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INNOVATIVE PEDAGOGY AND SUSTAINABLE DEVELOPMENT SKILLS IN GEOGRAPHY:

THE CASE OF SOME SECONDARY SCHOOLS IN MFOUNDI DIVISION

A Dissertation submitted to the University of Yaounde 1, Faculty of Education, in Partial Fulfilment of the Requirements for the Award of a Masters' Degree in Curriculum Development and Evaluation.

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November 2023

DECLARATION

The project entitled "INNOVATIVE PEDAGOGY AND SUSTAIINABLE DEVELOPMENT SKILLS IN GEOGRAPHY: THE CASE OF SOME SECONDARY SCHOOLS IN MFOUNDI DIVISION" has been written by AKWA CONSTANCE NJI

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This project is my endeavor and burrowed ideas have been acknowledged and referenced.

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CERTIFICATION

This is to certify that the Dissertation titled: "INNOVATIVE PEDAGOGY AND SUSTAIINABLE DEVELOPMENT SKILLS IN GEOGRAPHY: THE CASE OF SOME SECONDARY SCHOOLS IN MFOUNDI DIVISION" was carried out by AKWA CONSTANCE NJI, under my supervision and submitted to the University of Yaoundé 1 in fulfilment for the award of a Master's Degree in Curriculum Development and Evaluation.

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DEDICATION

To my parents of blessed memory;

NJI Joseph NJU

and

SWIRRI Rose ABEREFOR

ACKNOWLEDGEMENTS

ABSTRACT

This research investigate innovative pedagogic methods in the teaching of geography and its influences on the promotion of sustainable skill development in secondary schools in Mfoundi Division. A good number of researchers have indicated that geography students are not acquiring the necessary skills needed for survival in this 21st century as enshrined in Sustainable Development Goal 4, target 4.7 and law No 98/004 laying down guidelines of education in Cameroon. Although many teachers are aware of innovative pedagogy, its application and skill development in learners is still low. This all indicates a gap between what students learn in school and what they actually practice in the real world. Thus, the challenge to revisit classroom teaching and use innovative pedagogy tilted towards competence-based for sustainable skill development. To find out the extent to which innovative pedagogic methods (project-based-learning, fieldwork, outdoor learning and educational technology) in geography influences the promotion of sustainable development skills in secondary school, four (4) specific hypotheses and research questions based on the four were formulated to guide the study. A cross-sectional survey design was used for this study through a quantitative approach and the sampling was simple random sampling. Eighty (80) geography teachers where randomly selected from some secondary schools in Mfoundi Division for the study. Online Questionnaires (google form) was used as the instrument for data collection. Descriptive and inferential (simple linear regression) statistics were used to analyzed the data with the help of SPSS version 21. The findings revealed that innovative pedagogy significantly influenced sustainable skill development in geography as the tested variables indicated that their p-values were <0.05. That is for project-based learning, $P<0.05$ with a beta coefficient of 0.602; for fieldwork $P<0.05$ with a beta coefficient of 0.674; for outdoor learning, $P<0,05$ with beta coefficient of 0.563 and for educational technology, $P<0.05$ with a beta coefficient of 0.645. All four indicators of the independent variable were strong predictors of sustainable skill development in geography because they were linearly related to the dependent variable with fieldwork as the strongest predictor. It is worth noting that these results could be of specific interest to all teachers, policy makers, educational establishments and other institutions of higher learning envisaging implementing innovative pedagogy in their teaching learning process.

Key words: Innovative Pedagogy, Sustainable Skill Development, Project-Based Learning, Fieldwork, Outdoor Learning and Educational Technology

RESUME

Cette recherche étudie les méthodes pédagogiques innovantes dans l'enseignement de la géographie et ses influences sur la promotion du développement des compétences durables dans les établissements d'enseignement secondaires du département du Mfoundi. Bon nombre de chercheurs ont indiqué que les étudiants en géographie n'acquièrent pas les compétences nécessaires pour survivre dans ce 21e siècle, tel que prévu par l'objectif de développement durable numéro 4, en son cible 4.7 et la loi n° 98/004 fixant les orientations de l'éducation au Cameroun. Bien que de nombreux enseignants soient conscients de l'existence d'une pédagogie innovante, son application et le développement des compétences des apprenants restent faibles. Tout cela indique un écart entre ce que les élèves apprennent à l'école et ce qu'ils mettent réellement en pratique dans le monde réel. Ainsi, le défi de revisiter l'enseignement en classe et d'utiliser une pédagogie innovante s'oriente vers un développement durable des compétences basé sur les compétences. Pour connaître dans quelle mesure les méthodes pédagogiques innovantes (apprentissage par projet, travail de terrain, apprentissage en plein air et technologies éducatives) en géographie influencent la promotion des compétences en développement durable au secondaire, quatre (4) hypothèses et questions de recherche spécifiques fondées sur la quatre ont été formulées pour guider l'étude. Un plan d'enquête transversal a été utilisé pour cette étude à travers une approche quantitative et un échantillonnage aléatoire simple. Quatre-vingt (80) enseignants de géographie ont été sélectionnés au hasard dans certaines écoles secondaires du département du Mfoundi pour l'étude. Des questionnaires en ligne (*Google form*) ont été utilisés comme instrument de collecte de données. Des statistiques descriptives et inférentielles (régression linéaire simple) ont été utilisées pour analyser les données à l'aide de SPSS version 21. Les résultats ont révélé que la pédagogie innovante influencerait de manière significative le développement durable des compétences en géographie, car les variables testées ont indiqué les valeurs $p < 0{,}05$. S'agissant de l'apprentissage par projet, la valeur de p était la suivante : $p < 0{,}05$ avec un coefficient bêta de 0,602 . En ce qui concerne le travail de terrain, la valeur de p était de $p < 0{,}05$ avec un coefficient bêta de 0,674 ; pour l'apprentissage en plein air, $P < 0{,}05$ avec un coefficient bêta de 0,563 et pour la technologie éducative, la valeur p était estimée à $p < 0{,}05$ avec un coefficient bêta de 0,645. Les quatre indicateurs de la variable indépendante ont été perçus comme de puissants prédicteurs du développement des compétences durables en géographie, car ils étaient linéairement liés à la variable dépendante. Le travail sur le terrain s'est cependant révélé comme étant le prédicteur le plus puissant. Il convient donc de noter que ces résultats pourraient intéresser particulièrement tous les enseignants, décideurs politiques, établissements d'enseignement et autres institutions d'enseignement supérieur envisageant de mettre en œuvre une pédagogie innovante dans leur processus d'enseignement/apprentissage.

Mots clés : Pédagogie innovante, développement durable des compétences, apprentissage par projet, travail sur le terrain, apprentissage en plein air et technologie éducative.

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ABBREVIATION

AECT: Association for Educational Communications and Technology

CBA: Competency-Based Approach

COVID   Corona Virus Disease

GCE: General Certificate Examination

H0:   Null Hypotheis

HA: Alternative Hypothesis

ICT: Information and Communnication Technology

ILC: International Labour Conference

ILO   International Labour Organisation

IP: Innovative Pedagogy

MINESEC: Ministry of Secondary Education

MKO: More Knowledge Other

OBA: Objective-Based Approach

OECD: Organization for Economic Co-operation and Development

PBL: Project-Based Learning

RH: Research Hypothesis

SDG: Sustainable Development Goal

SPSS: Statistical Package for Social Sciences

UNESCO: United Nations Educational, Scientific and Cultural Organization

UNICEF: United Nations International Children's Emergency Fund

CHAPTER ONE

GENER AL INTRODUCTION

1.1   INTRODUCTION

Education in this age is rapidly changing as global expectations are becoming more ambitious and educational systems all over the world are expected to be reformulated to meet the 21st century skills and promote sustainability. The learning environment and pedagogic practices too are now being more innovative to enable learners' acquisition of knowledge, skills and values that will aid them survive in the 21st century and beyond. This has a lot of implication for the 21st century teacher and pedagogic approaches; they need to be forward thinking, curious, creative and flexible. This implies learning new ways of teaching that will meet the students' needs and equip them with the required sustainable skills for now and future use. Brutland Report in 1987 defines sustainability as "development that meets the needs of the present without compromising future generations' ability to meet their own needs" (United Nations, 1987). This, falling in line with Sustainable Development Goal (SDG) 4 to "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" UNESCO (2016), which is needed in the 21st century to build a sustainable society.

According to Makrides (2019), Education has evolved and is still evolving. Education has moved from Education 1.0, where learners are receptacles. This system is authoritarian, with the students being passive recipients, it is a teacher-centered system with the teacher giving knowledge as the absolute leader in the classroom and where technology was forbidden in the classroom. The education systems implemented in most countries today are characterized by the definition of Education 2.0, where learners begin to communicate, connect and collaborate (exam-based with

an underestimated student-centered approach which is not usually applicable, and the introduction to technology with teachers are not fully trained and equip). Then Comes Education 3.0 in the 21st century with few educational systems are pushing for reforms defined by it. It is student centered, with innovation, dialogue and technology and teachers are mere facilitators and needs strategic teaching methods that will enable the students to be content producers by being more creative, taking initiative, solving problems thus self-learning. Thus, the classical style of the classroom no longer exists.

Despite the evolution in education, many students are still lagging behind. According to the Global Learning crisis, schooling is not learning; that is going to school does not equate to the learning outcomes (UNICEF 2020, Costin, 2019, Lant, 2013). This implies that even though more and more students are being enrolled in school, both primary and secondary they are not acquiring the fundamental skills needed to fit into the society. Thus, the challenge is to provide quality education to students through effective teaching. To close up this gap of achievement in learning outcomes, classroom pedagogy needs to be revisited and tilted towards competence-based with the use of innovative teaching approaches. Such approaches needs to teach students to be creative thinkers and problem-solvers, build teamwork, communication skills and how to become global citizens amongst others (Costin, 2019)

Reiterating this issue, (OECD, 2016) says innovation is essential to bring about qualitative changes in education to increase efficiency and improve the quality and equity of learning opportunities, as opposed to the quantitative expansion seen so far. This will foster innovation in society by developing the right skills to nurture it. As such, it is imperative for national educational systems and policy reforms to be geared towards developing and using smart innovative pedagogies and creating innovation-friendly culture in their policies and syllabus.

In this age where the classroom should serve the needs of the society and beyond, learners must be engineered by lifelong skills that will enable them fit into the society and be global citizens. Some of such skills include creative thinking, teamwork, sophisticated reasoning, collaborative problem-solving abilities amongst others. According to Costin. (2019), these skills are better developed through interaction and not through long lectures or simply making students copy from a blackboard, as most teachers did when they were students or as it happens in the present pre-service education system. Therefore, for effective teaching, there should to be innovation, initiative, teamwork, creativity, flexibility, and adaptability in pedagogic strategies. This implies that learning outcomes and the quality of education from time immemorial very much depends on the teacher and quality of teaching.

Our common educational experience demonstrates that education is building and rebuilding itself through a permanent adaptation to the societal changes, to the progress in various fields and to the educational needs and expectations of the educated. The means of education represent an extremely important leverage to rebuild and reform education as curriculum resources that significantly support the mediation of training and self-training performed by the teacher. Based on the freedom of professional initiative and on the fact that the teacher is the one who knows the students' expectations and educational needs, the teacher is required to use the means of education in a personalized and creative manner, in order to achieve the proposed educational outcomes and to improve the quality of the educational process. (Baciu, 2015)

Cameroon is not left out in the changes affecting education as it evolves globally. To this effect, the syllabus is drawn guided by the stipulations of Law No.98 /004 of 14th April 1998 to lay down Guidelines for Education in Cameroon. To embrace all the objectives of education in Cameroon as stated in articles 4 and 5 of the above-mentioned law that is; to train children for their

intellectual, physical, civic and moral development and their harmonious integration into society, taking into account economic, socio-cultural, political and moral factors, the Competence Based Approach through Real-Life Situations was chosen as the basis for drawing up the new syllabuses for Secondary Education in Cameroon. MINESEC (2014).

Teaching in Cameroon educational paradigm has thus propelled the gradual move from Objective Based Approach (OBA) to Competency-Based Approach (CBA) over the years. Currently, the CBA is use in public secondary schools in the country. The objective of the CBA is for the learner to be engaged actively in all aspects of knowledge acquisition, skills development and professional behaviors that need to be demonstrated and practiced in a specific discipline. (Wiysahnyuy, 2021) The New geography syllabus according to Competence-Based Approach (CBA) for secondary general education outlines three main changes, a shift from objective-based approach to a competence-based approach through real life situations; shift from a school cut off from society to one that prepares citizens for a smooth insertion into socio-cultural and economic activities; and a shift from an evaluation of knowledge to that of competences necessary to sustainable development. (MINESEC, 2014).

According to Boutin (2004), in the CBA, student becomes a learner who must suggest ideas first, have the desire to know and learn, organize work using new technologies, assimilating new learning methods, and looking for new information. Thus in the CBA, the focus is to enable learners to master the knowledge, skills and attitudes needed for the world of employment and general life. The new role of the teacher is a facilitator and consists in encouraging the learners to acquire knowledge and skills, and entrusting the preparation of certain tasks to the students. This means teachers implementing this approach encourage learners to be creative, taking initiatives, and be at the center of their own learning. However, many teachers faced a variety of challenges

that impedes the effective implementation of competence-based curriculum in teaching and learning especially lack of effective training on the use of the CBA. (Wiysahnyuy, 2021). The teaching strategies used by teachers is questionable with regard to the acquisition of the skills and competencies needed in today's global society. Thus, there is need for teachers to be engaged in more innovative pedagogy in order to fully implement the CBA.

With innovation being increasingly introduced in various educational settings, the question on the importance of innovative pedagogy, that is, how to use it to facilitate learning in order to acquire lifelong competences in classrooms seems to grow correspondingly. However, innovative pedagogy is seen differently in different educational institutions and have different didactical practices in different fields. For example, in the teaching of geography innovative pedagogy can be seen as outdoor learning, project-based learning, fieldwork, the use of educational technologies amongst others.

1.2   PROBLEM STATEMENT

The acquisition of Knowledge, skills, attitudes and values essential for survival in today's society enshrined in Sustainable Development Goal 4, Target 4.7 places the learners at the forefront of education. In this light, this study considers the teaching of geography as a discipline in line with UNESCO 2030 agenda, which is aimed at ensuring that all learners acquire the knowledge and skills needed for sustainable development and sustainable lifestyle. Geography students should have valuable environmental awareness and experiences of spatial interaction and environmental consequences that arise from day to day activities (International Charter on Geographical Education, 2016). As such, geography students' skills in the 21st century need to be increased to ensure effective cooperation on environmental, social, economic and political issues (Yli-Panula, 2020). This will help to close the gap between what is learnt in school and what the society actually

needs. Thus a broad range of sustainable development skills needed have been identified such as communication, creative thinking, collaboration, problem solving among others by UNESCO and OECD as stated in González-Salamanca et al (2020)

In Cameroon, the Competence-Based Approach (CBA) in line with the vision of making Cameroon an emergent economy by 2035 is as an educational reform aligning educational goals with the demands of a more skilled workforce. The Ministry of Secondary Education (MINESEC, 2014) explained that CBA was a new pedagogical innovation aimed at "making sure that the learners could apply what they learn in class in real-life situations outside the classroom" i.e., acquiring lifelong skills necessary in the 21st century.

Despite these evolutions, there is still a gap between what student learn in school and what they actually practice in real-life situations outside the classroom thus indicating that schooling does not equate acquisition of fundamental skills needed to survive in the 21st century. There is little or no link between what the learners have acquired and the opportunities/ challenges present in their environment because: Students are unable to identify with increasingly simple environmental issues around them and come up with suggestions to redress the situation. They seem to be non-existent in their own environment; Many studies have not been conducted in geography on pedagogic methods that foster the development of sustainable skills; Also even with the introduction of the CBA(MINESEC 2014) and Project-based-Learning in the geography syllabus which hasn't gone operational yet (MINESEC 2019), many teachers are still ignorant of these approaches and innovative pedagogy to promote skill development. They are sticking mostly to the traditional lecture-note-blackboard methods of teaching, which leads to very slow rate of promoting sustainable development skills. With the student center approach of teaching (CBA), aligned to different innovative methods, secondary school teachers are required to master and use

the approach as a mode of education; whether or not they have been socialized to it and as such some questions remain unanswered such as: Are the teachers actually practicing this pedagogic approach that comes with innovative teaching methods? Are they prepared and equipped for the new pedagogical methods? Are the students able to apply what they have learnt in real life situations? What obstacles must be overcome for the approach's target objective to be achieved? etc (Wiysahnyuy 2021)

Based on these problems identified above, an investigation on innovative pedagogic approaches to teach geography in secondary schools provides a gateway towards identifying, understanding and using innovative teaching methods that will enable learners develop sustainable skills to help them fit in today's constantly changing world. Also, it is seen as a way of raising awareness and enable geography teachers to improve on their skills. This will thus be able to reduce the gap between what the learners learn in class and its applicability outside of the classroom.

1.3   OBJECTIVES OF THE STUDY

1.3.1   General Objective

This research is aimed at investigating innovative pedagogic methods in the teaching of geography and how it influences the promotion of sustainable development skills amongst learners in secondary schools in Cameroon.

1.3.2   Specific Objectives

➢ To evaluate the influence of Project-Based Learning (PBL) on the promotion of sustainable skill development in geography secondary schools

➢ To assess the effect Fieldwork on the promotion of Sustainable skill development in geography in secondary schools

➢ To examine the effect of Outdoor Learning on the promotion of sustainable skill development in geography in secondary schools

➢ To assess the influence of educational technologies on the promotion of sustainable skill development in geography in secondary schools

1.4   RESEARCH QUESTIONS

1.4.1   General Research Question

To what extent does innovative pedagogy influences the promotion of sustainable development skills in secondary school students in Mfoundi Division?

1.4.2   Specific Research Questions

➢ To what extent does Project-Based Learning (PBL) influence the promotion of sustainable skill development in geography in secondary schools in Cameroon?

➢ To what degree does fieldwork influence the promotion of Sustainable development skills in geography in secondary schools?

➢ To what extent does outdoor learning influence the promotion of sustainable skill development in geography in secondary schools?

➢ To what level does educational technology influence the promotion of sustainable skill development in geography in secondary school?

1.5   RESEARCH HYPOTHESIS

1.5.1   General Research Hypothesis

There is a significant relationship between innovative pedagogy and sustainable development skills in Geography in secondary schools in Cameroon

1.5.2 Specific Research Hypothesis

➢ Project-Based Learning (PBL) has a significant influence on the promotion of sustainable skill development in geography in secondary schools

➢ Fieldwork has a significant effect on the promotion of sustainable skill development in geography in secondary schools

➢ Outdoor Learning has a significant influence on the promotion of sustainable skill development in geography in secondary schools

➢ Educational Technology has a significant effect the promotion of sustainable skill development in geography in secondary schools

1.6   BACKGROUND OF THE STUDY

This section focuses on the background of the study, which is divided into historical background, contextual background, conceptual background, and theoretical background.

1.6.1   Historical Background

Before the coming of colonial intervention in Africa in general and Cameroon in particular, the indigenous population through informal education transmitted knowledge and production skills on agricultures necessary for human survival within families, tribes and communities. African Indigenous education according to Ashu (2020) was aimed at developing intellectual, physical and social skills; to understand, appreciate and promote the cultural heritage of the community at large as well as to acquire specific vocational training (training a child to know how to farm, hunt, carve, weave). It had key characteristics such as community oriented, leaning by doing (practical learning). It was a lifelong process where people learnt throughout their lives to protect, preserve and develop the traditional indigenous skills and cultures of Africa but with no literacy background

 The coming of the colonial powers according to Frankema (2012), brought in formal education with a non- vocational approach that is, focus was tilted away from learning on the job (acquisition of skills for daily survival) to reading and writing (literacy).

Realizing that access to education as seen in Millennium Development Goal 2, does not equate to quality of education (United Nations, 2015), United Nations Educational, Scientific and Cultural Organization (UNESCO) came out with 2030 Agenda that sets clear goals on skill acquisition. These can be seen in Sustainable Development Goal (SDG) 4 target 4.4, which states that "by 2030 there should be substantial increase in the number of youths and adults who have relevant skills including technical and vocational skills, for employment, decent jobs and entrepreneurship". Also target 4.7 which is about "ensuring that all learner acquire the knowledge and skills by 2030, needed to promote sustainable development including among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development*"* respectively (UNESCO 2017). As such there is increasing need to provide quality education with better educational outcomes worldwide for learners to better integrate into the society. This growing need creates an awareness of the importance of teaching methods that shapes better learning experiences i.e., readiness for innovation of pedagogy, i.e., pedagogy that is more engaging and relevant to the learners. Thus, focus is placed on teachers and teaching round the world, with aim to promote high quality teaching in classrooms. (Vieluf et al., 2012).

In Cameroon in a bit to orient education towards the acquisition of skills for sustainable development in line with SDG 4 target 4.4. and 4.7, it came out with the Growth and Employment Strategy Paper 2010/2020. Under EDSEC 2.4 Cameroon aimed at revising teaching programs and

guides in secondary schools; designed teaching and training programs following skills approach, including opportunities that the milieu offered. This led to a change from Objective Based Approach (OBA) to Competence-Based Approach (CBA) beginning in 2014 with a 2-year Sub cycle of observation that was followed by a 3-year sub cycle of orientation in lower secondary schools. As a result of this, there was the revision and introduction of new fields aim at building skills and values based on real life situations. For example, environmental and developmental issues in geography. In 2019, the school program for high schools was also modified to include more innovative pedagogy such as project-based learning (MINESEC, 2019) but has not been tested yet. Therefore preparing young people to meet new educational challenges implies reviewing and updating the pedagogies teachers use. Thus, innovation is seen as a normal response to the daily challenges of a constantly changing classroom (OECD, 2018).

1.6.2   Contextual Background

The context of this research is based on the fact that the 21st century is marked by ambitious educational changes and rapid growth of globalization. As such, it is common knowledge that educational systems today should empower learners with the necessary skills and competences that will enable them survive in the ever-changing society. However, the problem lies on how best the development and use of these skills can be achieved that is, which teaching methods can be used and how innovating pedagogy can help attain these educational outcomes.

Frequently, teachers make choices about their pedagogy not based on their own preference but according to a local and/or national curriculum structure. Many curricula now include "core competencies", "transversal skills" or "general capabilities" which point towards certain kinds of pedagogy and provide alternative starting points for learning design (UNESCO, 2015). Some curricula are constructed to be "competency-based", with the idea that students should move

through the development of different skills and knowledge levels at their own pace (Bristow and Patrick, 2014). Many innovative pedagogies call for curricula where students take an active role in managing their learning. They are expected to develop the habits of metacognition in terms of knowing what one knows and what one needs to understand better.

The goal of teaching being more than just the transfer of content from one person to another but the way that students are taught because the way students are taught affect what they learn (OECD, 2018). As such, particular innovative pedagogical approaches can be used to develop students' skills. This increases the decisions that teachers must make as to what teaching strategies to use to ensure sustainable skill acquisition.

In its vision for the future of education in 2030, (OECD, 2018) views essential learner qualities as the acquisition of skills to embrace complex challenges and the development of the person as a whole, valuing common prosperity, sustainability and wellbeing. In order to achieve this vision, a variety of skills and competences commonly known as 21st century skill is needed. These skills will allow learners to act as "change agents" who can achieve positive impact on their surroundings now and in the future. However, evidence shows that this vision has not yet been met and in order for sustainable skills to be developed to achieve this vision, there is need for effective innovative teaching and learning approaches that can result in not only improved learning outcomes but also greater student wellbeing.

In Africa, according to the Continental Education Strategy document for Africa (2016-2025) education has to be reoriented in order to provide African learners with the necessary knowledge, skills, abilities, capacities among others for innovation and creativity that is needed for the promotion of sustainable development locally and globally. Realizing African's Union Agenda 2063 (2015) will depend on building human capital through enhanced education that produces

Africans with appropriate attitudes and competences to meet needs of Africans and the global economy. This can be acquired through innovation driven revolution to promote quality education and lifelong driven opportunities for all drawn from Sustainable development Goal 4 which strive for quality education that is inclusive and equitable quality education and promotion of lifelong learning opportunities for all. (UNESCO, 2017)

According to law No 98/004 of 1998 lay down guidelines to education in Cameroon, the mission of education is to train learners in such a way that they will develop intellectual, physical, moral and democratic skills that will enable them integrate into their communities as better global citizens. To be global citizens in the 21st century, learners need to develop skills that are sustainable to enable them cope in this rapidly changing world. Objective 7 of this mission brings out some of such skills such as creativity, taking initiative, entrepreneurship, among others. However, from day-to- day experience in the field students lack initiative and are not entrepreneurial, most youths roam the streets after leaving secondary and high schools. From inferences, this suggest that teaching has fallen short of providing the necessary skills relevant for social applicability and some of the skills mentioned in Objective 7 above are not being met.

The educational curriculum and geography syllabus in particular seek to offer quality training to young Cameroonians in the 21st century that will enable them to fit into the demanding global job market. Thus, training tools are evolving to enable learners not just to acquire knowledge but empowering them to cope with complex and diverse real-life situations that takes into account sustainable development, local knowledge and culture.

There are modifications being made in the secondary school curricular in Cameroon and geography in particular towards the orientation of teaching. This orientation could summarized amongst others to train within the framework of emergence by 2035 citizens that are not only

bilingual and deeply rooted in their culture but more open to the world through sustainable skill development and dominated by information and communication technologies. (MINESEC, 2014)

However, there is still a gap in the teaching process and skill acquisition by learners as there is very little or no link with the opportunities and challenges present in their environment. The most highly educated people, i.e., those who have completed university education have the highest unemployment rates. That is partly because they tend to opt out of lower-skill jobs and partly because of the shortage of jobs requiring highly skilled workers (Sosales and Majgaard, 2016). Moreover, most university graduates have generalized skills as opposed to specialized skills (Sosales and Majgaard, 2016).

1.6.3   Conceptual Background

Learning is dependent on the pedagogical approaches' teachers use in the classroom. Pedagogy can be described as the heart of the teaching learning process. Pedagogy is a broad term with different meaning across cultures; however, it is all base on the method of teaching. Pedagogy refers to repeated patterns or sets of teaching and learning practices that shape the interaction between teachers and learners (OECD, 2018). According to UNESCO LearningPortal (2021), Pedagogy is seen as a broad term that includes how teachers and students relate together as well as the instructional approaches implemented in the classroom. A variety of pedagogic methods is use to teach in schools. However not all pedagogic approaches are effective that is, not all bring out the best in the acquisition of knowledge, skills, competences and attitudes of learners. The effectiveness of pedagogy often depends on the particular subject matter, understanding the diverse needs of different learners, and adapting to the on-the-ground conditions in the classroom and the surrounding context (UNESCO Learning Portal, 2021).

Education in the 21st Century represents a major paradigm shift from teacher-centered to learner-centered instruction. This implies that teachers have to adopt pedagogic methods that reflect the current realities. Thus, Pedagogic approaches or methods needs to be more innovative in order to cater for the need of the 21st century learner that is, learning geared towards to acquisition of skills and competences for sustainable development. Innovative Pedagogy According to Zhu et al (2013) is seen as teaching using new and diverse ideas, strategies that facilitates active learning and development of students' creative potentials in order to stimulate interest and improve learning.

According to Ünlü (2011) education programme put forward the necessity of development in harmony with individual, social and earth-scale innovations and developments through the skills students are to have. From the 21st general education skills to transferable skills such as critical thinking communication, creative thinking, problem solving, information and communication technologies and entrepreneurial skills among others. In order to align with the above 21st century skills, geography programmes need to be taught such that students acquire the basic geographical skills. Some of such skills stemming from geography lesson includes map skill, observation skill, field study skill, geographical investigation skill, analytical skills, preparing and discussing table, graph and diagram skill, time perception skill, change and continuity perception skill, and proof using skill (Ünlü (2011). Pedagogical approaches such as inquiry-based, project-based and collaborative learning can help develop fundamental soft skills such as critical thinking, creativity, teamwork and communication. These pedagogical approaches can incorporate innovative elements such as gamification, blended learning and experiential learning (OECD-iLibrary). This work will make use of the following concepts identified as innovative pedagogy strategies in the teaching of geography.

Fieldwork

Fieldwork is seen as an educational activity that takes place outside the classroom. It is a learning experience, which gives reality to the subject and saves it from being arid and theoretical. As such, fieldwork is regarded by most geographers as being central to their teaching (Phillips, 2012)

Fieldwork supports the geography curriculum by promoting geographical knowledge and understanding, bridging the gap between the classroom and the outside world and reinforcing students' understanding of geographical concepts. Fieldwork promotes the development of a range of transferable skills, including enquiry, numeracy, literacy and communication. Fieldwork encourages students to develop an appreciation for a range of different environments, with implication for the conservation of sites and linking to education for sustainable development. Fieldwork encourages students to consider and respect a range of perspectives on social, political and environmental issues, while giving them the confidence to justify their own opinions. Fieldwork encourages students to become independent learners and to develop teamwork, communication and leadership skills (Royal Geographical Society)

Learning and teaching in a field setting enhances environmental literacy, instills social responsibility towards preservation of biodiversity and raises awareness of ethical questions about other living beings. Fieldwork is valuable for educators too - in enhancing their confidence and expertise through shared experiences in the field; and interaction with students is vital in forming the relationships that are important in the classroom (Minocha et al., 2018).

Outdoor Learning

Learning outside the classroom is important for all young people if they are to connect with their local place, find a relevance for the classroom-based learning and develop a meaningful understanding of what environment really means. Outdoor learning does not have clearly defined

boundaries and includes many fields; however, it has common core skills. In Project Dirt (2018), learners learn through what they do, what they encounter and what they discover. This can be through recreational activities, adventures, expeditions, education for sustainability amongst other. Outdoor learning readily develops the learning skills of enquiry, experiment, feedback, reflection, review and cooperative learning.

Outdoor education is becoming popular in education recently and the term is used synonymously with different concepts such as adventure education, recreation education, nature education, museum education, or experiential education. It is also considered as complementary of mainstream education and a rich learning environment by the researchers (Okur-Berberoglu, 2021) There is a gap between real-world needs and the current education methods and practices in teaching geography regarding the current and future societal and economic phenomena. Teachers of secondary education therefore needs to be empower to find a new innovative pedagogy to teach creativity, innovation, collaboration, and co-creation in a 'out of the school doors' approach (Athanassios and Vasiliki, 2019).

Project-Based Learning

Project-Based Learning (PBL) is an individual or group activity that goes on over a period of time, resulting in a product, presentation, or performance. It typically has a time line and milestones, and other aspects of formative evaluation as the project proceeds. In conventional face-to-face teaching, the introduction of project-based methods entails recognizing that there will be less tutor control over the learning processes, that students must accept more responsibility for organizing their own learning experience. (Donnelly et al., 2005). Project-Based Learning prepares students for academic, personal and career success and readies young people to rise to the challenges of their lives and the world they will inherit (Kulkarni, 2020)

Project-Based learning is a project that involves the student or group of students carrying out a variety of educational activities with the goal of bringing out solution to a problem by the students themselves. (Laura et al., 2006). Kies (2018) reiterates that students are investigating a real-world question or problem and then presenting their learning in a final project. Through the creation of the final product, the students will be gaining a deeper understanding of the learning, as well as, developing critical 21st century skills.

PBL is a teaching method that involves students investigating a topic that is based on a real-world question or challenges; it is a student-centered as opposed to the traditional teacher-centered learning that takes place in many classrooms. It is changing from a guided learning process to an open learning process (D'Orio, 2018). PBL is not necessarily a new concept, but it has been gaining more and more attention from teachers and school districts as they seek to have students engage with the material deeper than ever before. With the plethora of teaching methods out there, PBL often has been overlooked because of its very nature. Many teachers are not trained in these student-centered approaches, especially PBL (D'Orio, 2018).

Educational Technology

Educational technology is the effective use of technological tools in learning. As a concept, it concerns an array of tools, such as media, machines and networking hardware, as well as considering theoretical perspectives for their effective application. (Michael, 2015)

Educational technology is important because it helps today's teachers to integrate new technologies and tools into their classroom as such learner centeredness is upgraded and improved in their classrooms. Educational technology enables teachers to engage their students in unique, innovative, and equitable ways. Teachers are also able to expand their network and connect with other teachers and educators nationally and globally (LoyolaUniversityMaryland, 2021).

1.6.4   Theoretical Background

The theoretical background of this study is based on the fact that, learning is dependent pedagogy.

This is because the way students are taught affect what they learn (OECD, 2018). These teaching

approaches needs to be innovative and learner centered to enable learners acquire sustainable or

lifelong skills.

This work is supported by four theories of learning i.e. Progressivism theory of learning by John

Dewey (learning by doing), Experiential Learning theory of David Kolb, social constructivism by

Lev Vygotsky (More Knowledge other).and connectivism theory of Siemens (Digital Age).

Progressivism Theory of Learning

The use of outdoor learning as well as project based learning as innovative pedagogic methods to

enhance skill development can be supported by John Deway the father of Progressive Education

Theory. Progressive education, according to Dewey (1938), is "a product of discontent with

traditional education" because it uses adult standards, curriculum, and teaching methods. He

thought that young learners could not benefit from traditional schooling. According to Dewey's

definition of progressive education, learning experiences for young children should be socially

engaging and developmentally appropriate (Dewey, 1938). To Him, social interactions are the key

to efficient learning, and the educational environment should be viewed as a social institution

(Flinders & Thornton, 2013). John Dewey believed humans learn through doing, which affirms

that reality must be experienced. According to Dewey, children must interact with their

environment to learn and adapt. Dewey believed the same was true for teachers and that it was

important for teachers and students to learn together. John Dewey states *"Give the learners*

something to do, not something to learn; and the doing is of such a nature as to demand thinking;

learning naturally results.". In contrast to traditional classrooms, Dewey believed that schools and

classrooms should be realistic representations of real-life situations, allowing children to engage in learning activities interchangeably and flexibly in a range of social contexts (Dewey, 1938). Project-based learning could be seen to have emerged as early as in 1900s with John Dewey and his advocacy of "learning by doing". Dewey explained that learning is an active constructive process by learners rather than passive absorption of knowledge, and requires practice from a task. Project-based learning acquires tasks to be hands-on complemented by students in real-world situations, which are authentic. Many have also seen John Dewey as a main propounded of Project-based learning especially as he focuses his work on "learning by doing". He advocated for a lifelong learning approached where students learn by interacting with real life activities.

With Progressivism, students learn by actively participating in activities and practical tasks, which enables them to better understand a subject and its applications as well as develop skills they can apply to real-life situations. By encouraging students to reflect on their learning, pursue their own inquiries, and work collaboratively with peers and teachers, develop their investigative, problem solving, and communication skills (Mannion, 2022). On these bases geography teaching-learning activities should be innovatively oriented toward skills acquisition that enable learners to be relevant in the 21st century. teachers should therefore organize teaching activities that will help the students to learn by doing such as outdoor learning, project-based learning, field work etc. This will enable them to effectively contribute to the progress of their community (Dewey, 1938)

Experiential Learning Theory (David Kolb)

The use of fieldwork as a pedagogic strategy in the teaching-learning process in geography can be supported by the theory of experiential learning propounded by David Kolb building on earlier works of John Dewey. Kolb's Experiential Learning Theory combines a four-stage learning cycle with four learning styles. It provides a powerful foundation for learning and development by

describing the ideal processes where knowledge is created through experience. "Learning is the process whereby knowledge is created through the transformation of experience" (Kolb, 1984, p. 38). The core of Kolb's four-stage model is a simple description of a learning cycle that shows how experience is translated through reflection into concepts, which in turn are used as guides for active experimentation and the choice of new experiences. Kolb refers to these four stages as concrete experience, reflective observation, abstract conceptualization, and active experimentation. As its name indicates, the experiential learning theory affirms the importance of experiential activities, such as fieldwork. The learning cycle through its stages provides feedback, which is the basis for new action and evaluation of the consequences of that action (Healey & Jenkins, 2000). These four stages representing students having the actual experience on the field, reflecting on the experience, learning from the experience and actually trying out what they have learnt thus putting their experience in use. This can lead into the building of skills Sustainability. Others on the other hand see William Kirkpatrick as the real founder of Project-based learning, which according to him is a set of activities in the carried out in the social environment that focuses on specific content and theme. As such, PBL focuses on learning by doing, experimenting, problem solving, teamwork, social skills, collaboration and partnership, and taking responsibility. Experiential learning paradigm in geography create experiential geography, where students should be given the opportunity to evaluate their representations and spatial practices and to rethink them in light of the knowledge and skills they have learned in class (Leininger-Frézal, 2018) and this involves teaching geography based on students' experiences in their communities and environment around them. The experiential learning strategy can be applied to fieldwork, Project-Based-Learning, and others in Geography. Guiding teaching methods towards experiential learning in geography can enable students to be exposed to practical applications of geographic concepts;

provide experience with team dynamics; students with experience in real-world client relations (Ive-Deway, 2019). With this, students have the opportunity to develop transferable skills such as collaboration, self-management, creativity, decision-making, problem solving, field observation skills, interpretation of field evidence etc

Social Constructivism Theory

Socio-constructivism theory propounded by Lev Vygotsky suggest that by taking part in projects, students interact with their peers and guidance of an older adult (teacher etc) under his idea of More Knowledge Other (MKO), exchange ideas and questions increases awareness. This help the students to gain new knowledge and develop lifelong skills. According to Vygotsky, language and culture are crucial for both the intellectual growth of people and how they view the world. This means that language is used to transfer concepts, which are then interpreted and understood through experience and interactions within a cultural context. Knowledge is therefore not just socially built, but also co-constructed, since it takes a group of people to have language and culture to create cognitive frameworks (Akpan et al., 2020). With this is mind, social constructivism is seen as cognitive constructivism that stands for collaborative learning between peers or under the guidance of a facilitator Social constructivism is a collaborative learning method centered on student participation, discussion, and information sharing is known as. It is the responsibility of the instructor to use collaborative and learner-centered teaching strategies. The fundamental element is that students collaborate in groups to share ideas, solve problems, or just produce new information to supplement what they already know. (Akpan et al., 2020).

Social constructivism therefore lays a good foundation for project based learning, outdoor learning amongst others in geography as a teaching leaning method. This theory can be actively applied in the teaching of geography. With innovative teaching in geography, Social constructivism changes

the role of the student from a passive listener to an active participant and a co-constructor of knowledge. This implies that social constructivism could be implemented in the classroom by utilizing teaching strategies that involves research projects, brainstorming, case studies, problem-based learning and more (Kelly, 2012). Among other things, the social interaction among learners, learners and teachers, learners etc encourages collaborative learning and group projects, guided discovery learning, and simulations.

Connectivism Theory

Educational technology is an effective technological tool in the teaching learning process aiding teachers to improve on student's centeredness; it can be supported by the connectivism theory of learning propounded by George. Connectivism theory states that learning does not simply happen within an individual, but within and across networks. According to Siemens (2005) and Downs (2005). Connectivism posits the concept of "nodes and links; this implies students/teachers as well as knowledge represent nodes that needs to be connected by links. It involves knowing where to find the right information you need, which node you need to connect with and how to get there. Siemens stated that developing a network and its nodes depends on the flow of knowledge and information within the network so when a student deals with other nodes on an issue, the flow of knowledge occurs. In other words, exchange of information between the nodes of a network represents the flow of knowledge. Therefore, in connectivism- based learning environments, flow of knowledge and information across networks leads to the dynamism, prosperity, growth, development, and network capability. Banihashem & Aliabadi. (2017). George Siemens (2005) and Stephen Downes (2005) said connectivism begins when an individual turns to digital technology to solve a problem and deepen the understanding of a topic. Connectivism promotes the idea that learning can successfully happen through digital channels, including social media,

forums, videos, and blogs (360 Learning Team). Siemens (2004), mention as learning activities begins to move learning into the digital age, we must create networks, which are connections between entities. By using these networks - of people, of technology, of social structures, of systems, of power grids, amongst others - learning communities can share their ideas with others, thereby cross-pollinating the learning environment (Siemens, 2005).

Connectivism contributes to the development of new pedagogies where control is shifting from the teacher to learners (Kop & Hill, 2008). Therefore, the integration of educational technology in the teaching-learning process can help learners to create connection in the learning environment. Students will be connected in the learning environment and out of learning environment. They can access web-based contents, remix it, share it, collaborate with others and create media rich deliverable for the classroom teachers as well as global audience, thereby putting learners at the center of learning. The four theories stated above was discuss in detailed in the literature review in relation to our four objectives and their influence in innovative pedagogy.

The increasing use of technology as an educational tool has changed the learning environment. With it came gaps in traditional ideas of teaching and the need for new methods to keep up. This theory therefore seeks to be the modern-day solution to bridge the gap between traditional teaching methods and innovative methods that can be exploited today as seen in this work such as virtual fieldwork, educational technologies etc. Therefore understanding this theory provides additional tools and strategies to create a learning environment that sets the students up for school success and skill development.

1.7 JUSTIFICATION OF THE STUDY

In and around most of Cameroon's school premises and our environment in general we see poor methods of waste disposal and the arbitrary dumping of waste yet geography students are unable

to relate to it with respect of what they studied in class. This shows that there is a gap between curricular content, acquired skills and practice, which may stem from the fact that geography teaching does not equate skill acquisition. This maybe because teachers seem to have very little knowledge about the use of innovative methods of teaching; sustainable development skills and how to go about it in their classrooms. They still use old traditional method of teaching and learning based principally of lectures and memorization of content, which does not enable students to acquire skills. Hence, the researcher got concern as to whether the teachers are aware that learners skills can be developed through innovative teaching? if teachers can or cannot use innovative pedagogy (modern teaching method) to teach geography? and how it can aid the students to put it to practice i.e., enabling them to recognize and identify problems around them to begin with and how they can possibly solve it sustainably, thereby promoting sustainable development?

1.8   SIGNIFICANCE OF THE STUDY

This study is aimed at finding out if the use of some innovative teaching methods in geography can influence sustainable skill acquisition necessary for the survival of learners in the 21st century and to what extent. This study will therefore be of benefits to students, teachers, and urriculum developers.

To students, it is hoped that the results of this study will help them uncover hidden potentials in them. Students will discover that the use of innovative methods in the teaching-learning processes such as PBL, ICT, outdoor learning activities etc can make learning easier, interesting, as they learn at their own pace and challenge them to brainstorm new ways to address problems in the society.

To Geography teachers, subject Inspectors and other relevant stakeholders, the study will help them to expand their knowledge and strengthen professional development/autonomy in order to improve on pedagogic strategies that they use to teach geography in a sustainable manner. Continuous innovating their teaching methodologies will enhance students learning and the acquisition of lifelong stills.

To curriculum developers/ policy makers, it will enable them in making major shift in curriculum policy towards innovative pedagogy in teacher training school, education in general and the teaching of geography in particular. This will go a long way to improve learners' performance and acquire lifelong skills necessary for survival in life and promotion of sustainability.

1.9   SCOPE AND DELIMITATION OF THE STUDY

1.9.1   Thematic

The research work focused on assessing the influence of innovative pedagogy on the promotion of sustainable development skills in geography in secondary schools in Cameroon. It examined four concepts (project-based learning, fieldwork, outdoor learning and educational technology) related to innovative education with the aim to establish the effect between four pedagogical methods of teaching and students acquiring sustainable skills for the 21st century and beyond in geography.

1.9.2   Spatial

This study was carried out in Mfoundi Division located in the Centre Region of Cameroon. Delimited to bilingual government secondary schools where geography is taught in this Division (Yaounde I, II, III, IV, V, VI and VII) because it has a high proportion of professional teachers who are exposed to the various resources (human, material, financial and infrastructural) that can aid a variety of innovative practices.

1.9.3 Temporal

The research span from 2021 to 2023 involving desk study, field data collection, analyses, interpretation and final write-up.

1.10 ORGANIZATION OF THE STUDY

This study is organized into five chapters. Chapter one contains the introduction and background to the study, statement of the problem and the objectives of the study. It also highlights the research questions of the study, the hypotheses, significance of the study, justification of the study, limitations of the study, delimitations of the study and operational definition of significant terms as used in the study as well as conclusion. Chapter two features a detailed review of literature on the area of this study. It reviews such literature in relation to the study variables. This chapter also puts to focus the theories that support the study. Chapter three presents the research methodology used in the study. Aspects of the research methodology employed include: Research design, the population of the study, target population, sample size and sample selection, data collection instruments, instruments validity and reliability. Included in this chapter are the data collection procedures and techniques, and the methods of data analysis. Chapter four, presents analysis and interpretation of the findings. Finally, chapter five provides the conclusion, recommendations and suggestion for further research.

1.11 OPERATIONAL DEFINITION

Innovative pedagogy

Innovation pedagogy is referred to as the effective combinations of new ideas, existing ideas, tools and practices together in new ways i.e. addition and modification of pedagogies different from conventional classroom practices in a manner that equips the learners with relevant

knowledge and lifelong skills necessary to survive in the 21st century and beyond. Innovative pedagogy therefore promotes 21st century skills such as communication, collaboration, critical thinking, creativity amongst others. Otherwise innovative pedagogy is seen as a learner centered, self-regulating learning approach that defines in a new way how knowledge, skills, attitudes are assimilated, produced and used by learners to solve real life problems in the 21st century.

Fieldwork

Fieldwork is a type of experiential learning whereby learners go out of class into the environment to experience first-hand the different phenomena they have learnt theoretically in class. Fieldwork gives students the opportunity to learn through direct observation and concrete experiences of their own as such students learn by doing and develop specific and generic skills that goes beyond school learning.

Project-based learning

Project-Based Learning (PBL) is a student-centred pedagogic approach whereby students carryout a research individually or as a team based on a real problem or challenge they have identified in their community with the aim of finding a solution through a project over a given period of time. PBL allows students to reflect upon their own ideas and opinions, and make decisions that affect project outcome and learning general; as such, students become autonomous and gain transferable lifelong skills such as leadership organizational, management, inquiry-based, critical thinking, communication, collaboration skills amongst others.

Outdoor learning

Outdoor Learning is active learning in the outdoors, i.e. places other than the classroom where that stimulates learning, which can be through adventure, excursions, recreation and experiential education. Here students learn through what they see, do, or discover. As learners interact outdoors

they readily learn new things informally that boost up their learning in the formal setting as well as develop cooperative, inquiry, reflective and communication skills amongst others in a relax manner that enhances their learning process and beyond.

Educational technology

Educational technology is defined as the strategic and purposeful use of technology to enhance the teaching learning process in order to enrich learning experiences and overall educational outcomes. It involves identifying, selecting and/or designing appropriate technological resources for the classroom that will enable simultaneous participation of students while addressing personal needs to improve learning. Educational technology facilitates students' engagement, participation and collaboration not only amongst themselves but globally.

Sustainable Development skills

Sustainable development skills refers to knowledge, attributes, values, attitudes and abilities that one needs be competent and survive in todays' society and beyond globally. Sustainable development skills is a prerequisite for sustainable development because an unskilled population or society has fewer development options. Sustainable development skills today represents skills needed for the 21st century and beyond such as communication, collaboration, critical thinking, creativity amongst others

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1   INTRODUCTION

This chapter presents reviewed relevant literature for this study. On that account, it examines

literature on innovative pedagogy, different types of innovative pedagogic methods used in the

teaching-learning process, the role and benefits of these innovative pedagogies in the teaching-

learning process, and barriers of integrating these innovative pedagogic strategies in the teaching-

learning process. Besides, this chapter also features the theoretical framework upon which the

study is grounded and empirical literature showing proofs of successful use of innovative strategies

for skill development**.**

2.2   THE CONCEPT OF INNOVATIVE PEDAGOGY

The term Innovative Pedagogy (IP) is not a simple matter and has no fixed definition especially as

mentioned by Smith (2011), it is a "diffuse and slippery" task. The definition of innovative

pedagogy "is a recurrent challenge in much literature" (Averill and Major, 2020, p. 148). However,

different authors have examined it regarding it meaning and significance. It is a stems from two

main words pedagogy and innovation. Innovative Pedagogy is design to stress on the modification

of teaching strategies to achieve educational outcomes i.e. newness, improvement, change etc to

pedagogy. Without a particular definition, Gilbert et al (2021) indicates that a series of

characteristics could be used to represent the most important aspects illustrating what innovative

pedagogies truly are. These characteristics includes, being new, planned and intentional; new in

the sense that it is the starting point of what has been done before, and intended to improve students

learning and achievement. Viewed differently, innovative pedagogy is described as "methods of

teaching that involve new ways of interactions between 'teacher-student*',* a certain innovation in practical activity in the process of mastering educational material."(Mynbayeva et al., 2018, p. 8)

Innovative pedagogies is the explicit call to imagination in designing, facilitating and debriefing learning processes. They go beyond focusing on knowledge and skills by engaging strategies, methods and tools that create a balanced and effective eco-system for learning, it therefore ensures three basic conditions for learners. That is in involves readiness with trust and confidence in the process; willingness by being motivated, interested, curious and determine to find answers to problems as well as capacity or ability to use learning opportunities for personal development and growth Ciolan (2014). In other words, Innovative pedagogy is seen as a learning approach that defines in a new way how knowledge, skills, attitudes are assimilated, produced and used by learners. Abam (2019) says innovative pedagogy is the process of teaching that leads to creative learning, by implementing new methods, tools and contents that can benefit learners and their creative potential. This underscores the importance of adopting active pedagogies by establishing learner-cantered approaches that will encourage learners to be in control of their learning. To achieve this (Yuen, 2016), proposes the adoption and utilization of innovation to facilitate learning thus innovative pedagogy. Innovative pedagogy is therefore seen as a learning approach that defines in a new way how knowledge, skills and attitudes are assimilated, produced and used by learners in a manner that equips the learner with relevant knowledge, marketable skills that will earn the learner an income, attitudes and values that demonstrate compassion and caring for self, others and the environment (Nabwire, 2016). Thus, innovative pedagogy is a gateway to develop lifelong sustainable skills for young people in the 21st century. Burden et al. (2019) sees innovative pedagogies as practices that are different from the conventional classroom practices and includes the effective use of new technologies to promote 21st century skills such as creativity,

collaboration, critical thinking and communication. Innovative pedagogy is impacted by the continual changes worldwide in technology, economics, and the environmental, political and social world. Innovative pedagogy promotes interactions, relationships, communication, and co-construction of knowledge while offering a vibrant and dynamic definition for the post-industrial 21st century context. (Young. 2016).

Innovative Pedagogy is a term that is increasingly being used today in relation to learning outcomes. That is with increased frequency to knowledge, skills, attitudes, responsibilities, autonomy and values needed by 21st century students to succeed and shape the world by creating and contributing to a better future as well how educational systems can develop them effectively. (Civis, 2021, p.7)

According to Peterson et al (2018) innovation pedagogy sets in when current practice is not adequately meeting needs as such existing ideas, tools or practices are brought together in new ways to solve problems. Educational purposes have shifted from imparting an established body of knowledge to preparing life-long learners and this has considerably implications for pedagogy. Teachers have to developed pedagogies that builds developmental attributes and self-regulated learning skills. (Haynes et al., 2016). Teachers therefore develop new pedagogies by being innovative, bringing in new ideas, adding to/modifying existing pedagogies. In many contexts, new pedagogies are shaped around the notion of self-regulated learning approaches with the aim of developing student's ability to manage and progress learning without the direct instruction of a teacher (Peterson et al., 2018).

Integration of Innovative Pedagogies in the teaching learning Process
According to Sharad (2020) innovative pedagogy has the aims of nurturing students with innovative skill and practical skills such that it becomes their second nature. For this, the teachers have to be geared up to facing the upcoming challenges in the rigid classroom settings. Thinking

out of the box, teachers can gradually attempt to introduce innovation in the classroom in the following ways

> Giving problem-solving activities to the students, providing opportunities to think differently and work independently.

> Continuously providing challenges and problems to coax children to think differently.

> Accommodate and accept multiple perspectives and diverse opinions.

> Using varied pedagogies like collaborative learning etc to interact and teach the students and not merely stick to the traditional process of teaching.

> Creating an element of curiosity and encouraging students to ask questions and search for the answers collaboratively.

> Providing ample time to the students to think, act, repeat and innovate.

> Motivating the students continuously.

As such innovative pedagogy being student's second nature, equips them with skills that will help them cope in the 21st century.

Innovative teaching takes place in different environment within and outside the classroom. This involves the identification of a problem and sourcing of information to resolve the problem through data collection and analyses, teamwork, interpersonal skills, critical thinking, creative problem-solving and effective communication. This "new pedagogy" (old and/or in different forms) aims to equip learners with 21st century skills to enable them to cope with the current lack of certainty, be flexible and able to assimilate, be creative and innovative (Amar & David, 2016).

The OECD working paper on Understanding Innovative Pedagogies, states that combination of different pedagogic approaches is a way of being innovative as it brings out different learning

experiences in student.s In actual teaching, teachers find they need to bring these different pedagogies back together to meet the multiple dimensions of learning. Teaching is therefore all about combinations. Each type of pedagogy comes with trade-offs related to the advantages and disadvantages of different set-ups. Teachers might therefore choose to combine certain pedagogies to achieve a balance of types of learning experiences. (Peterson et al. 2018. Pg. 40)

Table 1 Different pedagogic approaches creating different learning experiences/skills

		What makes students keep working				
		Teacher instruction	**Self managed**	**Group dynamics**		
What do Students work on?	**Teacher choice**	Lecture	Personalized	collaborative	Time-base	**When do we move on?**
	Co-constructed	Mastery-based	Blended	Discussions	Continuous assessment	
	Students choice	Scaffolded inquiry	Independent inquiry	Project-based	Final product	

Source: Perterson et al., (2018). OECD Education Working Paper

Pedagogical styles are shifting because of the rapid pace of changes in global knowledge and the social fabric of our societies. These changes can be seen in terms of expansion of communication, technology etc. As such, pedagogies are no longer conventional but are being innovated to suit 21st century education and skill acquisition.

Table 2 A conventional pedagogical education framework evolves into an innovative Pedagogical education framework

Conventional	Evolving into →	21st Century Framework
Academic-driven	→	Holistic
Cognitive and intellect	→	Social-emotional learning
Competitive learning	→	Collaborative learning
Conformity: maintain statue que	→	Creativity: experimentation and willingness for change
Fragmented	→	Integrated
Learning takes place in classroom	→	Outdoor in nature becomes a classroom for learning
National citizen	→	Global citizen
Obedience	→	Critical thinking
Reading, Writing, Arithmetic	→	Multi-literacies
Rote learning/ passive learning	→	Responsiveness/active learning
Teacher is responsible for child's education	→	Community partnerships extend responsibility for child's education
Teacher-directed	→	Child centred
Testing	→	Authentic assessment
Theoretical	→	Relevant and Practical
Uniformity/Assimilation	→	Diversity/cultural preservation

Source: Young (2016)

When innovative pedagogy is referred to, it is associated with multi-literacies and technology and it responds to the specific conditions in a specific location alongside the global factors such as environmental issues thus an educational system that is guided by a market driven economy; and local, national, and global politics. Innovative pedagogy therefore relies on the teacher's ability to be intuitive, to recognize patterns, and to construct ideas that have meaning. Innovative pedagogy is seen as a system of overlapping spaces rather than a sequence of orderly steps. The spaces are the

place to cultivate inspiration, ideation, and implementation, which helps in generating new ways of thinking and doing; trying out of ideas leading to an impact on people's lives (Young, 2016).

Innovative pedagogies are a fundamental part of teacher professionalism as such OECD in its publication on *" Teachers as Designers of the Learning Environment: The importance of innovative pedagogies"* sees Innovative Pedagogy is seen as a problem-solving process rooted in teachers' professionalism, rather than just an add-on applied by only few teachers in selected schools. Innovation in teaching therefore goes hand in glove with teacher experience and skills where teachers reflect on their own practices, to better align their personal capacities with innovative pedagogies (Paniagua & Istance, 2018). As per the OECD handbook for innovative learning environment, learners should be recognized as the main participant taking active part in their own learning by interacting and cooperating with others. Here students' motivation and emotions should be considered, this is because motivated students work very hard and students' innovative teaching learning environment becomes more effective with it is sensitive to individual differences. (OECD, 2017)

Figure 1 Innovating elements of pedagogy
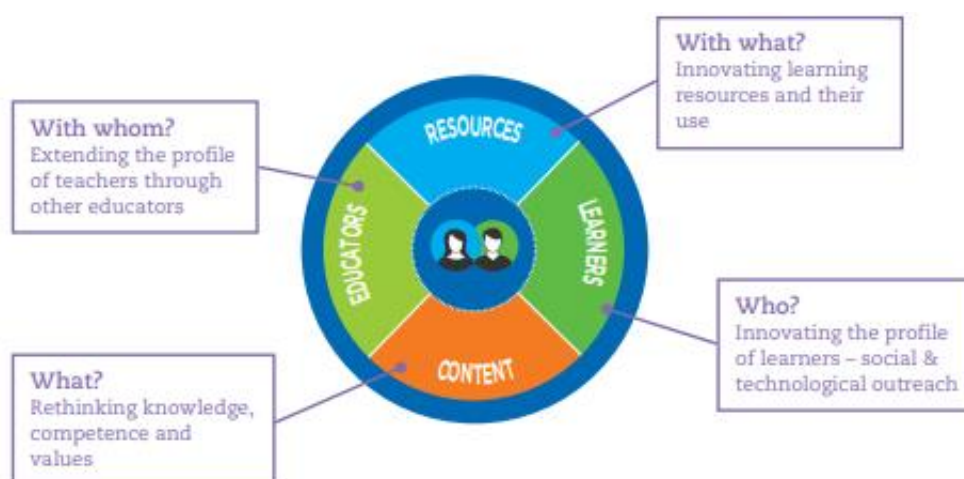
Source: OECD (2017). The OECD Handbook for Innovative Learning Environments,

Educators and teachers may be innovated as different experts, adults, family or community members. The content can be innovated using different approaches with emphasis on the

21st century competences including social learning, inter-disciplinary approaches, or giving emphasis to specific areas. Resources can be innovated through digital resources as well as redesigning facilities and learning spaces. (OECD, 2017)

Figure 2 Innovative Pedagogic Options

Source: OECD (2017), The OECD Handbook for Innovative Learning Environments,

IP can be integrated in the teaching learning process by mixing or combining innovative pedagogic approaches that promise to engage learners, create personalisation. This can be done by professional teachers individually and collaboratively in diverse forms of team teaching. Re-thinking how learners come together at different times is very important, that is, re-examining such basics as single age/grade practices, size of classes and how students are grouped Also learning time needs to be look into for instance, to personalise timetables, flexible study time

Integration of innovative pedagogy during crisis

The challenging educational environment created by the Covid-19 pandemic provoked teachers, educational institutions, policy makers to identify new ways to achieve success in education (Civis, 2021). Many educators and teacher of this era across the globe see the COVID 19 pandemic as an

opportunity to consider new ways of teaching by adopting innovative pedagogic approaches as well as reconceptualising the nature of their teacher education programmes (Mutton 2020)

According to World Bank, UNESCO and UNICEF Report (2021), the global disruption of education because of COVID -19 pandemic has constituted the worse global education crisis ever. This is because many educational institutions in the world had to shut down their doors for a very long time. Because of this crisis, there has been many changes in the field of education as it has brought in new dynamics and more possibilities for technology as an innovative pedagogy in the teaching learning process. Many school systems and teachers had to turn to some form of innovative out of class teaching strategies during this period.

In Cameroon, according to Béché (2020), the educational system was plagued with structural and pedagogical deficits during COVID 19. As such, the study showed that in order to guarantee educational normality in the event of other similar crises, there should be the integration of distance-learning technologies and improve access to essential socio-educational services.

Crisis affecting education can thus be seen as a means of upgrading and integrating pedagogic practices to meet up educational goals. Addressing the importance of innovative practices in educational systems today, OECD's Back to the Future of Education report states: "in education, there is a push to make our systems more innovative and our teachers more creative" (OECD, 2020, p. 66).

Importance of innovative pedagogies

Pedagogy is at the heart of teaching and learning as such preparing young people to become lifelong learners with a deep knowledge of subject matter and a broad set of social skills requires a better understanding of how pedagogy influences learning. Seen through this lens, innovation in

teaching is very imperative and becomes a problem-solving process rooted in teachers' professionalism, rather than an add-on applied by only some teachers in some schools. It thus sets the stage for educators and policy makers to innovate teaching by looking at what is currently taking place in schools as potential seeds for change. At the heart of all of these approaches is a sensitivity to the natural inclinations of learners towards play, creativity, collaboration and inquiry (Paniagua and Istance, 2018). The OECD Work on "Teachers as Designers of Learning Environment*"* goes further to say that; the quality of an education system cannot exceed the quality of its teachers. A teacher cannot help students meet new educational challenges by continuing to draw on a limited and perhaps even inherited set of pedagogies thus the genuine importance of upgrading and integrating innovative pedagogies. (Paniagua and Istance, 2018)

Globally today's education has multiple goals as such schools are also expected to prepare young people as future citizens and help them develop core knowledge and skills that will make them successful in life and work in this century. Educators have therefore been working on developing more student-centred pedagogies targeted towards developing students' personal competence as part of content learning. More emphasis is laid on experiential learning, believing that young people learn how to hold a discussion, how to speak in front of an audience, or how to manage an experiment by doing it as well as promoting self-regulated learning. (Peterson et al., 2018). Real-world inquiry brings learning to life. Through projects, students put foundational skills directly into practice in an interdisciplinary way. This gives them the opportunity to investigate topics through field trips, individual and group research etc. As such, students can plan, produce and present a project of their own. (Perterson et al 2018, P.48)

Innovative teaching techniques can help both teachers and students in a variety of ways. It can contribute to a more productive learning environment for students by fostering an atmosphere that

promotes active learning. These techniques can also encourage creativity and critical thinking, which can ultimately lead to better problem-solving and decision-making skills. Innovative teaching techniques can also increase student engagement and retention. Students are more likely to retain and apply the information they learn when they actively participate in their education. By fostering an environment, that promotes exploration and collaboration, effective teaching practices can aid in improving the rapport between educators and students (strobeleducation, 2023).

Barriers or Limitations to Integrating Innovative Pedagogy in the Teaching Learning Process
In seeking to identify innovative combinations of pedagogies, it is necessary to have some way of evaluating what makes one combination better than another does. This is because the combinations of pedagogies likely to lead to optimal knowledge outcomes may not be the same as that which leads to optimal personal and social development. (Peterson et al.,2018 p. 47)

Perceived Innovative Pedagogies in the teaching learning process of Geography
According to Aktaş & Ünlü (2013). "Teaching individuals' skills of acting in global sense of responsibility, being able to adapt to change, communicating effectively, proposing alternative solutions to problems, thinking critically and creatively is of great importance for a sustainable future". Geography being a science that is connected with other disciplines (interdisciplinary) on global environmental issues, it requires cooperation, use of multi-media and critical thinking. Thus by teaching social, economic and environmental changes through geography education, living in harmony with nature can be ensured. Therefore students are not only required to learn knowledge but have to be able to also produce knowledge through critical and independent thinking, as such pedagogy used by teachers in the teaching learning process should enable students to be creative in order to solve problems. It should ensure the development of reflective and critical citizens,

capable of building and mobilizing knowledge to solve problems, to create and implement ideas and projects, in a knowledge-based society that values skills

The realization of domain specific skills in geography such as observational skills, fieldwork skills geographical investigation skills, analytical skills amongst others is based active pedagogic practices that can be termed innovative. When promoting domain-specific skills, pedagogies must take into account the perculiarities in subject-specific knowledge and skills as well as the characteristics of the tasks that need to be solved. Promoting particular skills calls for teaching approaches that are often extremely dissimilar from one another (Peterson et al, 2018, pg. 65). To increase the achievement of geography skills, pedagogic or teaching strategies should be focused on *"skill-based"* activities. This implies student centeredness in real-life situations Ünlü (2011). Skills otherwise described as "21st century competences" such as learning to learn, managing and solving conflicts, collaborating, or critical-thinking, transcend domains that is it can be achieved in all domains and beyond with growing policy interest in such competences (Voogt and Roblin, 2012). As such geographical skills can be achieved in line with the 21st century competences (sustainable skills) which are critical thinking and problem solving, communication, collaboration and creativity and innovation referred to as the 4C's of the learning and Innovation Skills (P21, 2015). These competences demand, "a strong focus on student's performance, as the student must learn to apply general attitudes and skills to succeed. Learner-centred pedagogies are particularly suitable, such as inquiry-based learning or collaborative learning, as they give the learner an active role and promote the application of key skills and attitudes". (Peterson 2018, pg.66). In this light, the innovative pedagogies reviewed in this work will be fieldwork, outdoor learning, project-based learning and educational technologies.

2.2.1 The Concept of Field Work

Fieldwork is a long-standing practice that cuts across many disciplines in education. Reference is made to the principles and practice of fieldwork in sciences, environmental education as well as social sciences. (Kwok 1999). Kwok sees fieldwork as experiential learning that combines academic learning with off-campus activities by trying to integrate theory and practice in a particular area of study with the aim of enabling students to develop their own skills through learning-by-doing. Ajibade and Raheem (1999) says fieldwork is either considered as field trips, field teaching, field camps or field research and defined as *"any arena or zone within a subject where, outside the constraints of the four walls classroom setting, supervised learning can take place via first-hand experience"* Fieldwork according to Lambert et al (2016) is any curriculum component that involves students and teachers leaving the normal classroom setting and engaging in teaching and learning activities through first-hand experience of phenomena This helps to bridge the divide between the classroom and the real world (Fuller 2006).

Fieldwork is an integral part of geography studies; it is an important activity in terms of promoting geographical knowledge and skills that goes beyond school learning. It is an essential form of learning in many geoscience and bioscience subjects; this is because it provides an interesting, active and exciting part of the overall student experience. It enables students acquire a range of subject specific and generic skills, which enhance student employability (David et al. 2013). Fieldwork can be enhanced by linking pedagogy to recent technological advancements.

Skill development through fieldwork in geography

The use of the "real world" which exposes students to unfamiliar setting (awe and wonder) is a source of motivation to learn, experiencing the unfamiliar in the local context stimulates curiosity and through direct experience/observation theories can be linked to practice (Lambert et al., 2016). As such, fieldwork is seen as a way of developing real world learning whereby students develop

the skills of Investigating, experimenting and reasoning. Imagining, curiosity, reflection, determination, resourcefulness and sociability also sets in thereby enabling students to be able to think critically and solve real-life problems. It also promote social interactions, independent learning, cooperation in problem solving and decision making, increases environmental awareness (Lambert et al. 2016)

Students are able to recall the details of specie that they have had first-hand experience in the field during their fieldwork studies rather than what teachers describe to them during lessons in a classroom. Learning and teaching in a field setting enhances environmental literacy, social responsibility toward the preservation of biodiversity as well as raises awareness of ethical questions about other living beings in the environment. (Minocha et al. 2018).

In the journal of Teaching Geography by Geographical association, Cook (1999), has conducted extensive research into the role and value of fieldwork and found out the following using a categorisation proposed by Job et al. (1999).

- Fieldwork supports geography curriculum by promoting geographical knowledge and understanding, bridging the gap between the classroom and the outside world and reinforcing students' understanding of geographical concepts.

- Fieldwork promotes the development of a range of transferable skills, including enquiry, numeracy, literacy and communication.

- Fieldwork encourages students to develop an appreciation for a range of different environments, with implication for the conservation of sites and linking to education for sustainable development.

- Fieldwork encourages students to become independent learners and to develop teamwork, communication and leadership skills.

- Fieldwork encourages students to consider and respect a range of perspectives on social, political and environmental issues, while giving them the confidence to justify their own opinions.

According to Cameroon Geography Syllabus for Secondary General Education (2019) Fieldwork enables learners to identify and use geographic skills to properly investigate environmental processes, problems, develop appropriate statistical and map reading skills. Module 8 of this Syllabus dealing with pedagogic teaching strategies such as fieldwork and project-based learning, is aimed at aiding learners develop a sense of curiosity, observation, and understanding of global environmental problems. As such, learners build up their essential knowledge through processes that bring out the facts to them first hand (hand-on experience). With this, learners can be able to take initiative to process the resolution of problems identified from experiences

Approaches to Fieldwork

Field trip has been a long-standing practice in the teaching of geography; however, the approaches differ and have evolving with deferent approaches from teacher-centred to learner centred.

Observational fieldwork

Observational fieldwork is the simplest and most traditional form of fieldwork whereby teachers' experiences and ideas are passed onto the students and it is useful at the start of any fieldwork because it gives students an overview of unfamiliar places. (Martin et al, 1997). This traditional method is teacher-centred and students records answers to questions. (Lou 2016). The traditional observational fieldwork approach has as objective to read, understand the landscape and to grasp the essence of the place. As such, Esteves et al (2019) in their work saw observational fieldwork as a trip to places that had been studied in four walls of a classroom in order to apply observation skills such as reading the landscape, reading maps, location skills etc with the aim of developing a sense of place in the environment. However, these landscapes were read without the students

questioning, i.e. no question on environmental, social and political conflicts in it, as such students played just a passive role in these trips.

Geography fieldwork pedagogies have progressed from traditional teacher-centered approaches to more contemporary, student-centered, inquiry-based strategies (Marsh & Hart, 2011). The nature of fieldwork in the modern-day studies continues to change. It embraces the pace of modern life, where each hour is accounted for, fieldtrips crammed with a plethora of learning activity and action to satisfy consumer-driven demands (Fuller, 2015). Fieldwork is a holistic student-driven learning whereby all senses are engaged whose impact are not only cognitive but much more. (Lou, 2016). Which as Fuller et al (2016) states provides valuable experiences including opportunities to acquire "hands-on" subject-knowledge and skills in the real world. Fieldwork is a form of experiential learning that is carried out in an out-of-classroom setting with direct and first- hand experience with full participation of students to acquire necessary knowledge and skills not only for educational attainment but societal integration.

Research fieldwork with hypothesis testing

Fieldwork was later developed in a way that hypothesis could be tested as in any scientific research work. Hypothesis testing became the basis for fieldwork and students could create research hypotheses arising from their own perceptions about the geographical phenomena being studied. (Esteves et al., 2019). Students thus have active role in terms of participation in the tasks to be developed in fieldwork activities thereby making the teaching learning process to become learner-cantered. This method also has its limitations; for many it has become very restrictive for it has a more academic interest but would be of little application in the real world. (Esteves et al., 2019)

Inquiry-Based Fieldwork

This is a student-centred approach that allows active participation of students to ask questions, collect data, evaluate and apply data from the field. Geographical inquiry-based fieldwork is

understood as a method this is use to study problems within contexts whose characteristics are relevant to the research being developed. It includes different phases and methods use to try to respond to research questions related to concrete problems and contexts involving students and their perception (Esteves et al., 2019). By its nature, inquiry-based learning is a good framework for designing geographical field projects. Geographical inquiry entails curiosity, as there is need to know thus raising questions, selecting appropriate of geographical data, making sense of the data by describing, analysing and communicating information and reflecting and raising new questions (Roberts, 2013).

Discovery Fieldwork

With discovery fieldwork, students discover their own focus and the teacher assumes role of guide. Fieldwork especially in geography has evolved from its traditional observation- and description-based origins to a diversity of learning and teaching processes that currently focus on active learning, which is part of a global trend today "among the pedagogically responsive geographical community" (Marsh & Hart 2011). These progressive forms of fieldwork today gives the opportunities for first hand, holistic learning (Lou, 2016)

Benefits of Fieldwork

The benefits described are wide-ranging and include the development of skills in observation, data collection, analysing, research, and personal organisation as well as broader learning outcomes. Fieldwork brings about "experiential holistic learning". (Marsh & Hart, 2011, p. 273). Taylor et al (2012) reiterate that fieldwork "serves to spark student interest and deepen their wonder and puzzlement, so that they become physically and emotionally connected to places and people and can thus develop ways to make sense of the world". Reynolds (2012) emphasises the sensory possibilities: "Fieldwork offers opportunity to engage all the senses – smell, hearing, sight, touch and even taste, which is a reason why it engages so well and is so powerful in students' memories".

Barriers to Fieldwork

Fieldtrip have a diminishing profile in school curricula and timetables; there is also fear and concern about students' well-being, health and safety when it comes to out of class fieldtrip; large class sizes; increasing number of non-specialists teaching secondary school subjects; and shortage of financial resources and administrative support for organisation of physical field trips also handicaps fieldwork. (Minocha et al. 2018)

2.2.2   The Concept of Project Based Learning

Project-based learning has a long history, although it might seem like a relatively new approach that has become popular only in the last decade. According to Burlbaw et al (2013), PBL extends back to the 19th century to the works of Francis W. Parker and John Dewey. The essence of project-based learning is that a question or problem helps to organize and drive actions, and that these activities result in a final output that solves the driving question (Blumenfeld et al. 1991).

Project-Based Learning is a student-centered approach that involves an individual or group activity that is carried out for a period of time and results in a product, presentation, or performance. It typically has a time line and milestones. It has to do with instructional strategy that is intended to engage students in authentic, "real world" tasks to enhance learning and simulate professional situations. (Donnelly et al 2005). PBL is a teaching method that involves students researching a subject that is based on a problem from the outside world. As opposed to the traditional teacher-centered learning that occurs in many classrooms, PBL is a guided learning process is giving way to an open learning approach (D'Orio, 2018). It involves students researching a subject that is based on a problem or query from the outside world. It is a teaching method in which students gain knowledge and skills by working for an extended period of time to investigate and respond to a

complex question, problem or challenge that results in a product, publication, or presentation that is shared with a public audience (BuckInstituteforEducation, 2023)

PBL is not necessarily a new idea, earlier on, Dewey, Kilpatrick, and Montessori observed that people especially the youths have a natural curiosity and inclination toward investigation. The learning process in the real world is driven by this innate need for discovery and curiosity. For instance, before starting their own businesses, apprentices in many trades are required to complete their training. Humans learn best by doing; they do not learn best by reading about something or listening to a lecture. (Kies, 2018). Giving your students something to do instead of something to learn, and make sure that what they're doing requires thought or intentional connection-making (Dewey, 1916, p. 181). By interacting with the material, students are actively driving their own learning rather than taking a passive role in it. The basic idea of Dewey, Kilpatrick, and Montessori's teaching philosophies—students learning by doing—remains the same despite their minor differences (Montessori & Claremont, 1967; Peterson, 2012).

Project exercise (activity-based)

The objective of this kind of project is for students to apply previously learned skills to a problem in a field of study that they are already familiar with. This is the most conventional form of project-based learning. In the course descriptions of project-based courses in secondary education, the idea of applying knowledge is still emphasized as a key component of project work.(MINESEC 2019)

According to the geography syllabus in Cameroon module 8, Project-based-learning is mainly activity base through students observation and inquiries in their of local communities. (MINESEC, 2019)

The project's component (collaborative)

In this kind of project work, the goals are more expansive and the scope is wider; the project is more interdisciplinary in character and frequently concerned with "real world" problems; the objectives include enhancing one's capacity for autonomous work and problem-solving skills.

Collaborative project-based learning adopts a multidisciplinary, project-based approach using real world problems to bringing together knowledge and skills. (Donnelly et al. 2005)

Project orientation

This word refers to a program of study of entire curricular philosophy. Students' university education is entirely built on the projects they do, with instructional teaching only serving as a supplement to the project themes' prerequisites. The study material is chosen based on the requirements of the project themes. In the most extreme cases, like in the Social Sciences (geography) it is the students who choose the project topics, which is consistent with the original philosophy of the school or syllabus (Voetmann, 1999) Project Orientation includes project exercises mainly intended to tie together the subject matter covered in a given course. However, project collaboration and project orientation typically leave more room for a student-centered approach.

Three principles—learning is context-specific, learners participate actively in the learning process, and learners achieve their goals through social interactions and the sharing of knowledge and understanding—are the foundation of project-based learning, a student-centered approach to instruction. Al-Balushi and Al-Aamri (2014) describe it as a specific kind of inquiry-based learning where the context of learning is provided by genuine questions and challenges inside real-world activities that result in meaningful learning experiences.

Understanding and Applying Project-Based Learning

Any PBL lesson or unit must have a few essential components to be successful. First, "the project's activities and learning will be directed by the real-world question or challenge." The issue or question must be clearly related to life outside of the classroom for students to understand it. The students' ability to connect their projects to people "across the hall, on the other side of town, or across the world, an opportunity for students to collaborate with peers, experts, and anyone in

between, and a way for students to share their complete work" will also be made possible by this real-world connection, according to D'Orio (2018, p. 1).

Another key characteristic of any effective PBL lesson is the student having the choice to decide what will be produced at the end of the lesson or unit and what they will be using in order to complete it (Lee, 2015). Students will have a sense of ownership in the finished project if given the flexibility to choose and experiment. Additionally, it will make the students responsible for the bulk of the learning process. Instead of being the main force behind the learning, the teacher more often serves as a facilitator. In order to accomplish their project and exhibit their finished result, students will have to rely on their team to make the decisions required (Kies, 2018).

The final output is ultimately up to the students, but it is the teacher's responsibility to make sure that the project is acceptable for the learning objectives.

Developing 21st century skills in students is an essential task for every teacher. This is made possible by the highly adaptive teaching strategy known as PBL. With PBL, the teacher serves as a facilitator while the students carry out the bulk of the learning. Since PBL frequently incorporates teams, the students will be accountable for the learning of their teammates as well. This student-centered approach compels the students to take ownership of their learning. The abilities that children gain from completing a PBL lesson or unit will be helpful to them not only in school but also for the rest of their lives. These abilities are necessary for success in a geography studies course as well.

PBL was introduced into the geography syllabus in 2020 (MINESEC, 2019) and according to the Chief Examiner during a training seminar on the PBL (April 2023) for teachers. PBL is carried out according to five major steps which includes: Identification of problem (real-life situation) and

preparation, investigation, analysis, presentation and interpretation of results, and possible solutions to curb problem.

Importance of PBL

A growing focus on 21st century skills means project-based learning is gaining steam in education: it helps students built 21st century skills needed to succeed in the society such as critical thinking, communication, collaboration and creativity. It helps students approach meaningful learning opportunities with curiosity, while also giving them real-world skills they'll use for the rest of their lives. (Prodigy, 2022).

Project-Based Learning contribute to the high levels of student engagement that educators seek. PBL is also not merely a passing trend. Learning via experience has been an idea that has been discussed for many years (Kies, 2018).

Each and every student possesses a unique set of abilities. Project-based learning allows for experimentation and necessitates extensive application. Additionally, it gives students the freedom to approach an issue using their particular learning styles. With PBL students are able to access to a broader range of learning opportunities, providing a strategy for engaging culturally diverse learners (Railsback, 2002). For teachers, PBL enhanced professionalism and collaboration among colleagues, and opportunities to build relationships with students (Thomas, 2000)

Barriers to implementing PBL

Due to the diversity of available instructional strategies, PBL frequently goes unnoticed because of this. These student-centered methodologies, particularly PBL, are not widely taught to instructors (D'Orio, 2018). Many teachers according to Dahlgren et al. (1998), assumes that PBL is time consuming and they were unable "to cover as much material as a traditional lecture-based

style". Some pre-service teachers are reluctant and not confident enough to apply PBL due to lack of training and experience. Teacher are not sure whether to access the process of conducting the project or the final product (Aldabbus, 2018). Collaboration with parents is greatly needed for the success of PBL This relationship according to Aldabbus (2018) did not exist, and there is no effective communication between teachers and parents as it should be. Consequently, it has been observed that some parents underestimated the value of PBL, and not keen to offer the necessary materials for their kids to do the project.

2.2.3 The Concept of Educational Technology

Due to diversity and varying perspectives, educational technology is defined differently by each author depending on their requirements. Educational technology is the use of technology to improve education: It is a systematic, iterative process for designing instruction or training used to improve performance which is sometimes also known as instructional or learning technology (Ahmad, 2021)

Richey (2010) defines educational technology as "the study and ethical practice of facilitating learning and improving performance by creating, using and managing appropriate technological processes and resources". Educational technology is seen as the field of study that investigates the process of analyzing, designing, developing, implementing, and evaluating the instructional environment, learning materials, learners, and the learning process in order to improve teaching and learning (LoyolaUniversityMaryland, 2021). As a result, the term "educational technology" includes tools, methods, and processes that are based on scientific study to improve education. Educational Technology is a design science, a club of various kinds of research area dealing with basic, fundamental and key issues of learning, teaching and social organization. It is a process whereby modern technology is used in an organized and systematic manner to better improve and

enhance the quality of the education (Ahmad, 2021). Educational technology focuses on the theory and practice of utilizing new technology to develop and implement innovative educational approaches to learning and student achievement. Educational technology is dependent on theatrical knowledge from different disciplines plus experiential knowledge from educational practice (Ahmad, 2021). It is the effective use of technological tools in learning and addresses a variety of tools as a concept, including media, machines, and networking.

E-learning, instructional technology, Information and Communication Technology (ICT) in education, EdTech, learning technology, multimedia learning, technology-enhanced learning (TEL), computer-based instruction (CBI), computer-managed instruction, computer-based training (CBT), computer-assisted instruction or computer-aided instruction (CAI), internet-based training (IBT), flexible learning (FL), and web-based learning (WBL) are all terms that describe modern educational technology (Michael, 2015). Numerous media formats that convey text, audio, graphics, animation, and streaming video are included in the category of educational technology, as well as technological processes and applications such computer-based learning, local intranet/extranet, satellite TV, CD-ROM, and audio or video tapes. Many e-learning procedures are underpinned by information and communication systems

Educational technology can take place within or outside of the classroom. It may be instructor-led synchronous learning or self-paced asynchronous learning. Blended learning, which combines face-to-face instruction with distance learning, is appropriate for it. Learners and teachers use educational technology in classrooms , homes, corporations, and other settings.

Understanding and implementing Educational Technology

According to Michael, (2015), the use of both physical hardware and educational theory is referred to as educational technology. It covers a wide range of topics, including as learning theory, computer-based training, online learning, and e-learning where mobile technologies are included.

In order to describe the intellectual and technological advancement of educational technology, there are various distinct things to consider:

- educational technology as the theory and practice of educational approaches to learning.

- educational technology as technological tools and media that assist in the communication of knowledge, and its development and exchange

- educational technology for learning system management (LMS), such as tools for student and curriculum management, and education management information systems (EMIS)

- educational technology itself as an educational subject; such courses may be called "Computer Studies" or "Information and Communication Technology (ICT)"

Educational technology is an inclusive term for the tools that technologically or electronically support learning and teaching..

The traditional curriculum is believed to be insufficient to suit the needs of the new generation, known as generation Z and identified by Prensky (2001) as digital natives. Knowledge-based societies place a greater emphasis on 21st century skills, the idea of fostering a qualified learning environment, and the requirement to take into account innovations in education that will improve the performance of both instructors and students.

In this context, it is deemed crucial to incorporate new technologies into curricula for education and training (Somyürek, 2014). In particular, innovations in science and technology have not been reflected in geography teaching curricula, nor have the constantly evolving living conditions, personal, and social needs of the modern world been sufficiently taken into account (Akengin, 2008). In a similar vein, the study shows that traditional teaching methods are frequently used in the teaching of geography, and the course is viewed as being difficult and dull due to methods based on remote learning (Akengin, 2008). In terms of subject and content, geography is an easy

course to use visual and interactive materials in, and using these materials will increase the effectiveness of the course.

Technology and Geography

Mobile devices have been increasingly useful in educational applications contextually focused on supporting fieldwork methods, owing to unique optimizations for portability, social interactivity, context sensitivity, connectivity, and individuality (Klopfer et al, 2008; Patten, et al, 2006). This is especially true for inquiry-based fieldwork, where students are often challenged to take the lead throughout inquiry, data collection, and collaborative problem-solving in the field (Cliffe, 2017). Similarly Lee (2020) in the review of international geographical education says the use of mobile devices in field work helps in capturing moments of curiosity, can help to increase contextualized learning and awareness of what is happening in the surrounding world. Beyond the sensors installed on mobile devices for audiovisuals and GPS functions, many applications allow the users to collect and measure various geographical data during fieldwork. Mobile technologies as used in the fieldwork as a variety of embedded functions such as camera, recording, note-taking and online downloaded resources in the mobile devices have been used in the field trips to support concrete learning experiences

Virtual Fieldtrip

Virtual field trips involve using a computer screen to travel to places you would not visit otherwise. It is a field trip to another environment using the Internet. A virtual field trip engages the students in an experience that would not usually happen in the classroom. (Danver, 2016). According to Sriarunrasmee et al. (2015) integrated technologies can potentially support a quality class room, especially for activities that have certain limitations, such as the problem that a real filed trip cannot be organized due to limitations of distance, time, cost and availability of other resources, security,

access. For these reasons, Cassady and Mullen (2006) stated that the virtual field trip is a good alternative for the educational program, which can overcome difficulties. The students can experience the virtual field trip anytime anywhere, enriched by modern ICT. It reduces many limitations in organizing a real trip, on the contrary, increases the equal opportunity to those students who do not have a chance. Though virtual fieldtrip according to Cassady and Mullen (2006) cannot replace real field trip or a real site visit, it can however result in higher learning level, skills and experience.

Benefits of Educational Technology

With the use of educational technology, students can autonomously advance in mastering instructional materials, set their own pace of study, repeat any content that is not adequately clear, and receive quick feedback on their performance following assessments (Stošić, 2015).

The classroom can be moved anywhere thanks to technology as such (Ahmad 2021), Students can learn at home or in the "field" thanks to the knowledge and resources that are available instantly on demand and contained in a mobile device. Mobile technology enables more student collaboration, strengthening the basis of group work.

Technology instantaneously monitors and reports on students' development. This feedback gives you immediate motivation to improve on their performance. Students that use technology are also encouraged to achieve better, similar to what they do with their gaming consoles at home

Barriers to Educational Technology

Like the rest of the world, Africa is increasingly exploring the use of ICT as a way to enhance current education systems. However, the availability and use of such technologies is still severely constrained by high costs and lack of connectivity. In Francophone countries in particular, the use

of technology has remained low and according to (Stošić, 2015), computers are still not widely used in many schools, thus the teaching process is dominated by traditional methods.

With the advent of educational technology in the classroom, education is faced with the challenge of teachers' willingness to integrate educational technology in their daily work (Becker, 2000). Reiterating this Haji et al (2017) further explains that spite of the potential of educational technology in enhancing education; Cameroonian teachers have not benefited much because of lack of training, resistance to change from the conventional methods. According to Stošić (2015), a small number of teachers are willing to integrate educational technology in their teaching activities because It takes far more professional training through a variety of conferences, courses, professional literature, training seminars etc., to get a better knowledge in the use of educational technology.

2.2.4   The Concept of Outdoor Learning

Utilizing settings other than the classroom to support teaching and all-encompassing learning is known as outdoor education (White, 2011). The term "outdoor education" is often used interchangeably with other terms, including "adventure education," "nature education," "museum education," "recreation education," and "experiential education" (Okur-Berberoglu, 2015). Outdoor education is described as activities taking place outside and the philosophy of learning is that learning takes place in all circumstances and contexts where a human being is involved" (Brodin & Lindstrand, 2006). This demonstrates that learning occurs in all circumstances in real life. However, the notion of outdoor education may alter depending on the environment, purpose, and methodology of the study. There are six categories into which the contexts of outdoor education can be divided: learning and education, wilderness and nature, psycho-experimental

activities, psychosocial aspects of outdoor education, facilitation in various outdoor contexts, and multi-dimensional aspects.

Outdoor learning is seen as using places, other than the four walls of a normal classroom, to facilitate teaching and holistic learning (Reynolds, 2018). Outdoor learning does not have clearly defined boundaries and includes many fields and as stipulated by (englishoutdoorcouncil, 2018), it is a broad term that encompasses a variety of activities, such as playground games for young children, schoolyard projects, environmental education, adventure and recreational activities, personal and social development programs, expeditions, team building, leadership development, management development, education for sustainability, adventure therapy, and more. In addition to taking place in the outdoors, where participants can really see, hear, touch, and smell the real thing, outdoor learning also takes place in a setting where decisions have real-world repercussions

In recent decades, there has been a shift from traditional and teacher-centered to innovative and student-centered pedagogy in education and this has also led to the promotion of rapid evolution in the design of learning environments but with little attention paid to the usage and design of the outside areas. In this light OECD came up with the idea of Outdoor Innovative Learning Environment (OILE) for the 21st century that has to do with innovating and updating teaching methods and school design are seen as a way of improving learning. (Neda et al., 2020)

Outdoor education is considered as complementary of mainstream education and a rich learning environment (Okur-Berberoglu, 2021). According to (Oyeniyi, 2020) the outdoor environment has massive potential for learning as the outdoor environment offers motivating, exciting, different, relevant and easily accessible activities to all forms of students and gives them experiences are often remembered for a lifetime (lifelong skills). Integrating learning and outdoor experiences whether through play in the immediate grounds or adventures further provides

relevance and depth to the curriculum in ways that are difficult to achieve indoors. There is no requirement that learning and teaching take place only in classroom settings.

Importance of outdoor learning

According to Iwuji, (2012), because of students' direct engagement with nature in their surroundings through outdoor educational activities, they learn more effectively and develop their own opinions about the events they are learning about. When implemented effectively, the outdoor activity technique for teaching promotes student group interactions, which will advance early learning by fostering a spirit of cooperation, idea sharing, and respect for others' viewpoints. The potential for learning in the outdoors is enormous. The outdoors offers engaging, stimulating, unique, applicable, and conveniently located activities for children from preschool through college. Learning experiences outside are frequently cherished for a lifetime. (Oyeniyi, 2020). The ability to efficiently use local resources in the teaching process is another benefit of the outdoor activity-based teaching technique. In typical student activities, expensive scientific equipment is frequently replaced with readily accessible instructional resources (Iwuji, 2012). Evidence gathered by the House of Common Select Committee's findings strongly suggested that students gain significantly from education outside of the classroom. Academic fieldwork undoubtedly improves the teaching of science and geography, but excellent educational outings may also bring environment, history, art and design, and citizenship to life. Group activities, such as daring expeditions, can help people gain confidence and improve their social skills (Oyeniyi, 2020).

According to Cooper (2015), natural outdoor learning environment aids cognitive development, improves self-regulation, improves eyesight, improves academic performance, promotes self-confidence, builds understanding and appreciation of ecosystem and environmental processes among others. Outdoor teaching activities could allow better acquisition of knowledge by students,

as student have physical interaction with nature within their environs, this would make them to form their personal opinion about events. Outdoor activities also encourages group interactions among students and if properly used, the spirit of teamwork, exchange of ideas and respect for each other's point of view will be enhanced (Oyeniyi, 2020).

With outdoor learning, students are able to understand the relevance of a subject taught in school to everyday life, they make experiential connections with the real world outside the classroom, which helps to develop skills, knowledge and understanding in a meaningful context. Outdoor environments and surroundings act as a rich stimulus for creative thinking and learning. This affords opportunities for challenge, enquiry, critical thinking and reflection Different outdoor learning experiences offer opportunities for personal and learning skills development in areas such as communication, problem solving, information technology, working with others and thinking skills.

Barriers to Outdoor Learning

According to Rickinson et al. (2004), many teachers lack the knowledge or confidence to use the green school grounds as an outdoor classroom. As a result, many educators preferred the conventional indoor conceptions of learning and found it difficult to fathom breaking out of their habits and routines (Dyment, 2005). In the same light Parker (2022) states that lack of teachers' confidence in their outdoor teaching expertise; including fear of losing control and difficulties in managing children's behaviour. Also the lack of maintenance on the school grounds, a lack of evident greenspace, and unpredictable weather conditions Parker (2022). Funding of outdoor learning activities according to Waite (2009) is the most common barrier in developing outdoor . learning closely followed by health and safety reasons for the learners.

There is no official status for outdoor learning in teachers' educational practices, and added to this were teachers who felt constrained by the requirements of the current curriculum, a lack of time, aspiration, and structure.

2.3   THE CONCEPT OF SUSTAINABLE DEVELOPMENT SKILL

Sustainable development skills stemming from sustainable development that has been a difficult concept to define and is continually evolving. Originally defined in the Brundtland Report: "Sustainable development is development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987, p 43). Skills needed to be successful in today's world are rapidly changing due to socio-economic, political, environmental and technological changes as such the gap between the knowledge and skills acquired in school and that needed to survive in today's society has to be filled: an indication that skills needs to be sustainable. In this light, a broader range of skills needed for the twenty-first century otherwise termed sustainable skills or UNESCO and OECD (Carlos et al. 2020) have identified 21st century skills for a sustainable future. According to Arora (2018). Education is an essential tool for achieving sustainable development, which promotes skills such as like critical thinking, imagining future scenarios and making decisions in a collaborative way.

Sustainable skills according to Auktor, (2020), includes knowledge, abilities, values and attitudes needed to live in, develop and support a sustainable and resource-efficient society. According to ILO (2016), Sustainable development skill is an essential prerequisite for sustainable development as it contribute to facilitating the transition from the informal to the formal economy. Skills development according to the International Labour Conference (ILC) held in Geneva, is also

essential to address the opportunities and challenges to meet new demands of changing economies and new technologies in the context of globalization (ILO, 2008). De Cuyper (2022) Sustainable development is universally defined as 'meeting the need of the present without compromising the ability of future generations to do the same and it is divided into four main skills known as Collaboration, Control, Communication and Commitment.

Today's educational goals according to SDGs is to make learners be productive members of the society who are aware of the skills and abilities they have as such learners needs to acquire skills that attains sustainable development and promote lifelong skills otherwise known as sustainable development skills or 21st century skills. In this line with the P21 framework (2015), in the context of core knowledge instructions, students needs to have essential life long skills (sustainable skills) for success in today's world, such as critical thinking, problem solving, communication and collaboration.

Benefits of Sustainable skills (lifelong skills)

Sustainable skills help students build character and cultivate compassion and empathy, which are crucial as social collaborative beings. These skills also make sure that learners develop moral character and integrity, enabling them to work productively and cooperatively with others in the future (Varthana, 2022)

Sustainable skills is relevant in students' lives because it's not just about memorizing facts but about developing skills, needed to be successful on a personal and professional bases

These skills enables learner to adapt and adjust to their surroundings and able to handle life challenges effectively in their personal and subsequent professional lives as well as help the advancement of society by promoting and encouraging innovation. These innovations will lead to

cultural, ecological, social, and economic improvements as the complex societal problems get solved creatively (Varthana 2023).

Challenge to Sustainable skills

In the 21st century, learning is becoming increasingly complex and challenging. With the rapid pace of change in the world, it is difficult for students to keep up with the latest innovations, information and skills and apply them real-life situations. According to Mutohhari et al (2021), creativity, critical thinking, problem solving, communication, collaboration and digital literacy amongst other skills poses challenges in its application to both teachers and students. Also, the assessment of sustainable skills can often be problematic difficult. There is lack of knowledge and confusion as to how these skills should be developed in the classroom (Diego et al, 2023)

2.4   CONCEPTUAL FRAMEWORK

Generally, to anticipate discovering during an investigation, the researcher develops a conceptual framework which outlines the potential relationships between the pertinent variables of the study and specifies them (Bas swaen, 2015). Conceptual frameworks are a form of intermediary theory that make an effort to link to all facets of research. Conceptual frameworks can act like maps that give coherence to empirical inquiry.

Pedagogy is a broad concept that has been interpreted in various ways throughout history in relation to environment politics, economics, culture, and knowledge. It is influenced by relationships between students, teachers, and broader communities, and it is becoming more complicated (Gupta, 2008). Researchers came to the realization that the complexity of the classroom and the context of the teacher had a significant impact on the teacher's style and approach over time (Watkins &

Mortimore, 1999). Ongoing developments in technology, economy, and the political, social, and environmental spheres have an impact on innovative pedagogy. Pedagogy for the post-industrial 21st century context supports interactions, connections, communication, and co-construction of knowledge. To ensure that education is sustainable, innovative methods of teaching should be combined and adapted to inculcated skills and attitudes in students that will ensure them becoming global and responsible citizens (Sahasrabudhe, et al, 2020).

Geography program should therefore be taught in a way (innovative methods) that students learn the fundamentals of geography that are aligned with 21st century abilities. Map reading, field study, geographical investigation and inquiry, experimentation, communication, analytical skill, discussion, graph and diagram skills, time perception, change and continuity perception, and proof-using skills, collaboration are some of the skills that can be learned from geography lessons, according to ÜNLÜ (2011).

Therefore, with the aim to evaluate the influence of innovative pedagogy on sustainable skill development in geography, the researcher was able to identify five key concepts that helped the researcher to establish the link between the independent variable (innovative pedagogy) and the dependent variable (Sustainable development skills). The concepts are stated as follows: project-based learning, fieldwork, out-door learning, educational technology and sustainable skill development. These concepts were well described in the conceptual review by the author. The researcher was able to establish the link between the independent variable and dependent after a good literature review. Therefore, the researcher was able to come out with a conceptual framework as presented below.

Figure 3 Conceptual Framework
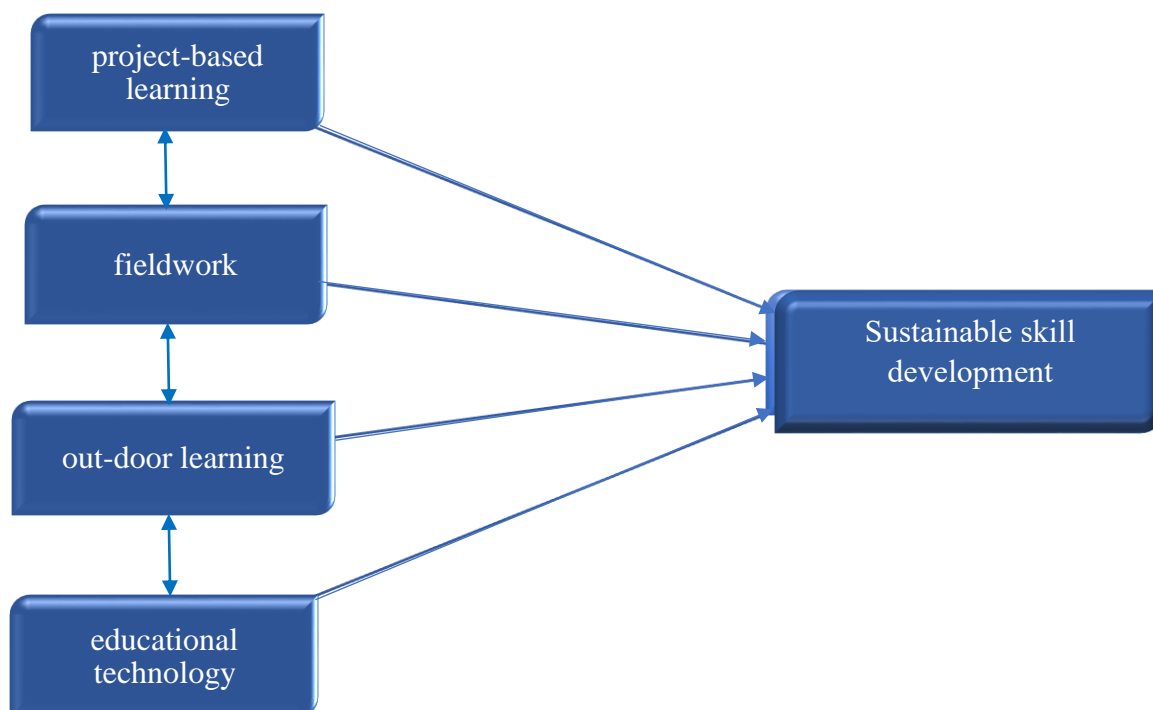
Source: Developed by the researcher.

From the figure above the researcher seeks to show the link between the innovative pedagogy and skill development. The four modalities of the independent variable (fieldwork, PBL, outdoor learning and educational technologies) when used as innovative pedagogic method in the teaching learning process influence the acquisition of sustainable skills in geography. They can be used independently or combine for better outcome. From the conceptual review it was observed that sustainable skills can be acquired in geography through teaching methods that encourage practical manipulation of the environment. Thus thee above framework can enable students acquire not only geographical skills but transferable skills such as communication, creativity, problem solving, team work, critical thinking, leadership skills etc necessary for their survival in today's ever

changing world.. These four modalities can therefore effectively contribute to the acquisition of the sustainable skills.

2.5   THEORETICAL REVIEW

This section of the literature focused on theories that are related to the teaching method used in teaching geography. The teaching process can be analyzed following various theoretical perspectives and focus on different teaching methods with respect to innovative skills acquisitions. Four theories have been selected for this study as follows: Progressivism theory of learning by John Dewey (learning by doing), Experiential Learning theory of David Kolb, socio-constructivism by Lev Vygotsky and connectivism theory of Siemens (Digital Age) (More Knowledge other). Each of these theories was discussed in detailed below.

2.5.1   Progressivism theory of learning by John Dewey (learning by doing)

The main proponent of progressive education is John Dewey. Dewey became a well-known education theorist at the turn of the 20th century, and he participated in discussions on educational reform up until his death in 1952 (Moyer, 2009). His numerous works, such as Dewey's books and articles from 1902 and 1938, underlined the need for educational reform and stressed the need of a well-rounded education that focused on the needs of individual student as well as the larger demands of the society. The early years of progressive education were influenced by Dewey's theories, which included whole-person approaches to classroom instruction as well as more experimental projects that positioned the school as a significant community hub (Moyer, 2009).

Early in the 20th century, at a period of fast economic growth and significant social upheaval, progressive education first emerged. This period characterized by improvement in transport, the use of radio and telephone for communication in the early 20th century parallel the changes brought about by the growth of technology and reliance on the internet for communication as well

as concerns regarding wealth distribution and access to social mobility. As such, questions about what educational techniques would best serve an increasingly diverse democracy began coming up. (Ayers and Schubert, 2012).

A pedagogical trend called progressive learning places more emphasis on teaching kids how to reason than on memorization by heart where children are pushed to absorb information at the price of understanding what is being taught in traditional education. In order to give students, the opportunity to approach ideas and content from various angles and develop their conceptual understanding of a subject, progressive learning adopts integrated curricula (Mannion, 2022). Learning by doing is the foundation of progressive education. It is a notion that enables students to learn by actively participating in activities and practical tasks. Students better understand a subject and its applications as well as develop the skills they will need as adults when they apply what they are learning to real-life situations. And the workplace is a collaborative setting with independence, creativity, critical thinking, and teamwork. By encouraging students to reflect on their learning, pursue their own inquiries, work collaboratively with peers and teachers, progressive learning helps students develop their investigative, problem-solving, collaboration and communication skills (Mannion, 2022). Experience is the source from which information is drawn in progressive education. Therefore learner must go through a transforming experience as opposed to transmission of knowledge. The type of transformation depends on how knowledge acquired alters the learner and how knowledge already in existence is altered thanks to the contributions of the learner. Experience applies to both individual and group learners, teachers, and collectives. (Tippett & Lee, 2019).

The progressive education movement by Dewey believes that education should be a journey of experiences that build upon one another to aid students in creating and comprehending new

experiences. He also believed that for learning to be truly relevant and remembered, there should be a connection between school activities and students' personal experiences (Mannion, 2022).

Bases on the progressivist approach geography teaching-learning activities should be oriented toward skills acquisition that will make learners to be relevant in the 21st century. According to John Dewey, teachers should organize teaching activities such that it will help the students to learn by doing. This will enable them to effectively contribute to the progress of their community.

2.5.2   Experiential Theory by David Kolb

According to Reshmed'sa & Vijayakumari, (2018), David Kolb is considered to be the propounder of the Experiential Learning theory. It is based on Dewey's (1938) work on the influence of experience on learning, Lewin (1951) work on linking theory to practice, and Piaget's (1952) work on how experience influences cognitive development. David Kolb's (1984) book on experiential learning is one of the most influential works linking theory to actual practice. Understanding anything through firsthand experience is known as "experiential learning". According to Kolb, experiential learning involves learners participating in a new experience, reflecting on that experience, conceptualizing it, and integrating it with prior experiences.

A key tenet of experiential learning theory is David Kolb's "cycle of learning," which is often expressed as a four-stage cycle of learning. It states that "immediate or concrete experiences" serve as a foundation for "observations and reflections." These "observations and reflections" are combined and polished into "abstract concepts," which result in new action implications that can be "actively tested" and, as a result, produce novel experiences (Reshmed'sa & Vijayakumari, 2018). Kolb's Experiential Learning Cycle, a four-stage learning process, is depicted in Figure 1.

➢ **Stage 1. Concrete Experiences:** In this stage, the learner experiences the immediate or concrete experiences, which provides a basis for observations and reflections.

- ➢ **Stage 2. Reflective Observation:** Here the learner observes and reflect on the experiences that are provided to construct a new idea.

- ➢ **Stage 3. Abstract Conceptualization**: The learner gains new idea or modifies the existing abstract concepts for better comprehension.

- ➢ **Stage 4. Active Experimentations**: The learner test hypothesis and applies them in new situations.

Figure 4 Kolb's Experiential Learning Cycle
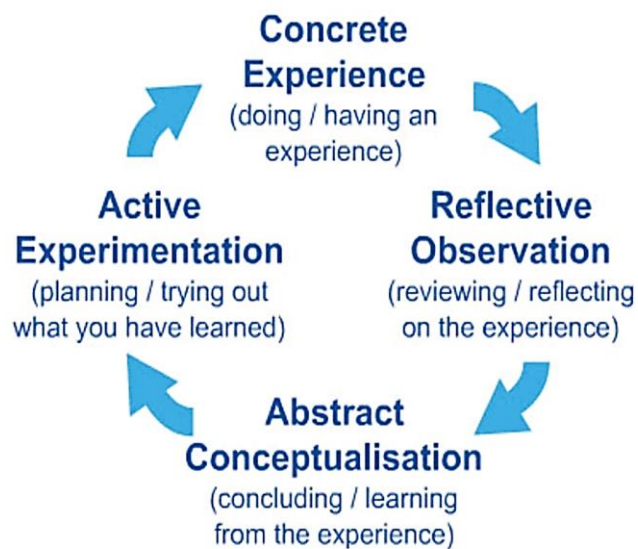
Source: Kolb's Experiential Learning Cycle (McLeod, 2010)

Geographers have adapted the experiential learning paradigm to create experiential geography, particularly in English-speaking countries and this involves teaching geography based on students' experiences (Leininger-Frézal, 2018). The experiential learning strategy is consistent with the discipline's epistemology. Experiential learning is also consistent with other teaching methods used in geography classes, such as examination of the initial representations students make or those they build while on a field trip (Healey & Jenkins, 2000; Ives-Dewey, 2009).

Guiding geography teaching methods towards experiential learning can enable students to be exposed to practical applications of geographic concepts; provide experience with team dynamics; students with experience in real-world client relations (Ives-Dewey, 2009). As such students will be able to develop not only geographic skills but transferable skills such as collaboration, self-management, creativity, decision-making, problem solving, field observation skills, interpretation of field evidence etc

Importance of Experiential Theory

Reshmed'sa & Vijayakumari (2018) in their work they were able to come up with some related literature review on the experiential learning theory to show the theory bring about skill acquisition. Williams (1990) conducted a study on 'Effects of experiential learning on knowledge acquisition, skill mastery and student attitudes and findings indicated that the Kolb Model of Experiential Learning had a significant effect on knowledge acquisition, skill mastery, and attitudes toward learning experiences. Arnold, et al. (2006) in their qualitative study on Experiential Learning in Secondary Agricultural Education says there are multiple benefits of experiential learning, including increased subject matter retention among students, active engagement, use of higher order thinking skills, and academic success.

From the literature above it was observed that numerous studies have indicated the positive effect of Experiential learning on different variables and thereby tend to facilitate learning process.

2.5.3   Socio-constructivism by Lev Vygotsky

Lev Vygotsky introduced the social constructivism learning theory in 1968. According to the notion, language and culture serve as the frames through which people see, share, and comprehend

the world. According to Vygotsky, language and culture are crucial for both the intellectual growth of people and how they view the world. This means that language is used to transfer concepts, which are then interpreted and understood through experience and interactions within a cultural context. Knowledge is therefore not just socially built, but also co-constructed, since it takes a group of people to have language and culture to create cognitive frameworks (Akpan et al., 2020).

Social constructivism views knowledge as something students do in conjunction with other students, professors, and peers, whereas constructivism sees knowledge as something they create on their own based on the experiences they receive from their surroundings. Social constructivism stresses the collaborative nature of learning while being guided by a facilitator or working with other students. Children's understanding is shaped not only by their adaptive interactions with the physical world but also by how people interact with one another in relation to a world that is cultural, meaningful, and significant, made so in large part by language (Akpan et al., 2020). Social constructivism is a learning approach based on the ability of learners to construct their knowledge. The level of potential development (academic achievement) is the level of development that the learner is capable of reaching (Hein, 1991). Hein views education as a social activity that involves other individuals, such as peers, family members, and even passing acquaintances like those who have gone before. With social constructivism, dialogue, social engagement, and the application of information are all crucial components of learning and ways to accomplish learning goals.

According to Vygotsky (1987), social interaction is essential to human development throughout life and social learning really promotes cognitive growth. In other words, learners can complete any learning task—no matter how challenging—while being guided by an adult or working together with peers under his idea of More Knowledge Order (MKO). The development of

possibilities for students to work together with the teacher and peers in creating knowledge and understanding is supported by this notion. Social construction of knowledge occurs in a variety of settings and on numerous platforms. It could be accomplished through group discussions, teamwork, or any type of pedagogical contact in a place of learning or training, on social media, in a place of worship, or in a marketplace. Students develop knowledge and experience necessary for leading fulfilling lives when they engage with others, the physical and immaterial world, and themselves. Kapur (2018)

The learner-centered approach to teaching is strongly emphasized by the social constructivism learning theory. It is the responsibility of the teacher to create an atmosphere that encourages group, problem solving and as such, the students become more involved in the learning process, while the teacher in the social constructivism learning theory serves as a facilitator rather than an instructor. The teacher needs to be aware of what each pupil already believes. Scaffolding is a common teaching strategy in the social constructivism learning theory. With this, the instructor continually modifies their assistance to the student's performance or difficulties

Implications of social constructivism on teaching methods

Teaching methods can be defined as the core art and science that underlies management and delivery strategies in the classroom Ebiere Dorgu (2015). According to Westwood (2008), a teaching approach is made up of the guidelines and techniques that instructors employ to promote student learning. This makes it clear that there are rules and procedures for teaching that are designed to optimize students' learning. These guidelines and procedures are based on learning theories like social constructivism. Here knowledge is not an individual property but rather a shared experience that arises from social interaction. Social constructivism could be implemented in the classroom by utilizing teaching strategies like case studies, research projects, problem-based

learning, brainstorming, and more. Among other things, collaborative learning and group projects, guided discovery learning, and simulations. In order to help the groups or pairs understand concepts or gather learning experiences in accordance with the intended objectives, the instructor may at times divide the class into groups or pair the pupils. With this, students gain inquiry skills and collaborate to conduct research and produce projects that showcase their knowledge. Project-based learning for example is a complete approach to classroom teaching and learning that is created to involve students in exploration of real-world issues(Blumenfeld, et al, 2011). Here, Learning is seen as a social process in which students cooperate through participating in group activities. Social constructivism changes the role of the student from a passive listener to an active participant and a co-constructor of knowledge among co-learners. It also transfers the duty of information acquisition from the teacher to the student.

Since social constructivism is built on student involvement, discussion, and sharing, it is also known as collaborative learning. Here a variety of groupings and interactive techniques are possible and could include class-wide talks, discussions in smaller groups, or pairs of students working together on projects or assignments. The fundamental tenet of the theory is that students collaborate in groups to share ideas, brainstorm solutions to problems, find causes and effects, or simply produce something new to supplement prior knowledge (Akpan et al., 2020). This theory greatly contributes to the implementation of innovative pedagogy for the teaching of geography.

2.5.4   Connectivisim theory of learning by Siemens (Digital Age)

The theory of connectivism was developed by Siemens, (2005) and is characterized as the learning theory of the digital age. The main underlying assumption with respect to this theory is that knowledge is distributed and "can reside outside of ourselves". Downes (2005) supports that "knowledge is distributed across a network of connections, and therefore learning consists of the

ability to construct and traverse those networks". In the same light Bates (2019) presents connectivism as a model of learning that acknowledges the tectonic shift in society where learning is no longer an internal individualistic activity rather Learning (defined as actionable knowledge) can reside outside of oneself (within organisation or a database). This actionable knowledge is assembled from a network of connections arising from experience and interactions within a community (Garcia & Ferreira, 2014).

Therefore, connectivism is seen as actionable knowledge, where an understanding of where to find knowledge may be more important than answering how or what that knowledge encompass. With this theory the starting point for learning occurs when knowledge is actuated by learners connecting to and participating in a learning community and the learning communities are defined as "the clustering of similar area of interest that allows for interaction, sharing, dialoguing, and thinking together" (Siemens, 2005). The learning community is described as a node, which is always part of a large network. Nodes emerge from the connection points found on a network. Nodes may also be organisations, libraries, web sites, journals, databases, or any other sources of information (Siemens, 2005). The networks are made up of two or more nodes which are linked in order to share resources.

Siemens (2005) come up with Eight Principles of the Connectivism as presented below:

1. Learning and knowledge rests in diversity of opinions.

2. Learning is a process of connecting specialized nodes or information sources.

3. Learning may reside in non-human appliances.

4. Capacity to know more is more critical than what is currently known.

5. Nurturing and maintaining connections is needed to facilitate continual learning.

6. Ability to see connections between fields, ideas, and concepts is a core skill.

7. Currency (accurate, up-to-date knowledge) is the intent of all connectivists learning

8. Decision making is itself a learning process. Choosing what to learn and the meaning of incoming information is seen through the lens of a shifting reality. While there is a right answer now, it may be wrong tomorrow due to alterations in the information climate affecting the decision.

Implication in the teaching learning process

In connectivist online learning environments, student focuses on creating academic social relations through synchronous and asynchronous tools. Information management helps the networked student to value resources, search resources, access to free resources, and use tools for social bookmarking, tagging, readership sharing, and social networking (Drexler, 2010).

Siemens stated that developing a network and its nodes depends on the flow of knowledge and information within the network. When a student deals with other nodes on an issue, the flow of knowledge occurs. In other words, exchange of information between the nodes of a network represents the flow of knowledge. Therefore, in connectivism- based learning environments, flow of knowledge and information across networks leads to the dynamism, prosperity, growth, development, and network capability.

2.6   EMPIRICAL REVIEW

2.6.1   Empirical review based on Project-Based Learning (PBL)

Since the majority of the studies under consideration did not randomly assign participants to control and experimental groups, it is impossible to establish with certainty a causal relationship between project-based learning instruction and favorable student results. A baseline equivalency

was created for the outcomes examined at the classroom level in the majority of these investigations, which were based on a quasi-experimental pretest-posttest design.

In a research conducted in Ghana, Bentil et al (2020) on the benefits of PBL on geography students in and it revealed that PBL develops geography students' critical thinking skills, observational and problem-solving skills, and promotes students' self-directed and life-long learning. it also nurtures the leadership qualities in students and reinforces student communication and interpersonal skills. In Brunei Darussalam, Caesar et al (2016) carried out a study on the benefits of adopting PBL in secondary geography lessons and the results showed that through careful planning and preparation, PBL activities can effectively enhance students' engagements and improve their grasp of geographical content knowledge. However, the teacher's shortcomings in performing the role of facilitator was a limitation. In a different study conducted in the United States, Geier et al. (2008) found that 7th and 8th grade students who participated in project-based inquiry science units demonstrated improved process skills, increased content understanding, and significantly higher pass rates on the statewide test compared to the rest of the district population.

With promising results, project-based learning has also been investigated as a teaching strategy with low-achieving students in Israel (Doppelt, 2003), and with students in second-chance schools in Greece (Koutrouba and Karageorgou, 2013). It was discovered that project-based learning benefited low-achieving students' motivation and self-image by allowing them to succeed early in the process and resulted in more students meeting the standards for college admission.

The use of Project-based learning with student teachers, have proven to improve their problem-solving skills and increase their awareness of the learning objective (Mettas and Constantinou, 2008).

2.6.2 Empirical review based on fieldwork

Dunphy and Spellman (2009) found out that students valued time spent connecting theory and practice through fieldwork and fieldwork has the capacity to provide all of the subject specific and transferable skills required within their chosen profession. The students also indicated they valued forming stronger social connections with peers and academic staff and that fieldwork inspired them to seek further engagement in the discipline/profession (Thomas & Munge., 2017). Fieldwork gives students the opportunity to experience "real" research (Hall et al 2002, 214). In the same light Boyle et al. (2007) explored the affective domain of fieldwork and found that most participants agreed that the experience had greater academic value than library work in helping them develop problem-solving and employability-related skills and in deepening their understanding of Geography.

Scott et al. (2006) studied the impact of eliminating fieldwork from the curriculum as a result of the curtailment of access to rural regions brought on by an outbreak of Foot and Mouth disease in farm livestock in the UK in 2001. In a study of about 300 students from five UK schools, it was discovered that participants thought fieldwork was both a beneficial experience and made a course 'better'. Many people who were denied the opportunity to participate in fieldwork felt that their learning was decreased and that they had lost the potential to develop technical skills and make connections between their study and the real world.

According to Gold et al. (1991, p. 21), "Geographers have long regarded fieldwork as being central to their teaching and research and as something intrinsic to the very nature of being a geographer." At both the secondary and tertiary levels, fieldwork has been praised as an approach and tradition to the study of geography that is universally accepted (Walford & Haggett, 1995).

2.6.3   Empirical review based on outdoor learning

Reynolds, (2018) wrote an essay to examines the potential effects of outdoor learning activities on student growth and subsequent conceptual understanding in young children. He made an effort to provide a better knowledge of "experience" as a crucial notion of learning and, in the end, develop strategies to improve individual practice and increase the chances for kids to realize their potential. The findings of this study indicate that outdoor learning is most effective when combined with deliberate classroom instruction, giving students access to a variety of informational sources and learning modalities to enhance conceptual understanding. The data showed a clear relationship between student and teacher enjoyment and their subsequent engagement, which led to significant improvements in understanding and learning. This evidence supports the idea that schools should offer as many outdoor and experiential learning opportunities for students as they can.

Another work carried out by Oyeniyi, (2020), looked into how students' attitudes toward basic science in secondary school in Ekiti State, Nigeria, were affected by outdoor activities and advance organizer teaching tactics. The non-equivalent pre-test post-test design was used in the study. The sample, chosen from three public secondary schools in the three senatorial districts of Ekiti State, included 138 J.S.1 students (intact class size), while the population in Ekiti State consisted of 12, 033 basic science students. Multistage sampling was use to choose the sample. According to the study's findings, students' favorable attitudes toward basic science were improved by the utilization of outdoor activities and advance organizer teaching. In order to improve students' academic performance, it was suggested, among other things, that the utilization of outdoor activities and advance organizer teaching tactics be encouraged in Basic classes in junior secondary schools. Additionally, it was advised that Basic Science teachers brush up on their subject matter so they can use teaching techniques like outdoor activities and advance organizers.

2.6.4   Empirical review based on educational technology

Ahmad et al., (2021) in their study where they administered questionnaires to examine the role of information and communication technologies in teaching and sustainable development and to examine the role of educational technology in the classroom. Their study's findings showed that students' opinions supported the claim that using technology in the classroom enhances learning and advances efforts toward sustainable development. The study also produced several suggestions to aid in the technology integration in education.

In the same light, Eze, (2016) with the aim to assess how educational technology centres affected students' ability to learn new skills for working for oneself developed research questions to direct the study at the faculty of education at Ebonyi State University and the study used a cross-sectional research approach with a sample size of 235. With the help of the mean and standard deviation, data was evaluated and it was found out that among other thing that educational technology centers provide skills in carving to students for self-employment.

There is a common belief that educational technology should equip students with the knowledge and abilities needed to adapt to a world that is always changing. Skills like critical thinking, problem solving, teamwork, innovation, digital literacy, and flexibility are frequently mentioned (Herodotou et al., 2019). The optimal way to develop those skills, including whether teaching and learning strategies are ideal for assisting or enabling the development of complex skills, is negotiable

Alajmi, (2021) carried out a study that sought to determine the impact of a blended learning instructional method on the degree of geographic skill acquisition by students in the eleventh grade. 65 made up the study sample and they were split up into two groups: an experimental group and a control group. The major task and geography target were covered in a six-week teaching

program created for the study's purposes. The Statistical Package for the Social Sciences (SPSS) program was used to statistically evaluate the pre- and post-test results from both groups. In terms of the high level of learners' acquisition of geographical skills in favour of the experimental group, the results demonstrated the superiority of blended learning. Martanto et al. (2021) found out that blended learning was very successful in teaching students' social studies abilities like critical thinking, communication, cooperation, problem solving, and creativity. According to McLaughlin et al. (2015), the blended learning approach increases students' accomplishment since learners study the material using online forms and student-centered learning-based classroom activities.

In the same light Sariyatun et al., (2021) in his study, title the impact of digital learning materials on students' social skills during social studies instruction. The efficiency of digital learning material and printed textbooks in enhancing students' social skills was compared using a quantitative comparison approach. 80 junior high school students took part in the study; 40 of them were in the experimental group and 40 were in the control group. While students in the control group utilized printed textbooks to learn social studies, students in the experimental group employed digital learning materials. The outcome of the independent sample t-test, which yielded a value of 0.028, demonstrated that there was a difference between the experimental and control groups in the study. Therefore, the results proved that digital learning material is more effective in improving students' social skills rather than the printed-out textbooks.

Based on the literature review it was observed that educational technology plays a vital role in sustainable skill acquisition in social sciences including geography.

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter provides a discussion of the research methodology used to collect data from geography teachers on innovative learning. The discussion in this section mainly focused on the following: Research design, study site, model specification, target population, sampling techniques, research instruments, reliability and validity of the research instruments, and data collection and analysis procedures.

3.1 RESEARCH DESIGN

According to Ogula (2005), a research design is a strategy, plan, and framework for conducting an inquiry to find answers to specific research questions and manage variance. A study design also establishes the framework for the study and serves as the researcher's blueprint for how they will approach their research topics (Kerlinger, 1973). The researcher employed a quantitative research strategy for this investigation and a cross-sectional survey design (which allows data to be collected at a single point in time) was used for this study's investigation. Survey is a quantitative method, according to Creswell (2009, p. 12), that "studies using questionnaires or structured interviews with the purpose of inferring from sample to inhabitants."

3.2 STUDY AREA

The research study was carried in the center region, in Yaounde, the administrative capital of the Cameroon, and precisely in the Mfoundi division. The Mfoundi division is made up of 7 subdivisions namely Yaoundé 1 to 7. The division covers a surface area of 297km2. Yaoundé is located 200 km from the Atlantic coast, between 4° North latitude and 11°35 East longitude. It is surrounded by 7 hills which would be responsible for its particular climate and the highest of which

are located on the west and north-west side (Mount Mbankolo 1075m, Mont Messa 1025m, Mont Febé 1025m, Mont Nkolondom 1200m). Yaoundé occupies a rugged site of 31,000 ha (2011). The population estimated in 2011 is 2 million inhabitants, or 11.68% of the total population of Cameroon. (Wéthé .J. 1999).

The climate that reigns in Yaoundé is of the equatorial type (Yaoundéen), characterized by the alternation of two dry seasons and two rainy seasons with an average temperature of 23.5°C contrasting between 16 and 31°C depending on the season and 1650 mm of precipitation on average per year. Average humidity is 80% and varies during the day between 35 and 98%. Frequent winds are moist and blow in a southwesterly direction; high winds are directed to the northwest. The vegetation is of the intertropical type with a predominance of southern humid forest (Wéthé .J. 1999).

This area was selected for the study because of some favorable conditions; available of modern classrooms, most teachers in this area are well trained teachers and also because the environment favours the implementation of innovative learning due to the availability advancement technology.

3.3   MODEL SPECIFICATION

The method through which variables are chosen for a model is called model specification (MacCallum, 1995). In model specification, there is a conflict between maintaining statistical power and adding all pertinent variables. In an effort to produce models that are as precise and economical as feasible, a variety of model specification techniques have been created. The model of simple linear regressions is concerned with the use of single independent or predictor variables and one dependent or criterion variable (Amin, 2005).

The model of simple linear regression analysis can be given as:

$Y = a + b1X1 + e$

Y = dépendent variable

a = regression constant

b= coefficients to be estimated from the data (b1)

X1= the independent variables (X1)

e = error term

Description of Model Variables

    The dependent variable (Y) is modelled as a function of the independent variables (X) with corresponding coefficients (b), along with the constant term (a) and error term (e). This model is illustrated below on the table:

Table 3 The description of model variable

Variables	Code	Measure
Dependent variable	Y	Sustainable skills
Independent variable 1	X	Project-based learning
Independent variable 2	X	Fieldwork
Independent variable 3	X	Out-door learning
Independent variable 4	X	Educational technology
Coefficient 1	b	Coefficient project-based
Coefficient 2	b	Coefficient fieldwork
Coefficient 3	b	Coefficient of out-door
Coefficient 4	b	Coefficient of educational
Regression constant	a	Regression constant
Error term	e	Error term

3.4   VARIABLES

3.4.1   Independent Variable

The independent variables in this study were aspects of innovative pedagogy that influence the acquisition of sustainable skills in geography at the level of secondary schools. Specifically, the independent variables examined in this study were project-based learning, fieldwork, outdoor learning and educational technology. The interrelationship between these characteristics of innovative pedagogy and sustainable skills development in secondary education in Cameroon were explored. Independent variables were measured using the ordinal scale whereby words such as strongly agree, agree, disagree and strongly disagree were assigned with corresponding scores of 4 for strongly agree, 3 agree, 2 disagree and 1 strongly disagree

3.4.2   Dependent Variable

The dependent variable in this study was sustainable skill development in secondary schools. The verifiable indicators were some key indicators of sustainable skills acquisition related geography lessons in secondary education. The ordinal scale was used to measure dependent variables whereby words such as strongly agree, agree, disagree and strongly disagree were assigned with corresponding scores of 4 for strongly agree, 3 agree, 2 disagree and 1 strongly disagree

Table 4 Recapitulative (synoptic) table of Hypotheses, Variables, Indicators, Modalities, Instrument of data collection and data analysis tool

General hypotheses	Specific hypotheses	Indepen-dent variable	Indicators	Modality	Items	Dependent Variable	Indicator	Modality	Items	Instrument for data collection	Data analysis tools
There is a significant relationship between innovative pedagogy the promotion of and sustainable development skills in Geography in secondary schools in Mfoundi	**Ha1:**Project-Based Learning (PBL) has a significant influence on the promotion of sustainable skill development in geography in secondary schools	Project-Based learning	-identifying real-life problems -team spirit communication -think and propose solution -take initiative and bring in new ideas	Strongly Agree, Agree, Disagree Strongly Disagree	1-5	Sustainable skill development	Demonstrates communication collaboration, creativity and critical thinking skills	Strongly Agree, Agree, Disagree Strongly Disagree	**21-25**	Questionnaire	Simple linear regression SPSS version 20
	Ha2: Fieldwork has a significant effect on the promotion of sustainable skill development in geography	Fieldwork	-attention and observation -active participation -engagement with real-life situation -discovery - inquiry by asking questions	Strongly Agree, Agree, Disagree Strongly Disagree	6-10	Sustainable skill development	communication, participation and collaboration, inquiry	Strongly Agree, Agree, Disagree Strongly Disagree	//	//	//

	in secondary schools									
	Ha3: Outdoor Learning has a significant influence on the promotion of sustainable skill development in geography in secondary schools	Outdoor learning	-stimuli for recall and retention - exploration real world -team spirit - adventure and acquisition of new knowledge	Strongly Agree, Agree, Disagree Strongly Disagree	11-15	Sustainable skill development	Discovery of life situations, inquiry , collaboration, brainstorm on new ideas, communication	Strongly Agree, Agree, Disagree Strongly Disagree	//	//	//
	Ha4: Educational Technology has a significant effect the promotion of sustainable skill development in geography in secondary schools	Educational Technology	-improves skills and expands knowledge online - read wider and more interaction -identify and locate places and collect data -access to a wider variety of location	Strongly Agree, Agree, Disagree Strongly Disagree	16-20	Sustainable skill development	Discovery of alternative solutions, navigate a wider community build inquiry based , collaboration, , communication skills	Strongly Agree, Agree, Disagree Strongly Disagree	//	//	//

3.5   POPULATION OF STUDY

A population refers to a collection of individuals or institutions with one or more common traits of interest to the researcher (Cooper, 1996). The population of the study included all secondary school teachers in Mfoundi Division. It is expected that this population should be able to use varied teaching methods in their teaching learning process.

3.5.1   Target Population

The targeted populations in the study were geography teachers from the various secondary schools in the Mfoundi division. This included geography teachers across secondary and high school in Mfoundi Division.

3.5.2   Accessible Population

Accessible population is the population that the researcher is able to make use of in his/her study. The accessible population of this study is drawn from all government bilingual secondary schools in Mfoundi Division i.e., geography teachers from all bilingual secondary schools in Mfoundi.

3.6   SAMPLING PROCEDURE

Sampling is the procedure a researcher uses to gather people, places or things to study. It is a process of selecting a number of individuals or objects from a population such that the selected group contains elements representative of the characteristics found in the entire group, (Kombo & Tromp, 2006). In this study, the sample technique used to get the required sample population was the simple random sampling technique. Here geography teachers were randomly selected as they responded to the questionnaire. Simple random sampling is the selection of individuals or members from a whole population at random, where each individual or member of a population has an equal and fair probability of being chosen. The population that was studied comprised of both sexes

regardless of age, literacy levels and included persons with disabilities who are stakeholders in education provision. The total number of respondents were 80 geography teachers.

3.6.1 Sample size

The sample size was determined using the Krejcie and Morgan table for sample size determination as presented in the figure below. A sample size of 80 participants was obtained. Yaouunde I had total of 17 geography teachers (Government Bilingual High School Emana and Nkoleton); Yaoounde II had no bilingual secondary school; Yaounde III had 12 geography teachers (Lycee Bilingue d'Application); Yaounde IV had 23 geography teachers (Government Bilingual High School Ekounou and Mimboman);Yaounde V had 9 geography teachers (Government Bilingual High School Essos); Yaounde VI had 29 geography teachers (Government Bilingual High School Mendong and Etoug-ebe) and finally Yaounde VII with 10 geography teachers (Government Bilingual High Ekorezok). This gave us a total population of 100 and according to the Krejcie and Morgan table for sample size determination, the sample size was estimated at 80

Figure 5 The Krejcie and Morgan table for sample size determination

N	S	N	S	N	S
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—N is population size. S is sample size.

Source: Krejcie & Morgan, 1970

3.6.2 Description of the Sample Population

This gives details the background information of the participants. It gives descriptive information on the gender, age, educational level, years of experience of participants with purpose of testing the appropriateness of the participants in answering the questions regarding the study however it does not directly influence the study.

Table 5 Sociodemographic distribution of the participants

		Frequency	Percentage (%)
	Female	30	37.5
Gender	Male	50	62.5
	Total	**80**	**100.0**
	25-30 years	21	26.3
	31-35 years	15	18.8
	36-40 years	25	31.3
Age Group	41-45 years	14	17.5
	46-50 years	2	2.5
	51-55 years	3	3.8
	Total	**80**	**100.0**
	Bachelors' degree	31	38.8
	DEPES 2	22	27.5
level of education	DEPES1	11	13.8
	Master's degree	13	16.3
	PhD	3	3.8
	Total	**80**	**100.0**
	0-5 years	19	23.8
	11-15 years	21	26.3
working experience	16-20 years	6	7.5
	21-25 years	4	5.0
	6-10 years	30	37.5
	Total	**80**	**100.0**
	First Cycle	34	42.5
Teaching cycle	second Cycle	46	57.5
	Total	**80**	**100.0**

From the table 5 above, the descriptive analysis showed that the majority of participants involved in this study were male with a frequency of 50 (62.5%) as compare to female with frequency of 30(37.5%). In the same light regarding age group, the table above shows that most of the participants involved in this study were among the age group 36-40 years (f=25, %=31.3), also it observed that a good number of participants fell in the age group 25-30 years (f=21, %=26.3). The table indicated that few participants fell in the age group 46-50 years (f=2, %=2.5%). With respect to the level of education of the participants the table above indicates that most the participants involved in this study had Bachelors 'degree (p=31, %=38.8) and a great number of those who also participated in this had DIPES 2 (f=22, %=27.5) and very few participants had PhD (f=3, %=3.8). The table above also indicates that most participants who took part in this research study had a working year experience of 6-10 years (f=30, %=37.5), this was closely followed by those who had a work experience of 11-15 years (f=21, %=26.3). Few respondents having working year experience between 21-25 years (f=4, %=5) took part in this work and finally the table above indicate that most participants who took part in this research study were teaching in the second cycle (f=46, %=57.5) and very few thought in the first cycle.

3.7 RESEARCH INSTRUMENT

This section describes how the research instrument will be designed and how its validity and reliability will be tested.

3.7.1 Questionnaire

Data collection was done using questionnaires which is an instrument used to collect data; it permits a measurement for or against a given perspective. It is capable of collecting a wide range of data very easily within a short duration. The tool enables one to justify the purpose of the research, give meaning and clarify any issue, which may be unclear to the respondent (Orodho,

2004). The researcher considered it ideal because the respondents recorded and interpreted it individually. To encourage the respondents to express their opinion freely and without any embarrassment, the researcher mostly used closed-ended questions. Questionnaire was constructed by strictly following the relevant standards and with explanations of questions wherever necessary. Researcher tried to be specific, short and clear by avoiding open-ended questions, assumptions, jargons and irrelevant questions.

Questionnaires in online format were administered to the participants vie their WhatsApp accounts and email address and the responses were collected using a spreadsheet. The questions were framed by taking care of all ethical facts related to academic research. Proper confidentiality and security were given to the data collected, and the identity of participants were protected..

Structure of the questionnaire

To collect primary data, online questionnaires were design and administered to the participants. The questionnaires have six (6) sections, Section one (1) consist of several items to gather data regarding demographic characteristics of the participant such as gender, age and their level. Section two (2) of the questionnaire was designed to determine the influence of project-based learning on sustainable skill acquisition, Section three (3) of the questionnaire was designed to examine the extent to which fieldwork affect sustainable skill acquisition. Section four (4) of the questionnaire was designed to examine the extent to which outdoor learning influences sustainable skill acquisition. Section five (5) of the questionnaire was designed determine the extent to which educational technology affect sustainable skill acquisition. Finally, section six (6) of the questionnaire was design to evaluate the sustainable skill development.

3.8   VALIDATION OF THE RESEARCH INSTRUMENT

This section will focus mostly on the reliability and validity of the research instrument

3.8.1   *Validity of the research instrument*

Validity has as substitute meaning of the truth, which indicates the accuracy of score observed and documented to the exact score of the object. Validity is the extent to which a test measures what it claims to measure (Yin, 2003). It is critical for a test to be valid in order for the results to be accurately applied and interpreted. The results of research work deeply depend upon the quality of work and accuracy of data collection for analysis. During this research activity, the researcher took the following steps to ensure the validity of results. The data collection instruments were obtained from another research (Oketch, 2013) and modified to suit the context of the studied area. The researcher reformulated these questionnaires according to research question and discussed with her supervisor as well as with other academic experts. These questionnaires supported the conceptual framework in order to get the best findings for the study. It is indicated that when a same instrument is used in different studies its validity is tested. The detail of the statistical formula is described in the analysis part. The questionnaire was pilot tested using geography lecturers and they constituted members of the target population that will not take part in the research. Feedback obtained from them enabled the researcher to improve on the face validity of the research instrument. For validity testing, the researcher provided introduction to the topic and the intentions of survey during data collection. It was very helpful to get valid data from teachers. The content validity of the instruments were determined by experts (teachers/ researchers). These experts carefully reviewed all the items of the instruments and judgments concerning how well the items represent the intended content area. Their judgments were based on whether all the variables had items which adequately represent them in the right proportions.

The items were meticulously scrutinized by four judges who ticked either Yes/No for each of the items, based on their expert view on whether the items are measuring the intended variables. A tick on (Yes) represented a content valid item while (No) represented an invalid item. The formula below was used in calculating the content validity index (CVI) for each of the items and the whole instrument.

$$CVI = \frac{\text{Number of items declared valid by judges}}{\text{Total number of items}}$$

Table 6 Indices of content validity index (Researcher survey 2023)

S/N	Variable	Nº of items	Nº of Judges	Yes	No	CVI
1	Project-based learning	5	4	4	0	1.0
2	Fieldwork	5	4	3	2	0.75
3	Outdoor learning	5	4	2	2	0.50
4	Educational technology	5	4	4	0	1.0
	Overall content validity index					0.81

The content validity index was 0.81 indicating that the content relevant variance of the instrument was 81%.

3.8.2 *Reliability of the research instrument*

According to Yin (2003), reliability evaluates the quality of research and shows the collision of variation from the measurement of the results. Reliability refers to the consistency of a measure. A test is considered reliable if the same result is repeatedly produced for example if data collection procedures can be repeated with the same result. The purpose of reliability is to minimize the errors and biases in a research work. Reliability of the research can be improved by taking some measurements to reduce the chances of errors that may lead towards inappropriate results. For

instance, questionnaires for empirical data collection were distributed to the respondents at the same time to avoiding different results. The questionnaires were distributed only within the domain of interested group such as teachers instead of the general population.

A reliability test was carried out to determine the internal consistency of items in the questionnaire using Cronbach's alpha (α) reliability test. The Cronbach's alpha was used to calculate the reliability of the instrument from the data collected from the pre-test with 20 participants and the reliability was obtained as presented below:

Table 7 Indices of internal consistency (Researcher survey 2023)

S/N	Variable	N	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items
1	Project-based learning	5	0.86	0.97
2	Fieldwork	5	0.88	0.97
3	Outdoor learning	5	0.86	0.97
4	Educational technology	5	0.75	0.81
	Total	**20**	**0.84**	**0.93**

The internal consistency estimate was 0.84 indicating that the instrument (questionnaire) was 84% reliable to collect data repeatedly. According to George and Mallery (2003), Cronbach's Alpha value above 0.90 indicates excellent internal consistency, above 0.80 is good, above 0.70 is acceptable, above 0.60 is questionable, above 0.50 is poor, and below 0.50 is unacceptable. Since the Cronbach's α coefficient was above 0.8, we conclude that the questionnaire was reliable.

3.9   ETHICAL ISSUES

According Blaxter et al (2006), consideration of possible or actual ethical issues is an essential part of any research project and the researcher took sufficient care about this throughout the research project. Gaining the cooperation, information and consent from the Ministry of Secondary

Education through the Divisional Delegation of Education in Mfoundi was first taken care of. Then the cooperation and survey of the teachers (respondents) followed and they were assured that the information provided by them will be treated with confidentiality and their identities protected. Other common ethical issues during data collection, analysis and writing stages like confidentiality, anonymity, legality, professionalism and participation were also taken care of, and was included in the questionnaire as well. Researcher did not come across or practiced any unethical practices during the action of this research**.**

3.10   DATA COLLECTION MODE

Data for this research was collected using questionnaires. Orodho (2004) note that the questionnaire approach is efficient in time usage, enables anonymity of the respondents to be preserved and ensures that questions are up to standards. The questionnaire was prepared for geography teachers.

The data was collected from geography teachers in the Mfoundi Division using the online platform (google form) as well as physical questionnaire where the respondent wasn't able to fill the online questionnaire. This was possible with the help of the staff from the various secondary schools, who encourage their colleagues to take part in the study by answering the online form in their institutions. The link to the online questionnaire was created and sent to various Heads of Department for Geography and other staff. This they shared with their collaborators/colleagues of the department through their respective WhatsApp groups. Also, for the purpose of communication and follow up with the respondents or any issue or question they may have, the researcher had a one-on-one with most of the respondents through WhatsApp for the period of the research.

To collect data for this study the researcher relied on quantitative approach, because the intention was to use close-ended questionnaire rated by geography teachers. The use of questionnaire as the

main method for data collection was adopted for a few reasons. First, it was possible to generate more data in shorter time. It was less subjective than qualitative methods because it could be independently analysed. It was clearly known what constructs or issues the researcher should focus on. The teachers who filled the questionnaire felt more comfortable to fill the questionnaire, because they had very limited time. Information generated from quantitative approach could be easily used for simplification and estimation.

3.11   DATA MANAGEMENT

The data obtained from this study was entered into the data collection form online. At the end of each day, the data was transcribed into Microsoft Excel. The Microsoft. Excel files were locked with password to prevent unauthorized access to participant's information. The hard copy data collection forms were put into envelop and then sealed and achieved in a locker expected to be available within 5years after study. The protected excel files was stored into an 8GB flash drive and Google Drive Cloud Storage.

3.12   DATA CLEANING AND PREPARATION

Survey data cleaning involves identifying and removing responses from individuals who either do not match your target audience criteria or did not answer your questions thoughtfully. This is usually done by visually inspecting the data for scores (or values) that are outside the accepted range of scores. In this study, it involves removing those which were deemed unusable i.e. due to factors such as data incompleteness and also those which were detected as outliers from the data set for the data analysis. Thus the researcher was left with an improved set of responses that made way for a better analysis.

3.13   METHOD OF DATA ANALYSIS

Descriptive statistics was used to analyse the collected data and the results was presented in the form of frequency distribution tables. Statistical Package for Social Sciences (SPSS version 21) program was used to analyse the data. Descriptive statistics was used to describe the influence of innovative pedagogy on sustainable skills acquisition, while the simple linear regression analysis was conducted to determine the influence of the independent variable (innovative pedagogy) on the depended variable (sustainable skills development).

The simple linear regression analysis as the statistics statistical method used to test all the four hypotheses of this study and level of significance adopted for the analysis is $P \leq 0.05$. This level of significance formed the basis for retaining or rejecting the four null hypotheses.

CHAPTER FOUR

DATA ANALYSIS AND RESULTS INTERPRETATION

4.1   INTRODUCTION

This chapter presents the findings from the field. It includes the results of the procedures used to answer the four research questions and test the four hypotheses that is interpretation of findings from the field. The results include statistical significance where appropriate and whether the null hypotheses were accepted or rejected.

4.2   RESPONSE RATE

A total number of 100 questionnaires were administered to geography teachers using the online google form. Of the 100 questionnaires, 80 participants responded to the questionnaire resulting to an 80% rate. This response rate was quite good and representative in addition.

4.3   RESULT BASED ON RESEARCH QUESTIONS

This section will present the results of the analysis based on the research questions. Four research questions were formulated for this study as presented below:

- ➢ To what extent does Project-Based Learning (PBL) influence the promotion of sustainable skill acquisition in geography in secondary schools in Cameroon?
- ➢ To what degree does fieldwork influence the promotion of Sustainable development skills in geography in secondary schools?
- ➢ To what extent does outdoor learning influence the promotion of sustainable skills in geography in secondary schools?
- ➢ To what level does educational technology influence the promotion of sustainable skills acquisition of in geography in secondary school?

To what extent does Project-Based Learning (PBL) influence the promotion of sustainable skill acquisition in geography in secondary schools in Mfoundi?

Table 8 PBL influence on sustainable skill acquisition in geography

	Items	SD	D	A	SA
Q1	Incorporating PBL into geography studies promotes stronger retention of skills and knowledge in students	0	4 (5.1%)	34 (42.4%)	42 (52.5%)
Q2	Teaching using PBL helps students to take ownership over their projects, reflecting and celebrating their progress and accomplishments.	0	5 (6.3%)	41 (51.3%)	34 (42.4%)
Q3	Teaching with PBL helps students look at real problems around them with a critical lens, ask questions and come up with possible solutions for these projects.	0	4 (5%)	28 (35%)	48 (60%)
Q4	PBL enables students to find their voice, take pride in their work, and are motivated to come up with new ideas for new projects	0	3 (3.8%)	34 (42.4%)	43 (53.8%)
Q5	PBL fosters students' interaction and communication with each other working as a team.	0	4 (5%)	39 (48.8%)	37 (46.2%)

Table 8 above represents the descriptive analysis of the extent to which Project-Based Learning (PBL) influence sustainable skill acquisition in geography in secondary schools in Cameroon. Five items were developed in order to respond to the question on the extent to which Project-Based Learning (PBL) influence sustainable skill acquisition in geography. The results of the analysis revealed that for items one (Q1), the majority of the participant strongly agree 42 (52.5%) that incorporating PBL into geography studies promote stronger retention of skills and knowledge in students. For item two (Q2) most participants agree 41 (51.3%) that Teaching using PBL helps students to take ownership over their projects, reflecting and celebrating their progress and accomplishments. For item three (Q3) the majority strongly agree 48 (60%) that Teaching with

PBL helps students to look at real problems around them with a critical lens, asking questions and coming up with possible solutions for these projects. For Q4 most participants 43 (53.8%) strongly agree that PBL enables students find their voice, take pride in their work, and are motivated to come up with new ideas for new projects. Finally, item five (Q5) revealed that most participants agreed 39 (48.8%) PBL fosters students' interaction and communication with each other working as a team, which reinforces interpersonal skills. Based on the responses a good number of them asserted that project-based learning contributes significantly to the acquisition of sustainable skill in geography. Therefore, project-based learning could be a good teaching method to be implemented for the acquisition of sustainable skills in geography.

To what degree does fieldwork influence the promotion of Sustainable development skills in geography in secondary schools?

Table 9 Fieldwork influence on the promotion of Sustainable development skills in geography

	Items	SD	D	A	SA
Q1	I encourage students to pay attention and observe during fieldwork to gain a better understanding of lectures taught and deepen their understanding of geographical concepts	1 (1.3%)	0	23 (28.7%)	56 (70%)
Q2	I encourage students' participation during fieldwork in geography to deepen their learning experiences.	0	0	25 (31.3%)	55 (68.7%)
Q3	Fieldwork prepares students for the workplace as it engages them with real life situation.	0	10 (12.5%`)	29 (36.3%)	41 (51.2%)
Q4	During Fieldwork students discover new things and this motivate them to learn by experience and develop new skills	0	3 (3.7%)	39 (48.8%)	38 (47.5%)
Q5	I focus on inquiry-based learning during fieldtrips which encourages students to ask questions and identify problems in the field of geography	4 (5%)	1 (1.3%)	34 (42.5%)	41 (51.2%)

Table 9 above represents the descriptive analysis of degree to which fieldwork influence the promotion of Sustainable development skills in geography in secondary schools. Five items were developed in order to respond to the question on the degree to which fieldwork influence the promotion of Sustainable development skills in geography in secondary schools. The results of the analysis revealed that for items one (Q1), the majority of the participant strongly agree 56 (70%) that they encourage students to pay attention and observe during fieldwork to gain a better understanding of lectures taught and deepen their understanding of geographical concepts. For item two (Q2) most participants strongly agree 55 (68.7%) that they encourage students' participation during fieldwork in geography to deepens their learning experiences. For item three (Q3) the majority strongly agree 41 (51.2%) that Fieldwork prepares students for the workplace as it engages them with real life situation. The result of the analysis revealed that for Q4 most participants 39 (48.8%) agree that during Fieldwork students discover new things and this motivate them to learn by experience and develop new skills. Finally, item five (Q5) revealed that most participants strongly agreed 41 (51.2%) that they focus on inquiry-based learning during fieldtrips which encourages students to ask questions and identify problems in the field of geography. Based on the responses a good number of the participants confirmed that fieldwork contribute significantly promotes the sustainable skill acquisition in geography.

To what extent does outdoor learning influence the promotion of sustainable skills in geography in secondary schools?

Table 10 Outdoor learning influence on the promotion of sustainable skills in geography

	Items	SD	D	A	SA
Q1	Outdoors learning opens up a world of fresh stimuli, which improve the power of recall and retention of students.	0	2 (2.5%)	47 (58.7%)	31 (38.8%)
Q2	Outdoor learning brings about collaboration and team building skills among geography students	0	6 (7.5%)	39 (48.7%)	35 (43.8%)
Q3	Excursions helps students to explore and understand the real world, which builds up confidence, focus and better coping mechanisms	0	6 (7.5%)	38 (47.5%)	36 (45.0%)
Q4	Outdoor learning is adventurous and enable students to gain knowledge and skills from the informal learning environment while reduces anxiety/stress	1 (1.3%)	1 (1.3%)	42 (52.5%)	36 (45.0%)
Q5	Out of class trips helps stimulates play in students and help them develop a better understanding of what they learned theoretically in class while having fun	2 (2.5%)	6 (7.5%)	37 (46.2%)	35 (43.8%)

Table 10 above represents the descriptive analysis of the extent to which outdoor learning influence the promotion of sustainable skills in geography in secondary schools. Five items were developed in order to respond to the question on the extent to which outdoor learning influence the promotion of sustainable skills in geography in secondary schools. The results of the analysis revealed that for items one (Q1), the majority of the participant agree 47 (58.7%) that Outdoors learning opens up a world of fresh stimuli, which improve the power of recall and retention capacity of students. For item two (Q2) most participants agree 39 (48.7%) that Outdoor learning brings about collaboration and team building skills among geography students. For item three (Q3) the majority agree 38 (47.5%) that Excursions helps students to explore and understand the real world, which builds up confidence, focus and better coping mechanisms. The result of the analysis revealed that for Q4 most participants 42 (52.5%) agree that Outdoor learning is adventurous and enable

students to gain knowledge and skills from the informal learning environment while reduces anxiety/stress. Finally, item five (Q5) revealed that most participants agreed 37 (46.2%) that Out of class trips helps stimulates play in students and help them develop a better understanding of what they learned theoretically in class while having fun. Based on the responses a good number of the participants asserted that outdoor learning contributes significantly in the promotion of sustainable skill acquisition in geography

To what level does educational technology influences the promotion of sustainable skills acquisition in geography in secondary schools?

Table 11 Educational technology influence on the acquisition of sustainable skills in geography

	Items	SD	D	A	SA
Q1	The use of Technology in class create multiple avenues for students to improve skills and expand knowledge of various aspects through online programs.	1 (1.3%)	3 (3.7%)	31 (38.7%)	45 (56.3%)
Q2	The use technology in classrooms to make geography lesson more lively, easy thus students are more likely to understand geographic concepts and acquire spatial thinking skills	1 (1.3%)	7 (8.7%)	33 (41.3%)	39 48.7%)
Q3	I use online discussion forums such as WhatsApp, which encourages students to read wider, interact more with peers and engage more in learning out of school	0	16 (20%)	46 (57.5%)	18 (22.5%)
Q4	GPS devices, google maps, recorders etc. in smart phones allows students during geographical fieldwork to easily locate sites and collect data	1 (1.3%)	2 (2.5%)	33 (41.3%)	44 (55.0%)
Q5	I use technology to carryout virtual fieldtrips which enable students to visit a wider variety of geographical locations and understanding real world environment	7 (9.0%)	15 (19.0%)	37 (46.0%)	21 (26.0%)

Table 11 above represents the descriptive analysis of the extent to which educational technology effect the acquisition of sustainable skills in geography in secondary schools. Five items were developed in order to respond to the question on the extent to which educational technology effect the acquisition of sustainable skills in geography in secondary schools. The results of the analysis revealed that for items one (Q1), the majority of the participant strongly agree 45 (56.3%) that the use of Technology to creates multiple avenues for students to improve skills and expand knowledge of various aspects through online. For item two (Q2) most participants strongly agree 39 (48.7%) that they use technology in classrooms to make geography lesson more lively, easy thus students are more likely to understand geographic concepts and acquire spatial thinking skills. For item three (Q3) the majority agree 46 (57.5%) that they use online discussion forums such as WhatsApp, which encourages students to read wider, interact more with peers and engage more in learning out of school. The result of the analysis revealed that for Q4 most participants 44 (55.0%) strongly agree GPS devices, google maps, recorders etc. in smart phones allows students during geographical fieldwork to easily locate sites and collect data. Finally, item five (Q5) revealed that most participants agreed 37 (46.2%) that they use technology to carryout virtual fieldtrips which enable students to visit a wider variety of geographical locations and understanding real world environment. Based on the responses a good number of the participants asserted that educational technology contributes significantly in the promotion of sustainable skill acquisition in geography.

The dependent variable; Sustainable skill development in geography.

Table 12 Sustainable skill development in geography

	Items	SD	D	A	SA
Q1	Through Innovative learning students are able brainstorm, discover alternative solutions, build new ideas and better coping mechanisms in the society	0	7 (8.7%)	42 (52.5%)	31 (38.8%)
Q2	Innovative teaching methods enable students to ask questions, gather, analyze spatial data and take decisions through a critical lens to solve surrounding real-life problems	0	8 (10%)	43 (53.7%)	29 (36.3%)
Q3	Innovative teaching equips students with technological skills that will help them navigate with ease their community and the world at large	0	3 (3.7%)	48 (60.0%)	29 (36.3%)
Q4	Innovative teaching methods helps students to build relationships with their community members when working on projects, gaining insight for careers, research and beyond.	2 (2.5%)	4 (5.0%)	40 (40%)	34 (42.5%)
Q5	Through innovative teaching methods, geography students can gain communication and collaboration skills with ease	0	3 (3.7%)	44 (55.0%)	33 (41.3%)

Table 12 above represents the descriptive analysis of the dependent variable sustainable development in geography. Five items were developed in order to respond to the question on sustainable skill development. The results of the analysis revealed that for items one (Q1), the majority of the participant agree 42 (52.5%) that through innovative teaching students are able brainstorm, discover alternative solutions, build new ideas and better coping mechanisms in the society. For item two (Q2) most participants agree 43 (53.7%) that Innovative teaching methods enable students to ask questions, gather, analyze spatial data and take decisions through a critical lens to solve surrounding real-life problems. For item three (Q3) the majority agree 48 (60.0%) that Innovative teaching equips students with technological skills that will help them navigate with ease their community and the world at large. The result of the analysis revealed that for Q4 most

participants 40(40%) agree that Through Innovative teaching methods students are able build relationships with their community members when working on projects, gaining insight for careers, research and beyond. Finally, item five (Q5) revealed that most participants agreed 44 (55.0%) that through innovative teaching methods geography students can gain communication and collaboration skills with ease.

4.4   HYPOTHESIS TESTING

A hypothesis is a predicted answer to a research question or problem. In social science research, there are two types of hypotheses; the Alternative hypothesis (sometimes called secondary hypothesis) denoted Ha which represents the hypothesis that the researcher wants to verify and the statistical or null hypothesis denoted Ho. These hypotheses are generally formulated in terms of independent and dependent variables. During this research project, four research hypotheses were formulated.

4.4.1   Verification of research hypothesis 1

HO_1: Project-Based Learning (PBL) does not have a significant influence on the promotion of sustainable skill acquisition in geography in secondary schools

HA_1: Project-Based Learning (PBL) has a significant influence on the promotion of sustainable skill acquisition in geography in secondary schools

Table 13 *Model Summary for* **Project-Based Learning (PBL)**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.598[a]	.357	.349	2.926

a. Predictors: (Constant), project-based-learning

The independent variable studied, explain that sustainable skill acquisition is influence by 35.7% by the independent variable, as represented by the R^2 in the table 13 above. This indicates that, project-based-learning has a strong influence on sustainable skill acquisition and 64.3% of sustainable skill acquisition is influence by other factors. Also, there is a strong positive relationship (r=0.598, SE=2.926) between the criterion (dependent variable) and the predictor variables (independent variable).

Table 14 ANOVA for project-based learning

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	370.877	1	370.877	43.314	.000[b]
	Residual	667.873	78	8.562		
	Total	1038.750	79			

a. Dependent Variable: sustainable skill acquisition

b. Predictors: (Constant), project-based-learning

The analysis of variance (ANOVA) was used to check the significant level. 95% confidence interval or 5% level of the significance level is chosen for the study. Thus the p-value should be less than 0.05

A significant regression equation was obtained as $(F_{(1, 78)} = 43.314, P < 0.05)$. The P-value obtained (0.000) was less than 0.05, indicating that there was a statistically significant influence of project-based-learning over sustainable skill acquisition. The result above reveals that the project-based-learning is a strong predictor of sustainable skill acquisition because they are linearly related.

Table 15 Coefficients for project-based learning

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.295	1.088		3.028	.003
	project-based-learning	.602	.092	.598	6.581	.000

a. Dependent Variable: sustainable skill acquisition

The simple linear regression model indicates that the independent variable (project-based-learning) had a positive β coefficient. According to the regression equation established, project-based-learning at a constant of zero, sustainable skill acquisition will be 3.295 and the findings reveal that every unit increase in project-based-learning will lead to a 0.602 increase in sustainable skill acquisition. At 5% level of significance and 95% level of confidence project-based-learning had a 0.000 level of significance, which means it has a significance influence on sustainable skill acquisition.

4.4.2 Verification of research hypothesis 2

HO_2: Fieldwork does not have a significant effect on the promotion of sustainable skills acquisition in geography in secondary schools

HA_2: Fieldwork has a significant effect on the promotion of sustainable skill acquisition in geography in secondary schools

Table 16 Model Summary for fieldwork

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.502[a]	.252	.243	3.155

a. Predictors: (Constant), field work

The independent variable studied, explain that sustainable skill acquisition is influence by 25.2% by the independent variable, as represented by the R^2 in the table 16 above. This indicates that, fieldwork has a strong influence on sustainable skill acquisition and 74.8% of sustainable skill acquisition is influence by other factors. Also, there is a strong positive relationship (r=0.502, SE=3.155) between the criterion and the predictor variables

Table 17 ANOVA for fieldwork

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	262.092	1	262.092	26.322	.000[b]
	Residual	776.658	78	9.957		
	Total	1038.750	79			

a. Dependent Variable: sustainable skill

b. Predictors: (Constant), field work

The analysis of variance (ANOVA) was used to check the significant level. A significant regression equation was obtained as (F (1, 78) =26.322, P <0.05). The P-value obtained indicated that were was a statistically significant influence of fieldwork over sustainable skill acquisition.

The result above reveals that the fieldwork is a strong predictor of sustainable skill acquisition because they are linearly related.

Table 18 Coefficients for fieldwork

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.972	1.438		2.067	.042
	field work	.674	.131	.502	5.130	.000

a. Dependent Variable: innovative learning

The simple linear regression model indicates that the independent variable (fieldwork) had a positive β coefficient. According to the regression equation established, fieldwork at a constant of zero, sustainable skill acquisition will be 2.972. The findings also reveal that every unit increase in fieldwork will lead to a 0.674 increase in sustainable skill acquisition. At 5% level of significance and 95% level of confidence fieldwork had a 0.000 level of significance, which means it has a significance influence on sustainable skill acquisition

4.4.3 Verification of research hypothesis 3

HO_3: Outdoor Learning does not have a significant influence on the promotion of sustainable skills acquisition in geography in secondary schools.

HA_3: Outdoor learning has a significant influence on the promotion of sustainable skill acquisition in geography in secondary schools.

Table 19 Model Summary outdoor learning

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.567[a]	.321	.313	3.006

a. Predictors: (Constant), out-door learning

The independent variable studied, explain that sustainable skill acquisition is influence by 32.1% by the independent variable, as represented by the R^2 in the table 19 above. This indicates that, out-door learning has a strong influence on sustainable skill acquisition and 67.9% of sustainable skill acquisition is influence by other factors. Also, there is a strong positive relationship (r=0.567, SE=3.006) between the criterion and the predictor variables

Table 20 ANOVA for outdoor learning

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	333.767	1	333.767	36.928	.000[b]
	Residual	704.983	78	9.038		
	Total	1038.750	79			

a. Dependent Variable: sustainable skills

b. Predictors: (Constant), out-door learning

The analysis of variance (ANOVA) was used to check the significant level. A significant regression equation was obtained as (F (1, 78) =36.928, P <0.05). The P-value obtained indicated that there was a statistically significant influence of out-door learning over sustainable skill

acquisition. The result above reveals that the out-door learning is a strong predictor of sustainable skill acquisition because they are linearly related

Table 21 Coefficients for outdoor learning

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.619	1.122		3.225	.002
	out-door learning	.563	.093	.567	6.077	.000

a. Dependent Variable: sustainable skills

The simple linear regression model indicates that the independent variable (out-door learning) had a positive β coefficient. According to the regression equation established, Outdoor learning at a constant of zero, sustainable skill acquisition will be 3.619. The findings also reveal that every unit increase in outdoor learning will lead to a 0.563 increase in sustainable skill acquisition. At 5% level of significance and 95% level of confidence out-door learning had a 0.000 level of significance, which means it has a significance influence on sustainable skill acquisition.

4.4.4   Verification of research hypothesis 4

HO$_4$: Educational Technology does not have a significant effect on the promotion of sustainable skills acquisition in geography in secondary schools

HA$_4$: Educational technology has a significant effect on the promotion of sustainable skill acquisition in geography in secondary schools

Table 22 Model Summary for educational technology

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.517[a]	.267	.258	3.123

a. Predictors: (Constant), educational technology

The independent variable studied, explain that sustainable skill acquisition is influence by 26.7% by the independent variable, as represented by the R^2 in the table 22 above. This indicates that, educational technology has a strong influence on sustainable skill acquisition and 73.3% of sustainable skill acquisition is influence by other factors. Also, there is a strong positive relationship (r=0.517, SE=3.123) between the criterion and the predictor variables

Table 23 ANOVA for Educational Technology

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	277.784	1	277.784	28.473	.000[b]
	Residual	760.966	78	9.756		
	Total	1038.750	79			

a. Dependent Variable: sustainable skills acquisition

b. Predictors: (Constant), educational technology

The analysis of variance (ANOVA) was used to check the significant level. A significant regression equation was obtained as (F (1, 78) =28.473, P <0.05. The P-value obtained indicated that was a statistically significant influence of educational technology over sustainable skill

acquisition. The result above reveals that the educational technology is a strong predictor of sustainable skill acquisition because they are linearly related

Table 24 Coefficients for Educational Technology

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.015	1.377		2.189	.032
	Technology	.645	.121	.517	5.336	.000

a. Dependent Variable: sustainable

The simple linear regression model indicates that the independent variable (educational technology) had a positive β coefficient. According to the regression equation established, educational technology at a constant of zero, sustainable skill acquisition will be 3.015. The findings also reveal that every unit increase in educational technology will lead to a 0.645 increase in sustainable skill acquisition. At 5% level of significance and 95% level of confidence educational technology had a 0.000 level of significance, which means it has a significance influence on sustainable skill acquisition

4.5 IMPLICATION OF THE FINDINGS

The following implications were made based on the findings of the study

Table 25 Implementation of findings of all the objectives

Variable	Pearson correlat.	R square	Unstandardized Beta	Significance	Decision
Project-based learning	.598	0.357	0.602	0.000	Project-based learning had a significant influence on the acquisition of sustainable skills
Fieldwork	0.502	0.252	0.674	0.000	Fieldwork had a significant effect on the acquisition of sustainable skills
Out-door learning	0.567	0.321	0.563	0.000	Out-door learning had a significant influence on the acquisition of sustainable skills
Educational technology	0.517	0.267	0.645	0.000	Educational technology had a significant effect on the acquisition of sustainable skills

From table table 25 above, we can conclude that all of our four independent variables have a significant influence on promoting the acquisition of sustainable development skills in geography. The strongest being fieldwork with a Beta coefficient of 0.674, followed by Educational Technology with 0.645; PBL with 0.602 and finally outdoor learning with 0.563.

Based on the four specific hypotheses state above the following conclusions were made:

- HO$_1$: Project-Based Learning (PBL) does not have a significant influence on the promotion of sustainable skill acquisition in geography in secondary schools. Our P-value (0.000)>0.05, which is highly significant, thus we reject the Null Hypothesis. Our data therefore favours the alternative hypothesis; thus we accept HA$_1$: Project-Based Learning (PBL) has a significant influence on the promotion of sustainable skill acquisition in geography in secondary schools

- HO2: Fieldwork does not have a significant effect on the promotion of sustainable skills acquisition in geography in secondary schools. Our P-value (0.000)>0.05, which is highly significant, thus we reject the Null Hypothesis. Our data therefore favours the alternative hypothesis; thus we accept HA$_2$: Fieldwork has a significant effect on the promotion of sustainable skill acquisition in geography in secondary schools

  - HO3: Outdoor Learning does not have a significant influence on the promotion of sustainable skills acquisition in geography in secondary schools. Our P-value (0.000)>0.05, which is highly significant, thus we reject the Null Hypothesis. Our data therefore favours the alternative hypothesis; thus we accept HA$_3$: Outdoor learning has a significant influence on the promotion of sustainable skill acquisition in geography in secondary schools

  - HO4: Educational Technology does not have a significant effect on the promotion of sustainable skills acquisition in geography in secondary schools. Our P-value (0.000)>0.05, which is highly significant, thus we reject the Null Hypothesis. Our data therefore favours the alternative hypothesis; thus we accept HA$_4$: Educational technology affects the promotion of sustainable skill acquisition in geography in secondary schools

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

This study sought to investigate the innovative pedagogic methods use in the teaching of geography and how it influences the promotion of sustainable development skills amongst learners in secondary schools in Cameroon. In this chapter, the research will be focusing on discussions, conclusion, implications and recommendations of the study. The discussions are related to the literature reviewed and the results obtained from the findings.

5.1 DISCUSSION OF FINDINGS

The results of the findings obtained in this work will be discussed under the main variables measured in this study. Thus, the discussion will focus the four objectives of the study

5.1.1 Influence of PBL on the promotion of sustainable skill development in geography

The study sought to find out whether or not project-based learning had a significant influence on the promotion of sustainable skill development in geography in secondary schools

The results of the simple linear regression between project-based learning and sustainable skill development in geography student showed that regression equation = (F $(1, 78)$ =43.314, P <0.05). From this finding, inference made was that project-based learning had a significant influence on the sustainable skill development. The magnitude of the influence was determined by the R-square value which gave a coefficient of determination of 0.357; meaning that 35.7% of the variability of the sustainable skill development of geography students could be explained by project-based learning. PBL also had a Beta coefficient of 0.602

In addition, when the responses of the geography teachers on the questionnaire in relation to project-based learning were scored and categorized, it was observed that the great majority of them

asserted that project-based learning contributes significantly to sustainable skill development in geography. These results are substantial because project-based learning is focusing on practical activities which obviously leads to skill acquisitions. In general, results reveal that all the items categorized under project-based learning were very important to the participants considering the fact that most of them strongly agree in most of the items.

It is worthy to note that this result is consistent with previous research carried out by the great educationists such as John Dewey (1938) who came up with a new pedagogical approach known as progressive learning that places more emphasis on teaching kids how to reason than on memorization by heart. According to him children are pushed to absorb information at the price of understanding what is being taught in traditional education. Learning by doing is the foundation of progressive education. According to Dewey experiential learning is a notion that enables students to learn by actively participating in activities and practical tasks. Students better understand a subject and its applications as well as develop the skills they will need as adults when they apply what they are learning to real-life situations. Also David Kolb (1984) building on the earlier works of Deway in his theory of Experiential learning sees learning as a process of knowledge and skill acquisition through experience. To him PBL enable learners to learn by doing, experimenting, problem solving, teamwork, collaboration etc.

Based on the research findings and the progressivist approach, geography teaching-learning activities should be oriented toward skills acquisition that will make them to be relevant in the 21ˢᵗ century. According to John Dewey, teachers should organize teaching activities such that it will help the students to learning by doing and this will enable them to effectively contribute to the progress of their community.

However, despite knowledge of the contributions of PBL to skill development, PBL still goes unnoticed. This student-centered method teaching are not widely taught to instructors (D'Orio, 2018). Many teachers according to Dahlgren et al. (1998), assumes that PBL is time consuming and they were unable "to cover as much material as a traditional lecture-based style". In-service teachers were reluctant and not confident enough to apply PBL due to lack of training and experience.

5.1.2   Effect of Fieldwork on the promotion of Sustainable skill acquisition in geography

The study sought to find out whether or not fieldwork had a significant influence on the promotion of sustainable skill development in geography in secondary schools

The results of the simple linear regression between Fieldwork and sustainable skill development in geography students showed that regression equation = ($F_{(1, 78)}$ =26.322, $P < 0.05$). From this finding, inference made was that Fieldwork had a significant influence on the sustainable skill development. The magnitude of the influence was determined by the R-square value which gave a coefficient of determination of 0.252; meaning that 25.5% of the variability of the sustainable skill development of geography students could be explained by Fieldwork. It also had the highest beta coefficient of 0.674 indicating that unit increase of field work will lead to 0.674 increase in sustainable skill acquisition

Moreover, when the responses of the teachers on the questionnaire in relation to fieldwork were scored and categorized, it was observed that a majority of the respondents indicated that fieldwork contribute significantly promotes the sustainable skill development in geography. These results are significant because fieldwork have curriculum components that involves students and teachers leaving the normal classroom setting and engaging in teaching and learning activities through first-

hand experience of phenomena. This helps to bridge the divide between the classroom and the real world (Fuller 2006). According to (David et al. 2013) Fieldwork is an integral part of geography studies; it is an important activity in terms of promoting geographical knowledge and skills that goes beyond school learning. It is an essential form of learning in many geoscience and bioscience subjects; this is because it provides an interesting, active and exciting part of the overall student experience. It enables students acquire a range of subject specific and generic skills, which enhance student employability. In general, the results reveal that all the items categorized under fieldwork were very important to the participants considering the fact that most of them agreed in most of the items.

It is imperative to note that this finding is consistent with previous research by prominent educationist like David Kolb's (1984) with his book on experiential learning, which is one of the most influential works linking theory to actual practice. According to Kolb, experiential learning involves the learner participating in a new experience, actively reflecting on that experience, conceptualizing that experience, and integrating it with prior experiences. In the same light Geographers have adapted the experiential learning paradigm to create experiential geography, particularly in English-speaking countries. As a result, students are given the opportunity to evaluate their representations and spatial practices and to rethink them in light of the knowledge and skills they have learned in class (Leininger-Frézal, 2018). This involves teaching geography based on students' experiences. The experiential learning strategy is consistent with the discipline's epistemology. According to Williams (1990), who conducted a study on 'Effects of experiential learning on knowledge acquisition, skill mastery and student attitudes' of which the findings indicated that the Kolb Model of Experiential Learning had a significant effect on knowledge acquisition, skill mastery, and attitudes toward learning experiences. Jenkins and Healey, (2000)

in their article 'Learning cycles and learning styles: Kolb's Experiential Learning Theory and its application in Geography in education' focused on the necessity for teachers to use a wide range of teaching methods to meet the student's needs specially fieldwork.

However, despite the experiences, knowledge and skills that students gain from fieldwork, it is skill not considered very much as a teaching methods. According to the geography syllabus (MINESEC, 2019) in Cameroon, fieldwork is a once a year thing and only in uppersixth class in preparation of the GCE Advance Level. Fieldtrip have a diminishing profile in school curricula and timetables; there is also fear and concern about students' well-being, health and safety when it comes to out of class fieldtrip; large class sizes; increasing number of non-specialists teaching secondary school subjects; and shortage of financial resources and administrative support for organisation of physical field trips also handicaps fieldwork. (Minocha et al. 2018)

5.1.3 Effect of Outdoor learning on the promotion of Sustainable skill acquisition in geography

The study sought to find out whether or not outdoor learning had a significant influence on the promotion of sustainable skill development in geography in secondary schools

The results of the simple linear regression between Outdoor learning and sustainable skill development in geography student showed that regression equation = $(F_{(1, 78)} = 36.928, P < 0.05)$. From this finding, inference made was that Out-door learning had a significant influence on the sustainable skill development. The magnitude of the influence was determined by the R-square value which gave a coefficient of determination of 0.321; meaning that 32.1% of the variability of the sustainable skill development of geography students could be explained by Outdoor learning. Outdoor learning also had a beta coefficient of 0.563

Also, when the responses of the respondents on the questionnaire in relation Outdoor learning were scored and analyzed, it was noticed that most participants asserted that outdoor learning contributes significantly in promoting sustainable skill development in geography. These results are important because with outdoor learning learners learn through what they do, what they encounter and what they discover. This is in line with the English Outdoor Council (2018) which sees outdoor learning as recreational activities, adventures, expeditions, education for sustainability amongst other and learning readily develops the learning skills of enquiry, experiment, feedback, reflection, review and cooperative learning. This type of activities easily promotes skill developments. In general, the results reveal that all the items categorized under outdoor learning were very important to the participants considering the fact that most of them agreed in most of the items.

It is worthy to note that this result is in line with previous research carried out by a good number of researchers such Cooper (2015), who asserted that natural outdoor learning environment leads to cognitive development, improves self-regulation, improves eyesight, improves academic performance, promotes self-confidence, builds understanding and appreciation of ecosystem and environmental processes among others. According to Oyeniyi (2020) Outdoor teaching activities allow better acquisition of knowledge by students, as student have physical interaction with nature within their environs, this would make them to form their personal opinion about events.

This is in the same light with social constructivism that states that children's understanding is shaped not only through adaptive encounters with the physical world but also through interactions between people in relation to the world that is not merely physical and apprehended by the senses. According to Kapur (2018), social construction of knowledge occurs in a variety of settings and

on numerous platforms. It could be accomplished through group discussions, teamwork, or any type of pedagogical contact in a place of learning or training, on social media, in a place of worship, or in a marketplace etc. Students develop knowledge and experience necessary for leading fulfilling lives when they engage with others; the physical and immaterial world; and themselves. Therefore, Outdoor activities also encourage group interactions among students and if properly used, the spirit of teamwork, exchange of ideas and respect for each other's point of view will be enhanced.

Through experiential connections with the outside world, students learn how a subject they are studying in class relates to their daily lives. This helps them develop their skills, knowledge, and understanding in a meaningful context. The outdoors and its surrounds provide a wealth of opportunities for learning and creative thinking. This presents chances for conflict, investigation, critical thinking, and reflection.

However, there is no official status for outdoor learning in the geography syllabus. Some teachers do feel constrained by the requirements of the curriculum, lack of time, aspirations and structure. According to Rickinson et al. (2004), many teachers lack the knowledge or confidence to use the green school grounds as an outdoor classroom. As a result, many educators preferred the conventional indoor conceptions of learning and found it difficult to fathom breaking out of their habits and routines (Dyment, 2005). Also, there is lack of teachers' confidence in their outdoor teaching expertise; including fear of losing control and difficulties in managing children's behaviour (Parker, 2022).

5.1.4 Influence of Educational Technology on the promotion of Sustainable skill acquisition in geography

The study sought to find out whether or not educational technology had a significant influence on the promotion of sustainable skill development in geography in secondary schools

The results of the simple linear regression between educational technology and sustainable skill development in geography student indicated that regression equation = (F (1, 78) =28.473, P <0.05). From this finding, inference made was that educational technology had a significant influence on the sustainable skill development. The magnitude of the influence was determined by the R-square value which gave a coefficient of determination of 0.267; meaning that 26.7% of the variability of the sustainable skill development of geography students could be explained by educational technology. Educational Technology came out with the second highest beta coefficient of 0.645

Also, when the responses of the participants on the questionnaire in relation educational technology were scored and analyzed, it was noticed that most participants asserted that educational technology contributes significantly in promoting sustainable skill development in geography. These results are important because it is deem crucial to incorporate new technologies into curricula for education and training (Somyürek, 2014). In particular, innovations in science and technology have not been reflected in geography teaching curricula, nor have they constantly evolving living conditions, personal, and social needs of the modern world been sufficiently taken into account (Akengin, 2008). Therefore, incorporating new technology into geography lessons will facilitate the process of sustainable skill development in geography.

It is worthy to note that this result is in line with previous research carried out by a good number of researchers such as Klopfer et al, 2008; Patten et al, 2006) who said that Mobile devices have been increasingly useful in educational applications contextually focused on supporting fieldwork methods, owing to unique optimizations for portability, social interactivity, context sensitivity, connectivity, and individuality. This in the light connectivism theory that point out that learning occurs when knowledge is actuated by learners connecting to and participating in a learning community and the learning communities are defined as "the clustering of similar area of interest that allows for interaction, sharing, dialoguing, and thinking together" (Siemens, 2005). Siemens stated that developing a network and its nodes depends on the flow of knowledge and information within the network. When a student deals with other nodes on an issue, the flow of knowledge occurs. In other words, exchange of information between the nodes of a network represents the flow of knowledge. Therefore, in connectivism- based learning environments, flow of knowledge and information across networks leads to the dynamism, prosperity, growth, development, and network capability.

Educational technology plays a vital role in inquiry-based fieldwork, where students are often challenged to take the lead throughout inquiry, data collection, and collaborative problem solving in the field (Cliffe, 2017). and this is achieved thanks to developing a network and its nodes with other students. Similarly Lee (2020) in the review of international geographical education the use of mobile devices in field work helps in capturing moments of curiosity, can help to increase contextualized learning and awareness of what is happening in the surrounding world. Beyond the sensors installed on mobile devices for audiovisual and GPS functions, many applications allow the users to collect and measure various geographical data during fieldwork.

Sriarunrasmee et al. (2015) says that integrated technologies can potentially support a quality classroom, especially for activities that have certain limitations, such as the problem that a real filed trip cannot be organized due to limitations of distance, time, cost and availability of other resources, security, and access. For these reasons, Cassady and Mullen (2006) stated that the virtual field trip is a good alternative for the educational program, which can overcome difficulties. The students can experience the virtual field trip any time anyway, enriched by modern information and communication technologies. From these various study it is seen that educational technology plays a vital role in sustainable skill development in geography students as they engage in learning with technological devices by get large quantity of data in their field of concern.

Like the rest of the world, Africa and Cameroon is increasingly exploring the use of ICT as a way to enhance current education systems. However, the availability and use of such technologies is still severely constrained by high costs and lack of connectivity. Computers are still not widely used in many schools, thus the teaching process is dominated by traditional methods With the advent of educational technology in the classroom, education is faced with the challenge of teachers willingness to integrate educational technology in their daily work (Becker, 2000).

5.2 CONCLUSION

The results of the finding revealed that:

- ➢ Project-based learning had a significant influence on the promotion of sustainable skill development in geography in secondary schools

- ➢ Fieldwork had a significant effect on the promotion of sustainable skill development in geography secondary schools.

- ➢ Out-door learning had a significant influence on the promotion of sustainable skill development in geography in secondary

> ➢ Educational technology had a significant effect on the promotion of sustainable skill development in geography in secondary schools

The results further revealed that if innovative pedagogy if effectively implemented in teaching geography lessons, it would greatly facilitate the process of sustainable skill development. Innovative pedagogy exposes the learners to real life situations and therefore, the learners learn by doing and this is greatly needed in the field of geography. The findings also revealed that the independent variables (project-based learning, fieldwork, outdoor learning and educational technology) came out as strong predictors of sustainable skill development in geography because they were all linearly related to the dependent variable.

It is imperative to note that the findings of this study are supported by sound theoretical assumptions of learning, approaches and principles (progressivism, socio-constructivism, connectivism and theory of experiential learning). Thus, these results are in general agreement with earlier research indicating that the use of innovative pedagogy have a positive impact on education theory, practice and the outcomes. However, despite the challenges on the field, the participants showed an amazing familiarity with the subject of innovative pedagogy. This study offers new evidence, as well, that the penetration of innovative pedagogy in education promotes skill development. In addition, it is worth noting that these results could be of specific interest to all teacher educational establishments and other institutions of higher learning envisaging implementing innovative pedagogy in their teaching learning process.

5.3   IMPLICATIONS OF THE STUDY

Introducing a "new but old" pedagogy termed "innovative pedagogy" in any teaching-learning situation requires a great deal of thought, planning and testing. As such various pedagogical perspectives or learning theories may be considered in designing and interacting PBL, field work, outdoor learning and educational technology. Therefore, educators and researchers must have a good grasp of the concept of innovative pedagogy, it advantages, and how it can be integrated in the teaching-learning process. The process needs multidisciplinary approaches that should involve teachers, researchers, policy makers and students.

- ➢ Researchers and educators should highlight and analyse those studies in which the impact of innovative pedagogy on human reasoning and learning as well as the importance of innovative pedagogy in the teaching-learning process for adaptation.

- ➢ In an educational setting where teachers make choices about their pedagogy not based on their own preference but according the national curriculum structure; policy makers and curriculum developers should make sure that they develop a curricular to include "core competencies", "transversal skills"   which point towards certain kinds of pedagogy (innovative) and provide alternative starting points for learning design (UNESCO, 2015)

- ➢ Teachers' continual professional development in innovative pedagogy should also be taken into consideration when drafting innovation policy instruments in. Curriculum designers need to consider the level of teachers' knowledge/expertise in relation pedagogical approaches. As such, questions such as;   are geography teachers aware of the most appropriate training programmes to support them in incorporating innovative pedagogy such as PBL, fieldwork, educational technology among others into their teaching? do

teachers receive sufficient resources (time, training and support) to develop the skills and knowledge required to effectively integrate innovation in their teaching-learning process? and have specific training needs in relation to supporting students with diverse and special needs?.

➤ The innovative learning environment produced by teachers' pedagogical training directly affects the school environment, which will not only be innovative but also explorative and supportive of personal growth. (Kozhuharova et al, (2019). This implies inculcating innovative pedagogical practices in teacher training institution should be taken more seriously and improved upon for quality education that is sustainable

➤ The introduction of the CBA in Cameroon, observational face in geography in 2014 and the revision of the syllabus of the upper forms in 2019 to include PBL highlights the need for students to acquire the skills and attitudes necessary for them to cope in today's world. Ensuring that innovative pedagogy is effectively practiced, syllabus, course content and Lessons should be made interesting and attractive to target teacher's attitudes towards using alternative and innovative teaching methods such as PBL, educational technology fieldwork, outdoor learning etc. When teacher's attitudes are positive towards these innovative methods, they will be more motivated to implement what they have learnt in their own classroom. It is not just enough that teachers have the competence, which often than not they don't even have but very imperative that they also have a positive attitude towards innovation integration

➤ Innovative pedagogy can provide many opportunities for progressivist, social constructivist and experiential learning through student-centered environment. Introducing students to different innovative methods and tools can equip them with important skills

they will need to function in the modern society (sustainable skills necessary for the 21st century such as communication, collaboration, critical thinking, and creativity amongst others). Students can be encouraged to cooperate with their peers to facilitate their own learning (social constructivist theory), to learn by carrying out activities, experimenting, observing and experiencing happenings and events in the environment (progressivism learning by doing, experiential learning), to connect and better communicate with peers and other personalities not only locally but globally (connectivism).

5.4   LIMITATION OF THE STUDY

- The study was carried out only on geography secondary and high school teachers within the Mfoundi Division and teachers of other fields where not considered though innovative pedagogy cuts across all teachers

- The research focused on the level of secondary schools, therefore the results cannot be generalized to include the situation at the level of pre-school, primary school, university. However, the idea of innovative pedagogy cuts across

- The research was cross-sectional and not longitudinal.

- Also, as a survey design, it could be limited by the fact that the data collected is self-report data, which can be subjective in some cases because it comes from teacher's own self judgement.

- Even in large cities like Yaoundé, which was choosen because of it has a high proportion of professional teachers who are exposed to the various resources (human, material, financial and infrastructural) that can aid a variety of innovative practices. Some of the teacher had difficulties assessing and filling online questionnaires on google form. This

goes a to show that even though teachers are aware of the role of educational technology as well as others as an innovative teaching method that can improve the quality of education through skill acquisition, they themselves are not verse with their usage.

5.5   RECOMMENDATION

Based on the objectives and findings in this study and coupled with fact that innovative pedagogy is still a very new concept or strategy in many secondary schools in Cameroon, the following recommendations are made to policy makers teachers, teachers, school establishments and students

- ➢ Policy makers in education should rethink teaching methods and file in for those (innovative) that does not depend on the traditional classroom, blackboard and lecture method but can enable secondary schools students to acquire the necessary 21st century lifelong skills upon graduation that will enable them fit in the society and solve community problems

- ➢ Student-teachers as well as in-service teachers should be encouraged to develop a positive attitude towards innovative pedagogy and also incorporate it in their teaching and learning activities. In-service training seminar for professional development should be carried out more frequently and in an in-depth manner. This will enable teachers update their skills as well as motivate them to dare into innovative teaching methods. Since its signing in 2020 by the Minister of Secondary Education PBL was adopted an innovative teaching strategy in geography. However, it has rarely been implemented because though teacher are aware of it, they have not had trained to do so.

➢ It is imperative for out of class teaching learning activities to be incorporated into the syllabus as part of many lessons and not only a one time thing as is the case of Fieldwork in the Sixth forms in geography for the purpose of official exams (GCE advance level). As such, the fieldwork is overcrowded with 3 to 4 field exercises in a single day that doesn't give students ample time to gasp the necessary skills.

➢ Unnecessary restrictions by school establishments should be removed to allow free access to technological resources to students and teachers both synchronously and asynchronously.

➢ Students should be provided opportunities to experiment and carry out learning activities in their environment in all levels and subject areas in secondary school for the lower secondary to upper secondary. This implies ample time to think, act and innovate by asking questions and search for answers collaboratively.

➢ The government in collaboration with the different ministries of education should support teachers with the necessary tools and resources to effectively implement innovative pedagogy in their geography lessons.

➢ School establishments should encourage out of class learning activities (outdoor learning) through exercises, excursion and leisure for students. By so doing, unintentional or incidental learning takes place as the students' connect with local places and carryout activities related to what they learn. This enables them develop skills of enquiry, experiment, while relaxing. It inspires students to rethink discrete learning fragments that is part of more integrated learning journey and prompt self-reflection.

5.6   SUGGESTIONS FOR FURTHER STUDY

- A similar study should be carried out but with a wider scope to include all teachers from all the other departments because innovative pedagogy as well and sustainable development skills are very important in integrating learners into the 21st century every changing society. Also innovative teaching methods and skills are interdisciplinary i.e., they cut across many disciplines

- This research work is just a survey with teachers response based on their self -judgment and not necessary practical work. Thus, experimental studies should be carried out using any of the innovative teaching strategies in this work.

- A comparative study should also be carried out to see the differences and similarities based on innovative teaching and skill development between different sectors or education such

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APPENDICES

Appendix A

REPUBLIQUE DU CAMEROUN Paix-Travail-Patrie ******** **UNIVERSITE DE YAOUNDÉ I** ******** **FACULTE DES SCIENCES DE L'EDUCATION** ******** **DEPARTEMENT DE CUERRICULAR ET EVALUATION** ********		**REPUBLIC OF CAMEROON** Peace-Work-Fatherland ******** **UNIVERSITY OF YAOUNDE I** ******** **FACULTY OF EDUCATION** ******** **DEPARTMENT CURRICULUM AND EVALUATION** ********

<u>**Serial No:**</u>

<u>INVITATION TO PARTICIPATE IN RESEARCH SURVEY</u>

I am a Master's Degree student in the faculty of education, at the University of Yaoundé I from the department of Curriculum Development and Evaluation. As part of my course requirements, I am undertaking a research on **Innovative Pedagogy and Sustainable Development Skills in Geography in Secondary Schools in Mfoundi Division.** Please kindly take a few minutes to fill the questionnaire that will take approximately ten minutes. The questionnaire consists of Six (6) sections purposely designed to gather information for academic research only. Your answers will be treated with upmost confidentiality. Thank You

INSTRUCTIONS

Please answer all the questions in the table below by giving your opinion to the statements provided. Place a tick in the box that correspond to your opinion following the judgment below (please be honest with your answer).

For section II to VI please give your opinion by placing a tick on the Likert scale box as presented below; strongly disagree (SD)=1, disagree(D)=2, agree(A)=3 and strongly agree-(SA)=4

SECTION I: RESPONDENTS DEMOGRAPHIC DETAILS

1. **Gender**

   ☐ Male

   ☐ Female

2. **Select your age range from the box below**

Age range	25-30	31-35	36-40	41-45	46-50	51-55	56-60
Tick							

3. **Education Level**

   ☐ DEPES1

   ☐ Bachelors' degree

   ☐ DEPES 2

   ☐ Master's degree

   ☐ PhD

4. **Working experience**

Number of years of working experience	0-5	6-10	11-15	16-20	21-25	26-30	31-35	36 and above
Tick here								

5. **Cycle**

   ☐ First cycle

   ☐ Second cycle

SECTION II: PROJECT-BASED LEARNING (PBL) AS INNOVATIVE TEACHING METHOD

	STATEMENTS	SA	A	D	SD
1	Incorporating PBL into geography studies promotes stronger retention of skills and knowledge.				
2	Teaching using PBL helps students to take ownership over their projects, reflecting and celebrating their progress and accomplishments.				

3	Teaching with PBL helps students to look at real problems around them with a critical thinking lens, asking questions and coming up with possible solutions for these projects.				
4	PBL enables students find their voice, take pride in their work, and are motivated to come up with new ideas for new projects				
5	PBL fosters students' interaction and communication with others working as a team.				

SECTION III: FIELDWORK AS INNOVATIVE TEACHING METHOD

		SA	A	D	SD
6	I encourage students to pay attention and observe during fieldwork to gain a better understanding of lectures taught and deepen their understanding of geographical concepts				
7	I encourage students' participation during fieldwork in geography to deepen their learning experience.				
8	Fieldwork prepares students for the workplace as it engages them with real life situation.				
9	During Fieldwork students discover new things and this motivate them to learn by experience and develop new skills				
10	I focus on Inquiry-based learning during fieldtrips which encourages students to ask questions and identify problems in the field of geography				

SECTION IV: OUTDOOR LEARNING AS INNOVATIVE TEACHING METHOD

		SA	A	D	SD
11	Outdoors learning opens up a world of fresh stimuli, which improves the power of recall and retention of students.				
12	Outdoor learning brings about collaboration and team building skills among geography students				

13	Excursions helps students to explore and understand the real world, which builds up confidence, focus and better coping mechanisms				
14	Outdoor learning are adventurous and enable students to gain knowledge and skills from the informal learning environment while reduces anxiety/stress.				
15	Out of class trips helps stimulates play in students and help them develop a better understanding of what they learned theoretically in class while having fun				

SECTION V: EDUCATIONAL TECHNOLOGY AS INNOVATIVE TEACHING METHOD

		SA	A	D	SD
16	The use of technology in class creates multiple avenues for students to improve skills and expand knowledge of various aspects through online programs.				
17	The use of technology in classrooms makes the subject more lively, easy and students are more likely to understand geographic concepts and acquire spatial thinking skills				
18	I use online discussion forums such as WhatsApp, which encourages students to read wider, interact more with peers and engage more in learning out of school				
19	GPS devices, google maps, recorders etc in smart phones allows students during geographical fieldwork to easily locate sites and collect data				
20	I use technology to carryout virtual fieldtrips which enable students to visit a wider variety of geographical locations and foster problematic thinking and understanding real world environment				

SECTION VI: SUSTAIINABLE DEVELOPMENT SKILLS IN GEOGRAPHY

		SA	A	D	SD
21	Through Innovative learning students are able to brainstorm, discover alternative solutions, build new ideas and better coping mechanisms in the society				
22	Innovative teaching methods enable students ask questions, gather, analyze spatial data and take decisions through a critical lens to solve surrounding real life problems				
23	Innovative teaching equips geography students with technological skills that will help them navigate their community and the world at large				
24	Innovative teaching methods helps students to build relationships with their community members when working on projects, gaining insight for careers, research and beyond.				
25	Through innovative teaching geography students can gain communication and collaboration skills with ease				

Thank you for your kind collaboration

Appendix B

RÉPUBLIQUE DU CAMEROUN
Paix – Travail – Patrie
****
MINISTÈRE DES ENSEIGNEMENTS SECONDAIRES
****
DÉLÉGATION RÉGIONALE POUR LE CENTRE
****
DÉLÉGATION DÉPARTEMENTALE DU MFOUNDI
****
SERVICE DES AFFAIRES ADMINISTRATIVES ET FINANCIERES
****
BUREAU DES AFFAIRES GENERALES
B.P. : 33 097 YAOUNDÉ TEL. : 222 22 84 68

N° 203 21/L /MINESEC/DRES-CE/DDES/MF/SAAF/BAG

REPUBLIC OF CAMEROON
Peace – Work- Fatherland
****
MINISTRY OF SECONDARY EDUCATION
****
REGIONAL DELEGATION FOR THE CENTRE
****
DIVISIONAL DELEGATION FOR MFOUNDI
****
FINANCIAL AND ADMINISTRATIVE AFFAIRS OFFICE
****
GENERAL AFFAIRS OFFICE
P.O.BOX : 33 097 YAOUNDÉ TEL. : 222 22 84 68

Yaoundé, le 270421

LE DÉLÉGUÉ DÉPARTEMENTAL

A

MADAME AKWA CONSTANCE N.
ETUDIANTE A UNIVERSITÉ DE YAOUNDE I

Objet : *Autorisation d'accès à la carte scolaire du Département du Mfoundi.*

Monsieur,

Faisant suite à votre demande de collecte de données dans mes services,

J'ai l'honneur de vous marquer mon accord.

Par conséquence, je vous invite à vous rapprocher de mon Chef Service de la Carte Scolaire et de l'Orientation Scolaire sis à la porte 204 de l'Immeuble abritant mes services.

LE DÉLÉGUÉ DÉPARTEMENTAL

M. NDEMBA Sidonie Thérèse
PLEG H.E.

REPUBLIQUE DU CAMEROUN
Paix-Travail-Patrie
****
UNIVERSITE DE YAOUNDE I
****
FACULTE DES SCIENCES DE
L'EDUCATION
******
DEPARTEMENT DE CURRICULA ET
EVALUATION
****

THE DEAN

N° 5 1 /21/UY1/FSE/VDSSE

REPUBLIC OF CAMEROON
Peace-Work-Fatherland
****
UNIVERSITY OF YAOUNDE I
****
FACULTY OF EDUCATION
****
DEPARTEMENT OF CURRILUM
AND EVALUATION
****

AUTHORISATION FOR RESEARCH

I the undersigned, **Professor MOUPOU Moïse**, Dean of the Faculty of Education, University of Yaoundé I, hereby certify that **AKWA Constance NJI**, Matricule **19P3728**, is a student in Masters II in the Faculty of Education, Department: **Curriculum and Evaluation**, Specialty: **Curriculum Developer and Evaluator.**

The concerned is carrying out a research work in view of preparing for a Master's Degree, under the supervision of **Prof. MOUPOU Moïse.** Her work is titled: **"EXPLORING 21ST CENTURY INNOVATIVE PEDAGOGY IN THE TEACHING OF GEOGRAPHY FOR THE PROMOTION OF SUSTAIINABLE DEVELOPMENT SKILLS IN SECONDARY SCHOOL IN CAMEROON ".**

I would be grateful if you provide her with every information that can be helpful in the realization of her research work.

This Authorization is to serve the concerned for whatever purpose it is intended for.

Done in Yaoundé...... 2 MARS 2021

For the Dean, by order

DONGO Etienne
Professeur