional and rigid, face to face classroom system makes student bored, and they lose their interest to attend classes. This boredom causes dropouts from the different levels of the educational system. Students from wealthier families go for private tuition to increase the chances for a better result in school; this is not possible for the students from comparatively poor backgrounds. Using ICT in classroom activities can make these classes more exciting and can increase the attention of students easily (Haddad & Draxler, 2002). ICT is treated as an essential driver of innovation and growth in a modern society. ICT in education enhances the support of development by creating a skilled workforce. It also has an immense effect on research and development activities (ADB, 2009). ICT use in education increase students' technical and cognitive proficiency to access, create and develop. It also enhances the potential of teaching-learning activities (ADB, 2009). Moreover, a technology enabled environment ensures the effective flow of information, and using technology in school makes it more accessible and usable (Mohd & Zainab, 2002).

Also, to move up the next rungs of the development ladder, it is essential to integrate ICT in teaching-learning situations which can improve the quality of a country's human capital and student's capability of using information (ADB, 2009). Grimus (2000) stated that "By teaching ICT skills in educational institutions

the students are prepared to face future developments based on proper understanding." Additionally, to support this statement Yelland (2001) mentioned that "Traditional educational environments do not seem to be suitable for preparing learners to function or be productive in the workplaces of today's society. Organizations that do not incorporate the use of new technologies in institutions cannot seriously claim to prepare their students for life in the twenty-first century."

ICT tools used in the teaching and learning practice

Tablets: A tablet is a mobile computer with display, circuitry and battery in a single unit. Tablets are equipped with sensors, including cameras, microphones, accelerometer and touchscreen, with finger or stylus gestures replacing computer mouse and keyboard. Tablets may include physical buttons, like to control basic features such as speaker volume and ports for network communications and to charge battery. An on screen, pop up virtual keyboard usually used for typing. Tablets are typically larger than smart phones or personal digital assistants at 7 inches or larger.

Online Collaboration

This refers to the use of technology to enhance and extend learners' abilities to work together regardless of their geographic proximity. Bates (2005), holds that one great advantage of e-learning is the opportunity for students separated by time and place to work together on a common task. Indeed, he argues that learning to work together online is an increasingly important workplace skill, and that it provides opportunities for students to share learning experiences, to learn how to work collaboratively and to test and develop their own ideas, without being physically present (Bates, 2005). Collaborative learning using the web is particularly important for courses where students are from different cultures and for continuing professional development, where participants have relevant professional experiences to share and draw from. However, the teacher must ensure that there are clear guidelines for working collaboratively. There must be procedures in place to deal with conflict resolution within groups and for dealing with students, who do not participate fully, or at all, in group assignments. Online collaboration includes electronic messaging system, social media or discussion forums.

Educational Software: These are computer programs designed strictly for educational purposes and charged with the following functions; personalized learning meaning the program adapts to individual needs offering lessons based on performance and learning needs, interactive learning, resource access (e-books, videos, online articles), distance learning meaning software offers remote learning situations that enables teachers conduct online classes, share resources and maintain communication with their students

Augmented reality: Augmented reality (AR) is a technology that makes digital information appear on

a physical object. We see this in applications like video gaming, marketing, learning, and navigation. When used correctly AR will enhance learning experiences and teaching concepts more effectively. For example, you can use AR to create immersive environments that help students better understand complex ideas. It is easy in cases where visualizing aids the retention of applications or learning materials, which are easier to follow and engage the audience. In short, augmented reality has endless potentials for educational purposes.

Digital Storytelling Tool: Digital storytelling is a student-centered activity which provides students with the opportunity for impactful peer-collaboration and engagement and therefore, can have a positive impact on student motivation. According to Robin (2005), digital storytelling is a combination of traditional storytelling and the use of modern digital features, such as images, videos, music, and narration, to engage students in the creation of authentic and constructive knowledge to more effectively share ideas with an audience through a multi-sensory project. Reinders (2010) adds that digital storytelling provides students with an innovative way to think critically and problem solve through collaboration and interpersonal communication that allows students to explore the world, as well as self-exploration, through multiple modes.

Learning Management System (LMS): An LMS is the infrastructure that delivers and manages instructional content, identifies and assesses individual and organizational learning or training goals, tracks the progress towards meeting those goals, and collects and presents data for supervising the learning process of an organization as a whole (Szabo & Flesher, 2002 as cited in Watson et al., 2007, p.28). Findik and Ozkan (2013) explain that Learning Management Systems (LMSs) are some of the tools used for curriculum management in eLearning. LMSs are synonymous with Virtual Learning Environments (Keller, 2005). Coates, James and Baldwin (2005) have posited that LMSs are also known as course management systems, instructional management systems, content management systems or simply as learning platforms. LMS tools have been defined as platforms for collaboration, offering features such as discussion boards, online grade books, email for both academics and students, announcements, syllabi as well as chat rooms (Findik & Ozkan, 2013; Joseph, 2007). According to Lonn and Teasley (2009), LMSs are web-based systems that enable both academics and students to share course material, submit and return course assignments, as well as allow for online communication. LMS has been defined as software that is used to plan, implement and evaluate a particular learning process (Almrashdeh, Sahari, Zin & Alsmadi, 2011). LMSs have been used to facilitate the management of teaching and learning activities in a more efficient and interactive manner, where sometimes the learning is fully online or blended. Blackboard, Moodle, Sakai and Desire2Learn are some of the most popular LMSs in use in higher education (Spelke, 2011). These technology tools vary from one institution to another, but in many ways offer similar

features such as course management, the ability to be customized for the different courses offered, and used for curriculum and pedagogical purposes. LMSs have the ability to improve communication, collaboration, incorporate multimedia, differentiate learning, and enhance teaching and learning, all of which are the affordances of using LMSs (Gautreau, 2011).

Online Collaborative Learning: Laal & Laal (2012) generally define collaborative learning as “an educational approach to teaching and learning that involves groups of learners working together to solve a problem, complete a task, or create a product.” Collaboration in group settings “suggests a way of dealing with people with respects and highlights individual group members’ abilities and contributions. There is a sharing of authority and acceptance of responsibility among group members for the groups’ actions.” (Laal & Ghodsi, 2012). Learners thereby face social and emotional challenges additional to the specific learning tasks that lead to considerable benefits compared to competitive or individualistic learning approaches. Laal and Ghodsi conclude that collaborative learning benefits learners through “higher achievement and greater productivity, more caring, supportive, and committed relationships; and greater psychological health, social competence, and self-esteem.”

Interactive whiteboard (IWB): IWB is regarded as a powerful educational technology which not only supports clear and seamless instruction but also raises the level of interactivity in classrooms (Mercer, Hennessy, & Warwick, 2010; Northcote, Mildenhall, Marshall, & Swan, 2010). Many researches indicate that students are more involved and motivated while information and communications technology (ICT) is present (Beauchamp & Kennewell, 2010; Chaudary & Sharma, 2012; Serow & Callingham, 2011).

IWBs have large display devices connected with computers, and when disconnection occurs, the instruction is disrupted and students’ attention is interrupted. Furthermore, in order to easily manipulate computers and display boards, instructors or students are often restricted to stand in front of IWBs or other interactive technologies to utilize it. By using the interactive projectors, instructors and students can remotely control all objects displayed from a distance, with no need to change classroom settings whilst enjoying the functionalities that IWBs or computers provide. Most researches point out that interactive technologies, such as interactive projectors and IWBs, play a crucial role in improving teacher-pupil interactivity. However, some studies indicate that teacher-centered teaching is unexpectedly strengthened, when the educational media, especially interactive technologies, are newly introduced into the classes (Kennewell, 2004; Hennessy, Mercer, & Warwick, 2011).

Digital Pedagogy and teaching and learning practice
Today, a characteristic feature of the development of modern society is the growing importance of information, which is becoming a comprehensive

and inalienable resource. Work with information has become the main content of almost every type of activity, including the field of education (Béché, 2018). Intercultural communication and the widespread use of ICT in the educational process should become inalienable conditions in achieving modern professional quality in the training of specialists with high spiritual, cultural, creative search, and social activity (Béché, 2018).

The integration of ICT in education has become an intriguing area of study thanks to social, economic, and technological advancements (Béché, 2017). The World Links Program was designed with the idea that technology might be used as a crucial instrument in improving educational performance and reducing the digital divide between developed and developing countries in an effort to equip young people to enter and participate in the global economy. The World Link Programme, according to Kozma, McGhee, Quellmalz & Zalles, (2004) was first launched in the 1990s with the main goal of assisting schools in the provision of ICT tools and educating teachers in order to promote the integration of ICT into education, particularly in poor countries. This program has significantly increased the pedagogic use of ICT in various African nations, including Zimbabwe, Mauritania, Senegal, Mauritania, South Africa, Ghana, and Mozambique.

Following the launch of the program a three-year evaluation of the World Link research on the program using a variety of sources was carried out between 1999 and 2000. The results of this study showed that developing countries can make major educational advances when technology infrastructure is created, followed by training programs for teachers on how to use these ICT tools pedagogically in their classrooms. To evaluate a three-year plan for ICT integration in schools (Desai, 2010), Nzépa & Keutchankeu, (2012) started a research effort that was also continued by World Links Development. The goal of the world link training methodology employed in this study was to equip instructors with the pedagogical understanding they need to incorporate ICT into their courses and enhance student’ learning through cutting-edge technological instructional techniques. Research findings indicated that the implementation of this program provided an effective outcome in the classrooms and school participation (Raviya, Dave & Tiwari, 2020).

Following the completion of the Multimedia Portable for Teachers Pilot (MPTP) project by the University of Nottingham School of Education in 1998, Fisher, Higgins, and Loveless (2012) undertook a study to determine the effects of ICT implementation. Throughout the initiative, instructors received ICT training on how to utilize the computers at their schools and how to effectively use the Internet for teaching and learning. The program’s primary goal was to boost teachers’ competency and confidence in using ICT in the classroom After the MPTP project, 98% of teachers who participated in the project made effective use of ICT in the teaching and the learning

process (Fisher et al., 2012). Self-confidence and competence increase remarkably as teachers were able to use ICT in their classrooms with little or no problems. Therefore, they noted that the MPTP program was hugely successful as many teachers confirmed the positive changes ICT have made in their profession.

Stienen (2007) asserts that ICT can enhance educational quality when teacher-educational materials are completely developed and when ICT is supported and utilized in school operations. Different educational projects covering topics including teacher preparation, the creation of instructional materials, and school administration from the basic to tertiary sectors were carried out in some developing nations to assist this project. Additionally, these countries' ICT educational strategies were developed in collaboration with International Institute for Communication and development (IICD) (Stienen, 2007). Most projects strive to integrate ICT into the educational process in a far more sophisticated way than simply using it to enhance the conventional instructional method. Given that instructors and students were the most active participants and benefited from these activities, data from the IICD-supported projects demonstrated an overwhelming impact on them. It was discovered that students and teachers had a very high score for awareness and empowerment of ICT use four years after the project's execution. The diverse studies also demonstrated that the numerous ICT integration initiatives implemented in these schools in developing nations have had a favorable effect on the education for all (EFA)'s universal objectives for education access. Zhao and Cziko (2001) also looked at efficient ways to integrate ICT into the classroom, highlighting the critical role that efficient ICT use plays in the teaching process. They claimed that the use of ICT in the classroom wouldn't disrupt or distract from students' ability to learn. Teachers have control over ICT when they develop self-belief in it as a powerful teaching instrument.

The successful professional development of teachers, according to Mishra and Koehler (2006), emphasizes specific classroom applications of general pedagogical ideas, exposes teachers to real-world situations, provides opportunities for group support and collaborative practices, and includes careful evaluation and feedback. According to them, computers must be included in the curriculum as a tool that may support the study of other disciplines if they are to have a substantial impact on the teaching and learning process. To make this transition, pre-service and in-service programs must be skilfully planned so that instructors are given the knowledge and abilities necessary to integrate ICT in their classrooms.

Modern Technology on Learning Environment

Noe & Kodwani (2018) claim that the internet is mostly to blame for our current revolution in education. Electronic networks that integrate phone, video, and data connections between students,

instructors, and experts have been made possible because of internet technology. Halimi & Hristoskova (2001) claim that the learning environment has been significantly impacted by the Internet. They contend that teachers need to learn a new skill to help pupils understand how to learn in light of the abundance of knowledge available on the Web. However, according to Glickman (1985), research on the performance of schools demonstrates that most of them merely do not significantly alter the lives of their pupils. Additionally, he makes the claim that *successful schools have faculties with a clear, common purpose toward which they strive*.

Bezuidenhout (2009) further notes that it is frequently difficult to make efficient use of both students' and lecturers' time when teaching large classes in a traditional setting, which reduces the educationally advantageous informal interaction between students and professors. According to Sun, Shirley, and Liu (2004), traditional classrooms taught students to rely on their tutors for their motivation, guidance, goal-setting, progress tracking, self-evaluation, and success. But because of technology, learning has evolved into a highly dynamic process. According to Palloff and Pratt (1999), interaction in all of its forms between and among learners, between learners and educators, between learners and content is a crucial part of the learning process. The capacity for new and improved methods of knowledge exchange and teamwork is thus increased by the usage of new technology.

In order to become the innovators of tomorrow, students must today acquire 21st-century abilities (Kibinkiri, 2014). To advance up the knowledge chain, they must employ those skills. Additionally, it lays the foundation for lifelong learning. In addition, Béch  (2017) draws the conclusion that the integration of ICT has had a motivating effect on students based on the responses he received from principals, students, teachers, and parents in a survey of eight secondary schools in Cameroon to better understand how the nature of the conditions in the integration of African countries, favour the successful integration of ICT in the school system and ensure quality education. The principals mentioned the flood of kids during use hours and other times, for instance. The student's enthusiasm for computers and increased interest in school were also emphasized; evidence of this interest included the students' attendance at cybercaf s and afternoon computer classes. Additionally, as a result of the students' apparent enthusiasm, there was a decrease in absenteeism, which showed the positive impact of the integration of ICT. Furthermore, 71 percent of the students—boys (38%) and girls (33%)—said that ICT significantly makes it easier to do coursework. Additionally, according to 80% of the professors, using a computer helps kids concentrate better on their academic work (Tchombe & Karsenti, 2008).

However, Mbangwana (2008) conducted a study on the instructional use of ICT by students and faculty at Cameroon State University. The study revealed that students used computers and Internet-based learning

materials more frequently than teachers for instruction: Z-calculated (9.78) and Z-critical (1.645). Additionally, Z - calculated (0.775) and Z - crucial indicate that students are more assured and competent about the use of computers and the Internet for instruction than their teachers (1.645) (Mbangwana, 2008).

Additionally, a survey of Makerere University's conventional distance learning students reveals that both electronic and non-electronic media were effective for fostering learner-learner and learner-lecturer communication (Muyinda, Lubega & Lynch (2009). Electronic communication made use of discussion boards, cell phones, and e-mail. 52 percent of the students admitted that they had spoken with their course directors during residential sessions to get updates on the IT II course. Prior to the start of the IT II online course, 88 percent of students had an email address. Sixty-four percent (64%) of students sent at least one email to a classmate, and 62% sent one to a professor. 42 percent of students used the discussion board to discuss hot topics presented in the BBLMS by the lecturer or other students, while 38% of students used their mobile phones for learner-to-learner communication. Constructivist learning existed. According to Muyinda et al., (2009), 81 percent of students agreed that the in-person training and the page-by-page instructions on how to use the Blackboard Learning Management System (BBLMS) were sufficient to enable them to take part in online learning.

Reverting to our original research question, we can see that the aforementioned literature fell short of a thorough examination of the behavioural shift in teaching-learning activities brought on by the adoption of ICT in private secondary schools in the Centre and North West Regions of Cameroon, which is the main subject of our study. Therefore, we will explore the ICT tools that are available, how they are used and the significance and effects of incorporating ICT into the curricula of the aforementioned regions.

E-Learning and Traditional Educational Methods

Technology facilitates almost every field of life, including education; technology usage has become an integral part of our daily lives. Today, the global-village concept facilitates communication, collaboration, education, and information with ease of access and more significant benefits (Shahzad, Hassan, Aremu, Hussain & Lodhi, 2021). Fischer, Heise, Heinz, Moebius & Koehler (2014) examined students' perceptions regarding E-learning as a substitute for traditional learning methods. Data revealed a strong, significant interest in E-learning as an extension of learning. Respondents considered E-learning an adequate substitute for traditional learning environments. Goyal (2012) considered that E-learning is the future of education, offering brighter prospects to students. With an efficient bandwidth network, internet-based learning is a need of almost every student.

E-learning is an effective alternative to traditional learning environments as it is growing briskly as an inevitable part of formal and informal education procedures. Due to its distinct features, students also prefer E-learning, indicating users' appreciation arising from E-learning's unique characteristics and benefits.

Owens and Price (2010) examined the impact of modern E-learning and information technologies (IT) on UK higher education. The results showed that E-learning and other technologies were valuable means of providing modern education to students and of potentially developing student interest in exciting ways. Rana & Lal (2014) conducted a study to investigate the benefits and challenges of E-learning. They found that respondents considered E-learning an adequate substitute for traditional learning patterns and policies. However, participants also expressed some challenges regarding E-learning's implication and usage, such as the unavailability of sufficient financial, social, cultural, local, national, and regional resources to meet modern study requirements. Mohajan (2017) found that students and teachers are still grappling with its implementation. Although education policymakers are also concerned with E-learning and implementation, there is still a long way to go. The E-learning policymakers and stakeholders also need to focus on some other areas, such as social, environmental, personal, and cultural factors, in this regard.

Furthermore, Arrey-Ndip, Carole, Njikam & Tamajong (2020) examined Cameroonian secondary students' perceptions regarding E-learning as a substitute for conventional learning. The results revealed that school administration largely relied on E-learning to improve students' learning skills. Obi, Charles-Okoli, Agunwa, Omotowo, Ndu & Agwu-Umahi (2018) stated that E-learning helps students to stay connected to national institutions and to avail themselves of what international institutions can offer. Due to increased opportunities, students can today expand their exposure and attain better opportunities in different study disciplines. De Giusti (2020) scrutinized the effectiveness of E-learning for US postgraduate programs in medicine and showed that asynchronous eLearning had been widely adapted and had replaced conventional learning as it provided ease of access and ease of schedule to residents with busy schedules.

RESEARCH METHODOLOGY

Research Design

This study was a quantitative analysis. In agreement with Amin (2005) a correlational study describes the important prerequisite for the realization of the regression (pp.139-140).

Population Samples

The population constituted of some selected secondary schools in the town of Bamenda and Yaoundé. The sample was done through a purposive sampling technique, which consisted of 532 respondents.

Instrument

Attitude scales were used primarily to collect quantitative data from a survey. The questionnaire consisted of 18 questions constructed along the pattern of the Likert scale: strongly agree (SA)= 1, agree (A)=2, neutral (N)= 3, disagree (D)=2, strongly disagree (SD)= 5 for teachers, based on the two variables of this research study: digital pedagogies and teaching / learning practices.

Spearman Correlation is expressed as:

$$\alpha = \frac{k}{k-1} \left(1 - \frac{\sum \sigma \frac{2}{k}}{\sigma^2} \right)$$

Where:

$\sum \sigma \frac{2}{k}$ is the sum of the variances of the k parts which are the items of the test or instrument.

σ = standard deviation of the test or instrument.

Research Question

The research question that was investigated in this study was as follows: Do digital pedagogies influence teaching/learning practices in Cameroon secondary schools?

Validity and Reliability

To maximize the content and face validity of the magnitudes generated from the descriptive research, four tests were adopted and developed by Ying (2003). They include: (i) construct validity (multiple sources of data were collected for the case under investigation in order to increase construct validity), (ii) internal validity (we have maintained a logic chain of evidence; the reader can follow the derivation from any evidence from our research question to the final conclusion. More the triangulation of different sources (used in convergence) of evidence was an important way of increasing the internal validity of this study), (iii) external validity (we attempted it to sharpen the external validity in the way that we have chosen the case study and conducted the research. The findings from this study can be generalized and replicated if conducted in the same conditions) and (iv) reliability (It is the consistency and stability of the research process (Miles & Huberman, 2003). To avoid errors and provide more reliability to our research, this work is coupled with content analysis. This ultimately allowed us to extract some key ideas). The table below is the presentation of data according to the research question.

FINDINGS

Descriptive Statistics

TABLE 2: Information on Digital Pedagogies.

| Item | Statement | | SA | A | Un | DA | SDA | Mean |
|------|--|-------|------|------|------|------|------|------|
| 1 | ICT integration is using technological tools in the teaching and learning process | f_i | 93 | 230 | 145 | 21 | 43 | 2,45 |
| | | % | 17,4 | 43,2 | 27,2 | 3,9 | 8,0 | |
| 2 | I am confident in my ability to use technology for instructional purposes | f_i | 95 | 208 | 165 | --- | 64 | 2,53 |
| | | % | 17,9 | 39,0 | 31,0 | --- | 12,0 | |
| 3 | I am proficient in using various educational technologies | f_i | 62 | 113 | 232 | 61 | 64 | 2,93 |
| | | % | 11,7 | 21,2 | 43,6 | 11,4 | 12,0 | |
| 4 | I am familiar with learning management systems and educational apps | f_i | 96 | 143 | 211 | 61 | 21 | 2,60 |
| | | % | 18,0 | 26,9 | 39,7 | 11,4 | 3,9 | |
| 5 | I have received adequate training on integrating technology into my teaching | f_i | 103 | 262 | 85 | 61 | 21 | 2,32 |
| | | % | 19,3 | 49,2 | 16,0 | 11,4 | 3,9 | |
| 6 | I participate in professional development opportunities related to educational technology | f_i | 209 | 178 | 42 | 61 | 42 | 2,16 |
| | | % | 39,2 | 33,4 | 7,9 | 11,4 | 7,9 | |
| 7 | I have adequate access to technological resources | f_i | 21 | 33 | 122 | 229 | 127 | 2,19 |
| | | % | 3,9 | 6,2 | 22,9 | 43,0 | 23,9 | |
| 8 | We use computers, tablets and software for teaching | f_i | 37 | --- | 330 | 64 | 101 | 3,12 |
| | | % | 7,0 | --- | 62,0 | 12,0 | 19,0 | |
| 9 | I use instructional tools such as delivering lessons through graphs, pictures, diagrams, multimedia appliances | f_i | 55 | 19 | 148 | 188 | 122 | 2,83 |
| | | % | 12,2 | 3,6 | 27,8 | 35,3 | 22,9 | |
| 10 | I use the internet to gather information | f_i | 42 | 56 | 64 | 188 | 182 | 3,83 |
| | | % | 7,9 | 10,5 | 12,0 | 35,3 | 34,6 | |
| 11 | I encounter significant challenges when trying to integrate technology in to my teaching | f_i | 33 | 64 | 146 | 127 | 162 | 3,66 |
| | | % | 6,2 | 12,0 | 27,4 | 23,9 | 30,4 | |
| 12 | I use ICT to facilitate interaction and engaging learning experiences | f_i | 95 | 42 | 105 | 103 | 187 | 3,52 |
| | | % | 17,9 | 7,9 | 19,7 | 19,3 | 35,1 | |

| Item | Statement | SA | A | Un | DA | SDA | Mean | Item |
|------|---|-------|------|------|------|------|------|------|
| 13 | With the use of ICT, there is and enhanced engagement and interaction in the classroom | f_i | 26 | 69 | 149 | 56 | 232 | 2,61 |
| | | % | 4,9 | 13,0 | 28,0 | 10,5 | 43,6 | |
| 14 | ICT tools foster communication and collaboration among teachers | f_i | 69 | 24 | 143 | 215 | 81 | 2,66 |
| | | % | 13,0 | 4,5 | 26,9 | 40,4 | 15,2 | |
| 15 | In today's digital world, it is crucial for learners to develop essential digital literacy skills | f_i | 59 | 131 | 227 | 39 | 76 | 2,91 |
| | | % | 11,0 | 24,6 | 42,7 | 7,3 | 14,2 | |
| 16 | ICT integration allows the teachers navigate the internet responsibly to evaluate information sources | f_i | 89 | 55 | 242 | 109 | 37 | 2,74 |
| | | % | 16,7 | 10,3 | 45,4 | 20,4 | 7,0 | |
| 17 | I use technology effectively for learning and communication | f_i | 36 | 55 | 154 | 80 | 207 | 2,49 |
| | | % | 6,8 | 10,3 | 29,0 | 15,0 | 38,9 | |
| 18 | The effective use of ICT in education presents a multitude of benefits for both learners and teachers | f_i | 53 | 58 | 74 | 184 | 162 | 2,30 |
| | | % | 10,0 | 10,9 | 13,9 | 34,6 | 30,4 | |

Source : Field statistics.

Item one is on the ICT integration using technological tools in the teaching and learning process. 17.4% (93) and 44.2% (230) support the statement while 27.9% (145) are uncertain and 4% (21) and 8.3% (43) are completely unaware of ICT integration using technological tools in the teaching and learning process. The mean (2.45) falls in the acceptance region, meaning most of the respondents accepted the statement. Even so, some 41.3% of the respondents were unaware of ICT integration using technological tools in the teaching and learning process. Item two shows the distribution of respondents according to the confident they have in the ability to use technology for instructional purposes. 17.9% (95) and 40% (208) strongly agreed and agreed with this statement respectively while 31.7% (165) were uncertain. 12.3% (64) were however not in agreement. The mean (2.53) falls within the accepted area, implying that the confident they have in the ability to use technology for instructional purposes even though 31.7% were uncertain. Item three is the distribution of respondents according to the proficiency in using various educational technologies. 11.9% (62) and 21.2% (113) of the respondents knew why, thereby strongly agreeing and agreeing respectively. 44.6% (232) were uncertain while 11.7% (61) and 12.3% (64) did not know the reasons for the proficiency in using various educational technologies thereby disagreeing and strongly disagreeing respectively. The mean of 2.93, falls in the accepted region, implying that most of the respondents agree with the statement.

Item four presents the distributions of the respondents according whether they are familiar with learning management systems and educational apps. 96 respondents (18%) and 143 respondents (27.5%) agreed to have understood the objectives. 211 (40.6%) claimed to be uncertain while 61 respondents (11.7%), disagreed with the statement. Yet the mean 2.60 still falls with the acceptance region. Item five presents the distribution of the respondents according to receiving adequate training on integrating technology into my teaching.

19.8% (103) and 49.2% (262) responded in favour of the statement while 16.3% (85) claimed to be uncertain. 11.7% (61) and 40.0% (21), did not agree with the fact of receiving adequate training on integrating technology into my teaching. Even so, the mean 2.32 still falls within the accepted region, meaning most of the respondents accepted the statement.

Item six is the distribution of the respondents according to whether they participate in professional development opportunities related to educational technology. 40.2% (209) and 33.4% (178) agreed of being aware participation in professional development opportunities related to educational technology, 8.1% (42) respondents claimed to be uncertain while 11.7% (61) and 8.1% (42) disagreed with the statement. The mean of 2.16 also falls within the region of acceptance. This implies that most of the respondents accepted. Item seven shows the distribution of respondents according to the adequate access to technological resources. 4.0% (21) and 6.2% (33) agreed with the statement while 23.5% (122) were uncertain. 44.0% (229) and 24.4% (127) disagreed. The mean of 2.19 is however found at the acceptance level. So, majority of the respondents supported the statement.

Item eight presents the distribution of respondents according to whether they use computers, tablets and software for teaching. None simply agreed. 63.4% (330) were completely uncertain while 12.3% (64) and 19.4% (101) disagreed and strongly disagreed respectively. The mean 3.12 also falls in the acceptance level, meaning that most of the respondents agreed with the statement. Even so, some 63.4% of the respondents claimed to be uncertain about this. Item nine shows the distribution of the respondents according to whether the use of instructional tools such as delivering lessons through graphs, pictures, diagrams, multimedia appliances. 12.2% (55) strongly agreed and 3.7 (19) agreed with this statement while 28.5% (148) were unaware. 36.2% (188) and 23.5 (122). Disagreed and strongly disagreed of this statement respectively.

The mean, 2.83 however falls within the acceptance region meaning that most of the respondents agree with this statement even though so many of them were uncertain.

Item 10 presents the distribution of respondents according to the use of the internet to gather information. 8.1% of the respondents strongly agreed, 10.5% agreed, 12.3% were uncertain while 36.2% disagreed and 35.45strongly disagreed. Based on the data, the mean is 3.83 and is found at the acceptance level. This implies that most of the respondents supported the statement. Yet quite a good number of the respondents think that the use of the internet to gather information is not yet effective. Item eleven is the distribution of the respondents according to whether they encounter significant challenges when trying to integrate technology in to my teaching. Again, based on the data, the mean is 3.66 which is at the acceptance level. This means equally that the majority of the respondents were in agreement with this statement. Item twelve shows the distribution of respondents according to whether the use of ICT to facilitate interaction and engaging learning experiences. Based on the data on this item, the mean of 3.52 is found within the acceptance level, meaning that most of the respondents agreed with this. Even so.it was noticed that quite a great number of respondents, (105) were uncertain about this. Also, quite a large number disagreed and strongly disagreed10.3, and 187 respectively. This means that the use of ICT to facilitate interaction and engaging learning experiences is not effective.

Item thirteen presents the distribution of the respondents according to whether with the use of ICT, there is and enhanced engagement and interaction in the classroom. Based on the data here, the mean stands at 2.61 which is found within the acceptance zone. This means that most respondents accepted this statement. Notwithstanding, a very large number of the respondents were uncertain (149) while 56 and 232 disagreed and strongly disagreed respectively.

Item fourteen is the distribution of respondents according to whether ICT tools foster communication and collaboration among teachers. From the statistics the mean stands at 2.66 which is at the acceptance level even though 144 respondents were uncertain and 215 plus 81 disagreed and strongly disagreed. Item fifteen is the distribution of the respondents according to whether in today's digital world, it is crucial for leaners to develop essential digital literacy skills. 11.3% (59) and 24.6% (131) were aware of this policy. 227 (43.7%) were uncertain while 7.5% (39) and 14.6% (76) were unaware. However, the mean of the data stands at 2.91 falling at the level of acceptance and meaning an acceptable number of the respondents were in support of the statement.

Item sixteen is the distribution of the respondents according to ICT integration that allows the teachers navigate the internet responsibly to evaluate information sources. Based on the data, the mean is 2.74 which is found at the level of acceptance. This means that most of the respondents supported this statement. Item seventeen is the distribution of respondents according to using technology effectively for learning and communication. The data gives us a means of 2.49 which falls within the region of acceptance, implying that the majority of the respondents agreed with the statement. Item eighteen is the distribution of respondents according to the effective use of ICT in education presents a multitude of benefits for both learners and teachers. Based on the statistics, the mean stands at 2.30. This also falls within the zone of acceptance even though a great part of the respondents does not seem to agree.

Inferential Statistics

Hypothesis

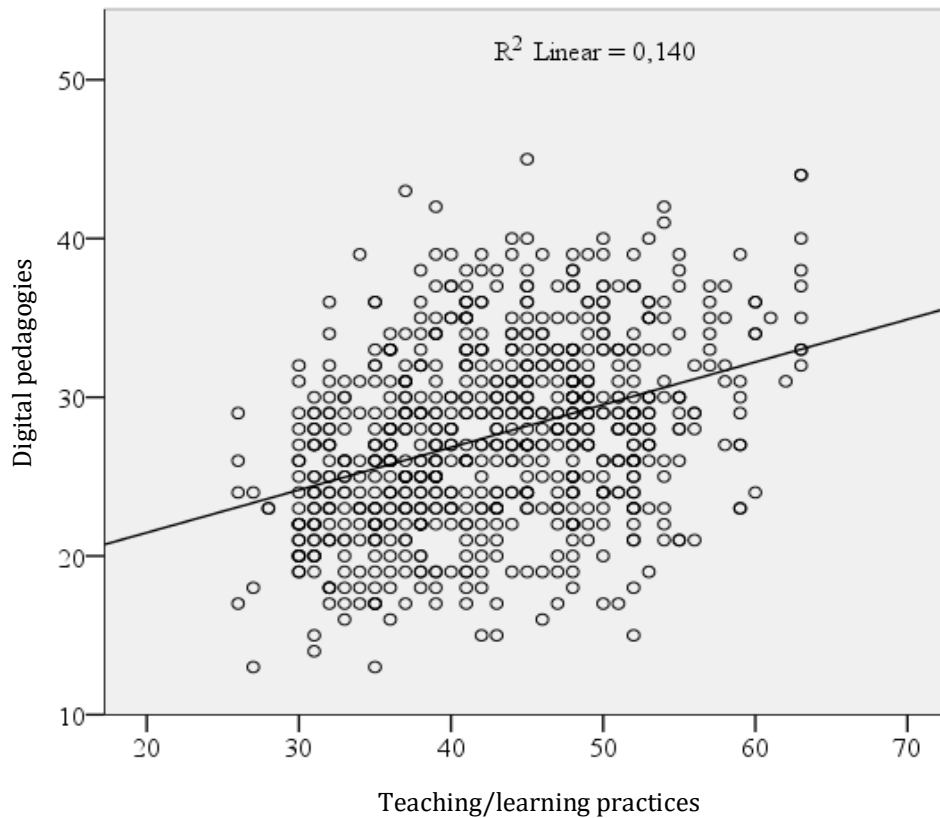
Ha1: There is a relationship between digital pedagogies and teaching/learning practices in Cameroon secondary schools.

Ho1: There is no relationship between digital pedagogies and teaching/learning practices in Cameroon secondary schools.

TABLE 2: Correlation between digital pedagogies and teaching/learning practices.

| Correlations | | | | |
|----------------|-----------------------------|-------------------------|--------------------|-----------------------------|
| VI x VD | | | Digital pedagogies | Teaching/learning practices |
| Spearman's rho | Digital pedagogies | Correlation Coefficient | 1,000 | ,721** |
| | | Sig. (2-tailed) | . | ,000 |
| | | N | 532 | 532 |
| | Teaching/learning practices | Correlation Coefficient | ,721** | 1,000 |
| | | Sig. (2-tailed) | ,000 | . |
| | | N | 532 | 532 |

** Correlation is significant at the 0.01 level (2-tailed).



The correlation table above reveals that the relationship between digital pedagogies and teaching/learning practices in Cameroon secondary schools is positively significant. This is based on the fact that the level of significance is 0.00 thus lesser than 0.05 which is the alpha which is the standard error margin. Alternatively; the correlation coefficient (0.07) is a positive value and is situated within the normal range. It is high and close to 1, indicating that there is a strong link between variables under investigation. The results reveal that we have no chance of making an error if we accept that the association between the variables exists. We can therefore conclude that digital pedagogies significantly influence teaching/learning practices in Cameroon secondary schools.

DISCUSSION

Data collected on this hypothesis was tested using the spearman rank correlation and multiple regression analyses. From the results, it was discovered that digital pedagogies can significantly influence teaching/learning practices in Cameroon secondary schools. Statistically the spearman rank correlation index, was 0.721 which is a positive coefficient and reveals that the relationship between digital pedagogies and teaching/learning practices is high and positive. Alternatively, looking at the level of significance of 0.00, we can conveniently conclude that there is no error in admitting that digital pedagogies can very positively influence teaching/learning practices.

Our field statistics led us to the conclusion that digital pedagogies can be used to positively influence teaching / learning practices in secondary schools in Cameroon. Most of our respondents said that ICT integration using technological tools in the teaching

and learning process. 17.4% (93) and 44.2% (230) support the statement while 27.9% (145) are uncertain and 4% (21) and 8.3% (43) are completely unaware of ICT integration using technological tools in the teaching and learning process. The mean (2.45) falls in the acceptance region, meaning most of the respondents accepted the statement. Even so, some 41.3% of the respondents were unaware of ICT integration using technological tools in the teaching and learning process. According to the confident they have in the ability to use technology for instructional purposes. 17.9% (95) and 40% (208) strongly agreed and agreed with this statement respectively while 31.7% (165) were uncertain. 12.3% (64) were however not in agreement. The mean (2.53) falls within the accepted area, implying that the confident they have in the ability to use technology for instructional purposes even though 31.7% were uncertain. Item three is the distribution of respondents according to the proficiency in using various educational technologies. 11.9% (62) and 21.2% (113) of the respondents knew why, thereby strongly agreeing and agreeing respectively. 44.6% (232) were uncertain while 11.7% (61) and 12.3% (64) did not know the reasons for the proficiency in using various educational technologies thereby disagreeing and strongly disagreeing respectively. The mean of 2.93, falls in the accepted region, implying that most of the respondents agree with the statement.

Noe & Kodwani (2018) claim that the internet is mostly to blame for our current revolution in education. Electronic networks that integrate phone, video, and data connections between students, instructors, and experts have been made possible because of internet technology. Halimi & Hristoskova (2001) claim that the learning environment has been

significantly impacted by the Internet. They contend that teachers need to learn a new skill to help pupils understand how to learn in light of the abundance of knowledge available on the Web. However, according to Raj & Glickman (1985), research on the performance of schools demonstrates that most of them merely do not significantly alter the lives of their pupils. Additionally, he makes the claim that successful schools have faculties with a clear, common purpose toward which they strive.

Bezuidenhout (2009) further notes that it is frequently difficult to make efficient use of both students' and lecturers' time when teaching large classes in a traditional setting, which reduces the educationally advantageous informal interaction between students and professors. According to Liu (2004), traditional classrooms taught students to rely on their tutors for their motivation, guidance, goal-setting, progress tracking, self-evaluation, and success. But because of technology, learning has evolved into a highly dynamic process. According to Palloff and Pratt (1999), interaction in all of its forms between and among learners, between learners and educators, between learners and content is a crucial part of the learning process. The capacity for new and improved methods of knowledge exchange and teamwork is thus increased by the usage of new technology.

In order to become the innovators of tomorrow, students must today acquire 21st-century abilities (Kibinkiri, 2014). To advance up the knowledge chain, they must employ those skills. Additionally, it lays the foundation for lifelong learning. In addition, Béché (2020) draws the conclusion that the integration of ICT has had a motivating effect on students based on the responses he received from principals, students, teachers, and parents in a survey of eight secondary schools in Cameroon to better understand how the nature of the conditions in the integration of African countries, favour the successful integration of ICT in the school system and ensure quality education. The principals mentioned the flood of kids during use hours and other times, for instance. The student's enthusiasm for computers and increased interest in school were also emphasized; evidence of this interest included the students' attendance at cybercafés and afternoon computer classes. Additionally, as a result of the students' apparent enthusiasm, there was a decrease in absenteeism, which showed the positive impact of the integration of ICT.

CONCLUSION

The research showed that different secondary schools have different strategies for the adoption of ICT policies and practices. They also have different corporate culture which is aggregating individual behaviour that affects the teaching practices. The objective of this paper was to investigate ICT integration vis-à-vis teaching and learning practices in Cameroon secondary schools. In this vein, our inquiry focused on assessing the link between the digital pedagogies and teaching/learning practices in Cameroon secondary schools. The study revealed

that ICT in education has become a priority during the last decade. However, very few have achieved progress; a small percentage of schools in some countries achieved high levels of effective use of ICT to support and change the teaching and learning process in many subject areas. Others are still in the early phase of information and communication technology adoption (Muhammad, Irfanullah, Siraj-u-Din, Hafiz, 2015). A number of studies have revealed that one of the important determinants of the adoption of new technologies is teachers' attitudes to ICT use in learning. A survey of teachers showed that teachers' positivity about the possible contributions of ICT was moderated as they became rather more uncertain and sometimes doubtful about specific, current advantages (Backhouse, 2013). If teachers' attitudes are positive towards the use of educational technology, then they can easily influence their students' attitudes and motivate them in their performance. Positive attitudes often encourage less technologically capable teachers to learn the skills necessary for the implementation of technology-based activities in the classroom. Therefore, if teachers want to successfully use technology in their classes; they need to possess a positive attitude toward the use of technology. Such attitude is developed when teachers are sufficiently comfortable with technology and are knowledgeable about its use.

By virtue of this, there is a need to highlight the necessity for the government to invest in digital pedagogy and make it more useful and effective by familiarizing educational actors with pedagogical practices that integrate ICT. Teachers in the field should be provided with continuous in-service empowerment on ICT tools. Meanwhile, the government should equip schools with modern ICT laboratories, and multimedia centre and develop syllabi that will permit students to acquire the necessary skills to undertake online distance learning.

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