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Global Journal of Transformative Education

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Transformative Education for Innovative Educational Practices: Fourth Volume of the *Global Journal of Transformative Education*

Michael Ndemanu[1] and Serafín Coronel-Molina[2]

The *Global Journal of Transformative Education (GJTE)* is an open-source, peer-reviewed journal designed to share educational research and practical classroom applications germane to transformative education worldwide. *GJTE* publishes academic articles on high-impact practices in the broad areas of pedagogy, curriculum, educational management and leadership, learning environment, educational policy, instructional materials, and reviews of educational resources that support transformative teaching and learning in PK-20 institutions and in adult education programs. *GJTE* is focused on sharing educational research and research-based practices with all stakeholders in the design and implementation of transformative education. Articles are offered as resources for teacher educators, teachers, school leaders, policymakers, civil society, students, and researchers. Content may include research articles, lesson plan ideas, assessments and management strategies, book reviews, and discussions about curriculum and connections between schools and communities that are geared toward maximizing educational outcomes for learners. It is becoming increasingly clear that traditional educational models are no longer sufficient to benefit vast sectors of the world's population, hence the need for new transformative education models. It will take transformative research to light the way to these new educational paradigms.

A good number of the articles published in this fourth volume of GJTE were initially reviewed and accepted for presentation at the 2023 World Conference on Transformative Education (WCTE) at the University of Cape Coast, in Cape Coast, Ghana, under the theme, "The Future of Africa and the Role of Transformative Education." A call for papers was sent to conference participants to submit their manuscripts to be considered for publication in the fourth volume of GJTE. All the submissions underwent a rigorous double-blind peer-reviewed process prior to being accepted for publication. Out of several manuscripts submitted, eight were found to meet the standards and rigors of transformative education ideals as enunciated on our website, www.gite.education.

This volume is composed of nine articles that delve into transformative education from multiple perspectives. They focus on diverse topics such as professionalization of higher education programs, decolonization, communication competency, STEM teaching, and E-learning. The articles included in this volume cover the following five geographical locations: Cameroon, Ghana, Nigeria, South Africa, and the United States. The contributions are relevant to scholars, educators, practitioners, educational policymakers, graduate students, governmental and nongovernmental organizations, academic institutions, and grassroots organizations interested in transformative education across the globe.

The first article, titled "The Role of Ethics Education in the Fight Against Corruption," is authored by Ndiku et al. Their paper examines the place of ethics education in secondary school education to curb corruption in Africa. Guided by the Deontological Theory, the authors utilized secondary sources through document analysis where review of related literature on ethics education and corruption was done. The study argues that corruption is a major problem in society and concludes that there is need to fight corruption through ethics education at grassroot levels beginning with schools. It recommends that educators enhance the teaching of life skill education that fosters ethics. The second article,

Full listing of authors and contacts can be found at the end of this article.

"Market Orientation for a Contextualized Professionalization of Higher Education in Africa: State of Art" by Kamdjo et al. focuses on the concept of market orientation in higher education and how it can be used to achieve goals of contextualized professionalization of university programs. They argue that the implementation of a market-oriented culture can pave a way for higher education to offer a response adapted to the expectations of society through five points summarized as: orientation toward policymakers, enterprises orientation, competition orientation, teachers and students' orientation, and inter-functional coordination. Contreras and Bedford co-authored the third article, titled "The Transformative Nature of Graduate Education." This is a reflective paper on the transformative experience of a doctoral education. It explores Transformational Learning Theory in the real world, providing helpful strategies to apply the theory to the doctoral education experience to help doctoral students embrace their own transformation. In the third article, Kouam, in his contribution, titled "English as Foreign Language (EFL) Teaching and Learning in Cameroon: Decolonizing Francophone Teachers' Minds," argues that Francophone EFL (English as Foreign Language) teachers' mindset needs to be decolonized so that they can teach the mainstream Cameroonian English to Cameroonian students without trying to sound British or American. His findings and recommendations also constitute a good material for innovation in EFL teacher education and classroom practice. Considering most African students learn in a language that is not their mother tongue, McGhie & Reis, in "Translations as a Transformative Form of Language Support to English Additional Language Speaking Students at a South African University," conducted a pilot study on an innovative translation intervention to students in a historically Black university in South Africa. Their findings show that the translations in the students' home languages assisted the students in comprehending the instructions and course content. In so doing, it levelled the playing field and enabled the students to perform optimally, resulting in an increased pass rate in the subject.

Strong and Amodei, in their article, "The Impact of Story: One Preschool's Experience using Story Cubes as a Culturally Relevant Oral Language Strategy," posit that storytelling is a universal practice which can be traced back to the beginning of human existence. Their article describes a study conducted at a trilingual preschool. Four preschool teachers and 60 PreK students ages 3-5 years participated in the study designed to explore the use of story cubes in their classrooms as a culturally responsive and reflective strategy. In "The Transformative Development Potential of Higher Education in the 4th Industrial Revolution," Bafon, et al. discuss the sustainability of socio-economic development of Cameroon which requires a robust national and regional innovation ecosystem in which higher education plays an important role in value and wealth creation. They assert that the transformative potential of higher education is evident through development of technological knowledge networks, innovation/knowledge clusters, and transformative digital governance in enhancing transformative learning. They recommend that higher education institutional leadership should consider these transformative development indicators as institutional benchmarks for higher education quality assurance, responsiveness assessments, and governance practices.

Amadiok et al. in their article, "Students' Use Behaviors of E-Learning Management Systems in Ghanaian Public Universities: What Do the Demographics Say?," advocate for an intense training for students who underutilize e-learning management systems. In their study, they found that social science majors and female students in Ghana's public universities showed low use behavior of e-LMS. They recommended that female students, in particular, and social science students, in general, should undergo enhanced training on using the e-LMS platform. In "Transitioning Hands-On STEM Teacher Training in Ghana from an In-Person to Online Modality," Hanson and Beem discuss how, during COVID-19, in-person training content was converted into videos and PowerPoint presentations accessed asynchronously together with synchronous Zoom sessions for discussions. Their findings show that teacher confidence and views about the feasibility of implementing hands-on activities increased with statistical significance and large effect size for both in-person and online training offerings. Hence, even with minimal technology, teachers across Africa could be trained online and experience meaningful learning.

Invitation to Prospective Authors

We invite authors keen on transformative education from all walks of life to consider *GJTE* as an avenue for disseminating their ideas germane to curriculum and teaching. *GJTE* accepts submissions for its Open Call, with no deadlines for submissions and no publishing fees for authors. The journal's website includes Author Guidelines to help prospective authors with formatting specifications, and an online Submissions System to help with the submission, review and editing process. New authors are invited to register in the system. *GJTE* also invites readers to join our Editorial Board of Reviewers by selecting the "reviewer" role and indicating content expertise in their user profiles.

Acknowledgments

The Global Journal of Transformative Education (GJTE) is a singular publication venue. Despite the time and effort invested in the conceptualization, development, implementation, production, and publication of this fourth volume, we could not have done all this by ourselves. The publication of this volume is the result of the hard work and dedication of many people. First of all, our profound gratitude goes to the *Global Institute for Transformative Education (GITE)* and its founding members for their sustained sponsorship to make this volume happen. We are deeply thankful to Tom J. McConnell, Managing Editor; Luis Eduardo Orozco, Assistant Managing Editor; and Isaac Galyon, Assistant Editor, who provided us with invaluable assistance in their respective roles, taking care of the daily operations of *GJTE*.

Our heartfelt thanks also go to the Assistant Editors, Christina Cooper and Emma Bonham for copy-editing the revised submissions. We are also grateful to our colleagues who serve on the Editorial Board of Reviewers, as well as to institutions, friends, colleagues, and social media networks from around the world for their help in publicizing the *GJTE* website and Facebook page widely.

Last but not least, we would like to thank all the contributors to this fourth volume for choosing *GJTE* to publish their work. Many thanks to IUScholarswork for hosting *GJTE*'s website. Without the generous assistance and contribution of all these great people and institutions, *GJTE* would never have become a reality.

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The Role of Ethics Education in the Fight Against Corruption

Judah M. Ndiku,[1] Joseph W. Nasongo,[2] & Monicah A Odero[3]

Abstract

Education has an integral role in inculcating morality in learners, producing responsible persons who can be trusted to promote the well-being of society. According to Julius Nyerere, an educated individual is one ready to serve the masses and recognize themselves as part of the society. Unless corruption is eliminated within and through the education system, society will continue to be captive of corruption, since it has overlooked the prime duty of imparting knowledge of morals to its citizens, thus resulting in the growth of citizens whose morals are in question. Corruption can be dealt with when people come into agreement and understanding of their place, the place of others, and the need to address the common good; that is, public resources. This position paper examined the place of ethics education in secondary school education in curbing corruption in Africa. Guided by the Deontological theory, the authors utilized secondary sources through document analysis where review of related literature on ethics education and corruption was done. The study argues that corruption is a major problem in society and concludes that there is need to fight corruption through ethics education at grassroot levels in schools. It recommended that educators enhance teaching of life skill education that fosters ethical education.

Keywords: *Education, Ethics, Morality, Corruption*

Ethics and Ethics Education

Ethics is a branch of philosophy that involves systematizing, defending, and recommending concepts of right and wrong conduct, often addressing disputes of moral diversity. The term comes from the Greek word ethos, which means "character." The Cambridge Dictionary of Philosophy (1995) states that the word ethics is "commonly used interchangeably with 'morality' and sometimes it is used more narrowly to mean the moral principles of a particular tradition group or individual." Ethics is more important than morality in creating a functioning society.

According to Varkey (2021), ethics is a broad terminology that entails the morals and the effect of moral choices. Ethics influences the way we make decisions and the way we perceive things. Ethics entails normative ethics which tend to answer the question of moral ethical principles which are just for society. The norms and the ethical variations may occur due to the differences in culture, ethics, and society. The ethical norms are applicable in the areas of specialization and protection of the interest of one in their profession. Ethics entails various fundamental principles such as autonomy, justice, beneficence, and no maleficence. The principle of benefice and no maleficence are traceable back to the ancient times of Hippocrates. The beneficence branch advocates that the physician has an obligation to act right in the conduct of supporting the patient's rules of morality and preventing harm to others while no maleficence is the obligation of the physician not to carry any harm to the patient.

Ethics education entails all educational dimensions and processes directly or indirectly interconnected to the ethical extent of an individual's life that can otherwise be planned, designed, guided, or monitored with the right educational methods and tools that remain unconscious, unexamined, or unintentional. Ethical education's main focus is on value and ethics promotion in terms of justice, equality, dignity, inclusiveness, and human rights among others as an entity of education to nurture individuals who are respectful in attitudes towards fellow human beings and the society. It is also a form of education that will inculcate its member's positive character, and reflective and informed moral

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judgment that puts individual's beliefs and values into practice. This is because education is not only an inherently value-laden process but it also enhances its consequences in terms of educational outcomes and relationships formed in the context of education (Strahovnik, 2016).

Ethical education also plays a fundamental role in nurturing individuals who are autonomous, caring, and resilient and who can contribute globally and locally. Ethical education strives for the following goals:

- to aid ethical thinking, accommodation, autonomy, and responsibility in children and the community at large established in a given educational setting;
- to help children examine and understand important ethical principles, ideals, values, and virtues, and to furnish them with intellectual and moral abilities relevant for responsible moral judgment and decision making;
- to direct children to examine diverse values, moral justifications that they can merge into guiding unity;
- to give direction to children on commitment in values that are recognized and regarded as key aspects of life;
- to enable children to overcome any prejudices that may come in their lives at various stages of life, to promote ethical behaviors, for character development among children that will facilitate the ancient ideal of *eudemonia* and finally for persons to situate themselves into a local and global society (Globokar 2018, Strahovnik, 2016).

The above inclinations of what ethics education was coined in the heart of John Dewey that serves as the goal of education in general that sums to form a cultivated and effectively functional valuable judgment or trial to respect with admirable aesthetics, accepted intellectually and approved morally (Dewey, 1980).

Ethical education helps people to formulate values that are relevant to, for, and in their own lives socially. It is also pegged on the deontological theory of ethics which according to Immanuel Kant states that nothing is good without qualification except a good will, and a good will is one that wills to act in accord with the moral law and out of respect for that law rather than out of natural inclinations. To act ethically therefore should be according to the moral law which is against any acts of corruption. Autonomy and justice are the widely used principles of ethics. Autonomy is traceable to the philosopher Immanuel Kant as an acceptable ethical principle (Taylor, 2005). The principle advocates that each person has a unique value and purpose and should be given a chance to make rational decisions. Autonomy can be applicable in advocating for the moral issues in the society. However, the principle is limiting since it doesn't give a chance to persons of unsound mind in decision-making. This shows that persons have no right obligation to the decision on their behalf. Lack of a person's decisions on an issue due to the mental or physical disability has a consequence on the practices of the legal determination of the patient. The principle of autonomy can limit decision-making and deny people the right to making their own informed consent decisions. People have a right to be told the truth and their issues are guarded with confidentiality as evident with the health professionals.

On the other hand, the justice principle is interpreted as the equity, fairness, and treatment of people in an appropriate manner. In a societal setting, governance is the basis of economic growth. This applies to the family setting, community, institutions, or even the country. If human rights are violated, justice is not served. The main infringe of justice in today's society especially the developing countries is corruption that is taking away the rights of individuals. In the health sector, for example, justice is applicable in the fair distribution of healthcare resources and equitably in justifiable norms. The ethical principles have contradicting obligations. Appropriate application of the principles can help curb the problems faced in today's society especially corruption.

Education is a basic human right. Ethics education is considered as part of the human right. The purpose of ethics education is not only its study but also mobilizing the knowledge body to develop cognitive ability. The cognitive ability helps individuals apply ethical principles in fields such as economics, medicine, and policy in decision making. Ethics education also helps one to develop the critical thinking that helps them to guide their actions in the influence of others. Ethics education revolves around one's moral actions and the ability of one to respond to moral reason. In essence, ethics education plays significant role in the process of becoming human by inculcating cardinal values that strenghthens responsible actions and interactions.

Corruption and its Manifestations in Society

The word corruption originated from the Latin word *rumpere*, meaning to break or to rupture. The Latin word *corruptus* means consequence of of dishonest conduct or behavior, described as perveted, morally

corrupt, and broken. It thus means to break someone or force him or her to change the attitude of a certain principle or former opinion. From Latin, corruption is definable in two terms: issues of bribery or damage.

Corruption is attracting a lot of attention around the world. Several attempts have been made to define corruption by different scholars differently. Even though it may be difficult to define, it is generally not difficult to recognize when observed. Corruption is popularly defined, by the World Bank as the abuse of public office for private gain (Langseth & Stapenhurst, 1997). This, however, is not an indicator that corruption cannot exist in the private sector. Applied to large private enterprises, it manifests itself through procurement or even hiring. The abuse of public power is not necessarily for one's private benefit but it can benefit one's party, class, tribe friends, and family, among other beneficiaries (Kaufmann & Siegelbaum, 1996). Corruption can be defined neutrally as intentional non-compliance with an arm's length relationship aimed at deriving some advantage from the behavior for oneself or related for individuals (Tanzi, 1995). Rendtorff (2009) defines corruption as a controversial, illegal, and unethical because it is an act that goes against or challenges established and well-defined conceptions and laws of justice. It is the use of the government office for personal or private gains (Hallak & Poisson, 2007).

From the definitions, corruption is not a new phenomenon globally. What is new are the ever-mutating forms it is taking and the harm it is wrecking to the prosperity, security, reputation, and integral well-being and survival of our nations. Secondly, institutions have been set up and allocated resources to fight corruption, but corruption is getting worse and more widespread indeed, it is endemic. Corruption is an outcome of the society (Svensson, 2005). It reflects the nature and quality of a country's legal, economic, cultural, and political institutions. It also indicates the general moral quality of a people and their dominant values and priorities. Corruption has diverse effects on economic development and is very dangerous. It leads to a loss of resources. According to the World Economic Forum, the global cost of corruption is a*t least $2.6 trillion*, or 5% of the global gross domestic product (Guteres, 2018). It leads to political instability, poverty and unemployment, high crime rate and insecurity, increased cost of goods and services, increased poverty, injustice, and negative international image.

All over the globe, corruption is evident in all sectors of the economy and society even among professionals, for instance doctors, police, and even traders (Akdemir & Yeşilyurt, 2023). In the institutions of learning, corruption is also evident. Teachers take bribes from their students to facilitate the passing of examinations. In the institutions, the issuance of fake certificates and degrees as a result of corruption is also evident. Selling educational skills illegally destroys the market and the skilled labour force.

Many countries exhibit corrupt acts. Corruption can be administrative, political, and bureaucratic. Administrative corruption is manifested when the politicians are forced to sell their votes to the political parties. Administrative corruption occurs when those in administration accept bribes to facilitate tax evasion (Hallak & Poisson, 2007). For bureaucracy corruption, hiding files or slowing down the investigations is an act of corruption. Corruption entails a variety of issues such as funds embezzlement, bribe issuance, and nepotism, among other issues. The acts can be legal or illegal depending on the context.

In Asia, corruption is defined as unjust and unlawful acts. The acts may include soliciting funds from the public for unjust practices. A boundary can be drawn between the level of corruption ranging from minor issues to more complex issues. Major corruption can include ghost workers, wrong tender issuance for the school constructions, supply, and the manufacture of books (Hallak & Poisson, 2007). Parents bribing the school heads to secure their children's admissions and get promotions to the next grades is a minor form of corruption. Corruption is an injustice and classification as a minor or major issue should never be a matter of concern. Teacher's appointments through corruption can delay administration and promote misbehavior.

The determination of corruption varies from one state to another. In some countries, the issue of gifts to students in schools or public officers is unethical. They consider it as an act of bribery and punishable by the rule of the law. Some societies however accept the act of issuance of gifts for students and bets personal agents. They define corruption as Western belief that is in contradiction with reality. They see that a gift of low monetary value does not attract anything in return while that of high monetary value attracts something in return (Hallak & Poisson, 2007). Research indicates that persons share direct variations on what is ethical and what is unethical depending on the environment. The issuance of the gift can be narrowed to the education centers of learning, some argue that a teacher offering private tuition is unethical while some can

argue that it is ethical. The quantification of the claim is justifiable by the ultimate end of the quality of education. Therefore, for higher education institutions, private tutoring can be considered a legal act. If students who fail to meet the required grades are offered private tuition by the higher education institutions through their funding then the case is ethical.

Omar (2005) avers that the trend of the corruption rate is more prevalent in African countries than the Western countries, with Asia having the highest rate of corruption. As years progress the rate of poverty in Asia declines while that in Africa increases rapidly. The increase in corruption rate in Africa is to blame for the high rate of poverty. In a report by Transparency International (2015), growth for the rich is seen to be increasing while that of the poor declining. Corruption makes citizens lose the trust of the political parties and even leaders. Lack of trust raveges learning institutions. If children are permitted to cheat in their exams, the higher institutions of education will lack trust in the credibility of the grades the students attain. Research shows that Kenya is one of the countries where bribery is likely to be issued. Kenya is ranked as one of the most corrupt countries in the world. In 2022, it was ranked at position 123 out of 180 countries of the world (Annan, 2022). The level of bribery is shown to have risen as the years progress. The level of bribery increase shows that those who cannot afford to bribe cannot attain services and the basic amenities in life. According to Odinga (2004), the level of bribery in parliament requires a commission for the disposal. If the MPs are corrupt and they are the key holders of the budgetary determination mandate, then the cost of living is likely to rise and children from poor families will not get the chance to have funding from the government for their studies.

Adverse examples of corruption cases in Kenya have been categorized into five by Mohamed Noor (2018). The Goldenberg scandal which he states to be a long-lasting saga between 1991 and 1993 where Goldenberg International Company owned by a Kenyan tycoon businessman Kamlesh Pattni, would export jewelry and then get compensation from the Central Bank of Kenya for foreign exchange earnings. From the look of things, this scandal cost Kenyan taxpayers money around US dollars 600 (BBC News, 2004, cited by Noor, 2018). The Anglo-leasing scandal came second involving a public procurement deal, a two-decade scandal with a series of corruption sagas in it. This scandal involved a series of dubious international financial transfers that related to government security contracts among other corruption cases. The third was the National Youth Service Scandal that suffaced between 2015-2017. Here, officials discharged various contracts of procurement to companies but never delivered even though full payments were disbursed to each company. The fourth was the Rio Games Scandal in 2016 when the spirit of Kenyan athletes for the Rio Olympic games was shattered when money that was meant for their catering and comfort was stolen. There was also overpricing of return air tickets for the players. Lastly, Kenya experienced a National Cereal and Produce Board Scandal that was affiliated with no genuine transaction records or receipts . With this and to blind Kenyans, the government of Kenya tried to react to these cases in court battles but the perpetrators were left free. The cases are still ongoing with no desirable fruits. This has resulted in mistrust of the government by the public. These are some of the cases of high-level corruption cases reported in Kenya. From the above assertions, corruption has adverse effects not only on the government and institutions but also on the society at large. It has led to unfavourable economic conditions, political instability, poverty and unemployment. Among the citizens, according to Mohamed Noor (2018), corruption has led to crime and insecurity, increased cost of goods and services, increased poverty, injustice and negative international image.

Role of Ethics Education in the Fight Against Corruption

The purpose of ethics education in general, is to build values and develop the knowledge, skills, and attitudes necessary to shape students' civic stance against corruption (Cam, 2016). The key to successfully fighting corruption is to change the

culture among the young generation. Globally, corruption is an area of interest that has persisted to exist despite several attempts to stop it. The United Nations Office On Drugs and Crime (UNODC) is trying to lead the Anti-Corruption Academic Initiative (ACAD), which is a collaborative project that seeks to encourage teaching and research of anti-corruption issues by institutions of higher learning. The initiative acts as a central hub for anti-corruption education worldwide. Its role is to bring together professors globally and regionally offering free online resources on possible mitigation online. The UNODC has also fought for "Education for Justice" that seeks to control crime and promote a culture of legitimacy through education activities at all

levels of education. It is therefore believed that this will help the next generation better understand vices of illegality and how best to overcome them. This however has not put forth or clearly shown the need and role of ethics education in curbing corruption.

The World Economic Forum estimates the global cost of corruption is *at least $2.6 trillion*, or 5 percent of the global gross domestic product (Guteres, 2018). The UN convention, for example, emphasizes the need for being transparent and accountable for the actions that we undertake. The call for the eradication of the bribe issuance and receiving gives individuals equal opportunities to acquire education. Education being the social equalizer helps society to understand appropriate acts and thus enables them to have a clear understanding that corruption is an act of injustice to human rights. If children are denied the rights to acquire education since they cannot bribe, the whole cause of humanity is triggered.

In Rwanda, the government has a mandate to promote accountability and transparency. The advocacy for transparency is an act of human rights (Sikhosana & Nzewi, 2019). It helps bridge the gap of corruption and the possible loopholes that can be incurable in society. Analysis of the cash flow and the fiscal budget helps eliminate the issuance of bribes since no money is left to be looted withoutbeing traced. Enforcement of transparency and accountability will release the much needed resources to the targeted development projects and help limit the poverty levels in the society. A corrupt free society gives all children equal opportunities in the educational centers of learning and eradicating poverty.

The effect of corruption ranges from the individual, society, and country up to the global perspective. In Nigeria for example, the effect of corruption is deeply rooted in the society affecting its individual (Okunlola & Obadare, 2016). The effect of corruption manifests from the economic perspective to the educational systems. Corruption being a global problem affects the citizens of various nations leading to the reduction in the moral fabric with the inclusion of academia. However, corruption is common in the underdeveloped or the developing nations. According to Okunlola and Obadare (2016), the World Bank report showed that the economies of the developing countries are more prevalent with corruption cases. Nigeria as an example shows high levels of poverty among the citizens with only a few individuals meeting their basic needs. The employers not being able to meet the employees needs such as salary payments and students' ability to access education due to the poor facilities is a manifestation of the corruption depth.

Generally, corruption has adverse effects in any society. Some scholars have discussed various aspects and effects of corruption in various fields such as the economy and education. They however assert that even a small incidence of corruption can become dangerous to the normal functioning of the society and any institution of learning (Dreher & Herzfeld, 2005). Indeed a corrupt education system is the beginning of all problems to the society. For example, if students cheat in exams, the outcome is production of poor skilled personnel who cannot deliver in the economy as well as making the job market flooded with mediocrity and underperformance. The lack of qualified personnel makes it difficult to enhance economic productivity.

In a more corrupt society or institutions of learning, there exists a moral dilemma. Individuals in such environments tend to collaborate in matters of corruption and as such, nobody can stand still in promoting ethics education (Hallak & Poisson, 2007). Ethics education plays a vital role in non-materialistic costs of corruption which is dangerous in the erosion of democratic values, human rights, and freedom which in turn may lead to the loss of human lives. Ethics education should hence be enhanced in all centers of learning ranging from the basic educational institutions to tertiary institutions to generate a morally upright society. Though this might be a tall order, it is the way to go in the process of training the mind of all children from their formative stages in life.

Like many other countries, Kenya is one of the countries immensely affected by corruption. In the fight against this vise the country has developed institutions that are responsible for its eradication. There exists an approach of a legal and institutional framework through the enactment of laws and the establishment of institutions to fight this menace. For example, the Ethics and Anti-Corruption Commission (EACC) has yielded some positive breakthrough towards the fight against corruption. There has been also an attempt by Transparency International Kenya (TI-K) to initiate integrity clubs for students in ethical and integrity learning in schools (2015). This has been made possible by supporting and strengthening the activities of 80 integrity clubs across the country. However, only three counties were taken care of; 30 in Trans-Nzoia County, 29 in Kisumu County, and 21 in Kwale County to improve discipline and responsibility among students. All

this however hasn't brought much positive change and the emphasis on ethics education as a criterion to curb corruption is imperative. The initiatives being made through the educational reforms as the country embraces Competency Based Education and introduction of life skills and fanning of moral education of values will impact the lives of the future generations. However, as it is now the little or no effort in the reduction of corruption cases can be attributed to the fact that some people who should serve as examples in society are the perpetrators of the vice. Kadida (2016) in his study ascertained that the Chief Justice and the President of the Supreme Court of Kenya was reported to have confessed that corruption networks in Kenya have penetrated even oversight institutions that are tasked with the role of fighting corruption. This in itself is an indication that there exists little moral leadership in Kenya at the top most the hierarchy which is expected by the public to be independent of such vices. This has pushed the need for a paradigm shift in the implimetation of life skills, values and moral education espoused in the Competency Based Education from the norm which is the ethics education perspective to addressing ethics through the multiple learning dimesions: formal, informal, and non-formal processes to bring about ethical reasoning and virtue formation. The educational reforms instituted through the Competency Based Education in Kenya have made progress in a number of ways. There is the mainstreaming of Pertinent Contemporary Issues (PCIs) to train the young ones on the evils of corruption in learning areas around Global Citizenship, Life Skills and Values where life skills, values and moral education are articulated (KICD, 2017). This form of education is an all-round system that requires contribution from all dimensions. The school being a formal institution that acts as a foundation where teaching and learning of all kinds can easily be executed remains the most ideal place for ethical values to be incurlcated now and in the future. The several constructive activities that take place during teaching and learning in a formal setup creates a fertile ground for the transmission of ethical education in all aspects of life during and after childhood. This includes learning through association, imitation, and interaction. If utilized well at this stage of life to its learners, there is a likelihood to produce citizens who are sound and responsible for their various actions in life, the workplace, and in society at large.

It is hoped the initiatives through implimetation of Competency Based Education will impact the student soft skills to navigate daily issues of life with ease. Ethically grounded persons from school will shun and condemn acts of corruption regardless of the influence they may encounter in the line of duty. The continuous education or creation of awareness on corruption helps to mitigate the possible ways for its elimination. Understanding that corruption is a form of injustice is the first ethical way for its eradication. Ethics education in itself is an enemy of corruption since corruption requires individuals to perhaps take bribes for them to be served in any organization or institution. This form of education requires the same individuals to practice what is right and shun away from wrongdoing by all means regardless of the good things that come with it. The application of educational ethics will demand more transparency from the organizations be it vertical or horizontal. Ethics underscores doing what is right and instils the the will to speak against the vices in society, corruption included. The determination of its effects also drives the push for the anti-corruption commissions to help fight the vice.

Ethics education enhances the awareness creation of the benefits of good morals such as good governance accompanied by transparency. It is in the same vein some civil society organizations, advocate for the fight against the corrupt practice. International civil society calls for transparency that enhances the good governance of its member states around the globe. The perception of the corruption index rate produced annually makes the member states debate on the issues regarding corruption. Despite, the lack of trust in the annual reports need for transparency by countries is no issue to bargain as the issue of corruption is hitting up. The address of corruption by countries helps investors build trust in a certain country and facilitate its eradication. Reinforcing what governments and civil society do to fight against corruption through ethics education will to a great extent contribute to sustaining the war against corruption.

Theoretical foundation of ethics education to eradicate corruption

The underpinning theory encompassing the discussion in this paper is the deontological theory of moral obligation. The word deontology derives from the Greek words for duty (*deon*) and science (or study) of (*logos*). In contemporary moral philosophy, deontology is one of those kinds of normative theories regarding which choices are morally required, forbidden, or permitted. In other words, deontology falls withinthe domain of

moral theories that guide and assess our choices of what we ought to do (Stanford Encyclopedia of Philosophy, 2024). For deontologists, what makes a choice right is its conformity with a moral norm. Such norms are to be simply obeyed by each moral agent.

The assumptions in the deontological theory is that society has developed clear rules, laws and norms that define the moral duty of individuals to act right and shun wrongdoing. Society employs education to transmit and inculcate morality in children. As such, the contents of moral education and the educational process should ensure that learners have a clear sense of what is right and wrong, good and bad, and be willing to choose right actions. In essence, if education is properly undertaken, then learners will be clear in their minds that corruption is wrong, evil and should be shunned by all.

Rationale and content of ethics education in combating corruption

Since education is considered the basic pillar of any society, different stakeholders are actively reinforcing ethics education around the world, for instance, UNESCO initiated a program in 2004 where it supported its member states in initiating and supporting teaching programs and professional ethics education. This is approached by Ten Have (2008), in his work addressing the influence of UNESCO in ethics education programs in schools.

Also, the European Union has encouraged its member states to incorporate ethics education in their school curricula. They stress that students who are equipped with ethical norms at early stages will easily understand that there are diverse conceptions, principles, and perceptions and have an improved ability to substantiate their moral judgments (Cam, 2016).

In the US, ethics education became part of most US institutions of higher education between 1980 and 2015. Over time, ethics education has been attributed to playing a role in enriching students moral capacities and reinforcing community standards (Keohane, 2006). Ethics education in the US has produced consistent results and has provided structured opportunities for students to develop values associated with morality.

Traditionally, the African society took upon itself to produce ethically upright generations. After the introduction of formal education, the responsibility of inculcating ethics in children was left largely to schools (Mwanzia, 2019). This to a great extent has led to the erosion of the training in morals and values as educational institutions concentrated on academic excellence fanned by the push for good academic grades at the expense of morals and values training sometimes effectively achieved through informal and non- formal learning.

Ethics education content concerning corruption

Ethics define the principles that morally control someone's behavior in any activity. Ethics is a philosophical branch that revolves around the analysis and concepts of moral interactions that helps identify the right or wrong. The ethical analysis helps us define ethics education which aids in the determination of pedagogical requirements through the analysis and conceptualization of behavior morally. Ethics education aims to assemble a knowledge body for its purposes rather than only studying ethics. Teaching ethics in schools helps children approach the life challenges they encounter. Educational ethics is considered a human right because it aids in making people free. According to Dewey, the introduction of democracy in teaching helps in the application of new methods in teaching and teaching (Dewey, 1980).

In education, four major ethical considerations takes the center of the pedagogical training. The ethical considerations include truth, dignity, act of fairness, and freedom. The ethical issues help one to grow with self-responsibility of determining what is right and what is wrong.

Dignity and truth

Dignity in ethics education is defined as the respect for human dignity (Parandeh, Khaghanizade, Mohammadi, & Mokhtari-Nouri, 2016). Students need to respect everyone including the younger ones. This is not only applicable to the students alone but also the teachers to respect others regardless of their ethnic background, age, religion, and opinions, and treatment of people justly. Dignity and ethics education are strongly related and they can help regulate corrupt practices. On the other hand, truth aims at regulating the teachers' activities by helping them steer the students to move through life activities and environment for others. Truth helps in transparency, the transparency can range from the government activities to the administrative agencies. Transparent administrative ways in the educational centers of learning can help curb the corrupt practices in society. They reduce the ways and channels of corrupt activities.

Virtues training

Virtues training entails the lifelong skills that help an individual live rightfully in society through association with others. Virtues are related to ethics education as they advocate for rightful practices such as honesty, fairness, and freedom (Melé, 2005). Fair treatment of individuals stipulates that all people must be treated without discrimination. Fair treatment of individuals in society is arrived at fair practices in the school, as the school is a social organization that guides the activities of the society, if students are trained in the right way through virtues training, the students will acquire the rightful skills to employ in their daily dealings with others, through the implication of virtues at a tender age in education, hence, human justice is attained which is also advocated for by human rights.

Approaches in ethics education to eradicate corruption

The approaches in ethics education to reduce corruption include instructional approach. According to Mulhearn *et al.*, (2017), instructional approaches in ethics facilitates content delivery, the delivery method, processes, and activities. The instructional method is effective in the acquisition of the skills and knowledge of the learners. The acquired knowledge helps the students acquire appropriate skills that promote heathy living through corruption eradication. Corruption is the key element that affects the current society. Improvisation of the appropriate ways of its elimination helps equity in society.

Instructional training helps the learners identify how corruption is carried out. The possible ways of evading them are identified in the instructional training (Mulhearn *et al*., 2017). The use of instructional methods such as video presentations of corruption being undertaken helps students identify the need to be just and practice fairness to others. If a teacher gives illegal marks to a student, for example, the other learners will be offended. The appropriate ways of elimination is through the application of relevant approaches.

The second approach to the study of ethics in education is the utilitarian approach. The utilitarian approach seeks that all people in society be treated fairly. It seeks that any action taken should strive to bring happiness to all the people in the society. If the action offends others, then the act should be eliminated. The use of the utilitarian approach in learners' education helps them learn how to live socially and justly in society. Since corruption denies members of the society who cannot practice in the act of injustice fair treatment, they are denied the rights and freedoms of association with other members of the society. Instilling of fair practices among learners at an early age through ethics education helps eliminate them. According to Armstrong, Ketz & Owsen, (2003), accounting students can invoke methods of cost to discuss it in varied topics. The utilitarian idea argues that "the end justifies the means," this argues that people should engage in activities that are beneficial to all. Advocating for fair practices helps reduce corrupt practices in society.

Virtue approach can also be used in ethics education to address corruption. Virtues approach aids in virtues development. The method is rooted in the philosophical account for the conduct morally and the aim in education. According to Carr & Steutel (2005), the virtues approach aims at virtue promotion and instillation to the students. A teacher can practice morality by acting as an example to the students. Practicing a good role model is also a way of helping students acquire moral knowledge. If the teacher refuses to receive or issue a bribe, the students will learn that the act is a vice and they should not engage in it. The virtues approach aims at instilling values that are admirable to the learners (Carr & Steutel, 2005). If students grow up with moral values they will not engage or they will speak out against the vice. The virtues approach can well be addressed by the teachers by introducing it into the school curriculum. The government can chip in by providing the available resources to aid the virtues approach instilled in the learners.

Conclusion

Corruption has been found to be a serious challenge globally, internationally, and regionally. The cases of corruption range not only at individual level but also at groups, institutions of learning, and the government at large. Several efforts to curb this vice have produced little or no fruits. With the involvement of the government bodies in corruption, it becomes difficult to overcome this vice, however, there is a need to instill ethical education at grassroots levels in schools to produce future generations who are corruption-free and that will be commited to reduce the cases of corruption at all levels. It is due to this that this study sought to analyse the role of ethics education in the fight against corruption. The study was guided by the deontological theory of ethics whose main concern is on how individuals are expected to behave with respect to the moral duties they are entitled to. It is enshrined in the statement, *"duty for*

duty's sake". Meaning that individuals who have encountered ethics education will be obligated to obey rules and laws on the right actions and shun vices like corrupt acts. The sources were extracted from literature with emphasis on secondary sources. The study used document analysis as qualitative paradigm was employed to arrange, locate and assess the information gathered.

Recommendations

The authors recommend the following:

There is a need for education stakeholders to foster ethics education in school curriculum. Thus ethics education is to be made a compulsory subject in all stages of education. The ethics education process should emphasize the deontological theory of moral obligation such that learners adhere to rules and principles laid down at all times. Additionally, ethics education should promote rational reasoning in the way that individuals will critically reflect on how their actions might affect others, undermining their dignity and the common good, and strive to respect fellow humans by shunning corruption.

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Market Orientation for a Contextualized Professionalization of Higher Education in Africa: State of Art

Carole Vanessa Kamdjo[1] & Henri Rodrigue Njengoue Ngamaleu[2]

Abstract

Market Orientation is a managerial philosophy governing the behavior of all actors in an organization to create greater value for the benefit of all stakeholders. Considered in the field of education, this managerial culture presupposes questioning and involvement of the various stakeholders (students, companies, university competitors, etc.) allowing consideration of educational actions for the benefit of all these actors. The professionalization of teaching has been one of the major challenges of African educational systems for several decades. To meet this need, African governments have imported several education systems, the latest of which is the Bachelor-Master-Doctorate (BMD) system. We aim in our paper to posit that Africa was not ready for a world uniformization of diploma as BMD subsystem implemented. In this review of the literature, we compare publications to present the concept of Market Orientation, its conception in higher education and how it can be used to achieve goals of contextualized professionalization, using the Thirty Glorious Years and that of China's period of industrialization to support understanding. This review finds that implementation of a market-oriented culture can allow higher education to offer a response adapted to the expectations of society through five points summarized as 1) Orientation toward Policy-Makers; 2) Enterprises Orientation; 3) Competition Orientation; 4) Teachers and Students orientation; 5) Inter-functional coordination.

Keywords: *Market orientation, Professionalization of teaching*

Introduction

The professionalization of higher education is a need for Africa's governments independence. It could help to link education to economic needs and reduce poverty. For education systems, professionalization will help to enhance external effectiveness of higher education. Professionalization of programs can improve the graduates' outlook in the job market. To achieve the goal of professionalization, higher education has imported several educational systems, the latest and currently used being the Bachelor-Master-Doctorate system. This system aims to professionalize higher education and its effectiveness remains mixed, as demonstrated by many authors. Indeed, the reforms have taken place, but do not achieve the expected results in terms of improving employability (Bouba, 2014), enhancing personal and professional qualities (Bomda, Fozing and Mgbwa, 2022) or even the overall situation of unemployment and underemployment (Avom & Nguekeng, 2019). Criticisms against this system have been made in other countries on the continent, notably in Algeria (Ghouati, 2022) and Senegal where its cancellation is being considered. This inadequacy is seen in an increasing underemployment rate. Indeed, according to economists, Sub-Saharan Africa remains the region of the world most dependent on its agricultural sector, but the low competitiveness of traditional agriculture and struggle for access to natural resources have contributed to accelerating the massive continuous migration of peasants towards the cities (Nkuitchou, 2022). This is why African cities have seen their population multiply by more than ten times during the 20th century (Banque Africaine de Développement [BAD], 2020). This strong mismatch between the need for skills and the quality/level of education has harmful effects on employment conditions (BAD, 2020) and consequently on economic growth.

The objective of this article is to propose some axes for building and implementing a higher education

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system that meets the contextual needs of the economies of African countries. To achieve this, the author's research group has developed a documentary analysis that allows them to specify the definition of the concept of professionalization adapted to higher education, return to the conceptualization of the concept of market orientation and subsequently detail the axes of structuring and implementing a system of professionalization of higher education in a market-oriented logic. Without the pretension of completeness, at different stages, they enlighten their objectives by using two examples: the Thirty Glorious Years and the China experience.

Conceptual Framework

The meanings taken by the word "professionalization" closely depend on the conditions of its appearance and its use (Wittorski, 2008; Boussard, 2014; Ghouati, 2022). The authors retain three specific meanings. Firstly, it concerns the professionalization of an activity understood as "the process by which an activity becomes a liberal profession driven by an ideal of service" (Wittorski, 2014, p. 16). Secondly, comes the professionalization of training or employment, which consists of promoting the development of knowledge and skills through processes of learning, acquisition and development of skills that transform a learner into a professional (Wittorski, 2012; Boussard, 2014). Finally, comes professionalization understood as the evolution of an organization or a function (functional service) of the organization towards the production of organized and efficient work through the development of the flexibility of people at work (Wittorski, 2012). This last typology is based on current developments within organizations which are: work planning; the transition to a logic of results; as well as the transition from a centrally controlled system to a certain decentralization of responsibilities.

In higher education, the authors mostly retain two conceptions of the professionalization concept. Firstly, the professionalization of the teaching activity consists of giving the teaching activity the character of a profession. Secondly, the professionalization of training consists of creating a link between training and the labor market (Abdourhaman, 2018, Ghouati, 2022).

Professionalization of Teaching Activity

The professionalization of teaching activity is inspired by the work of sociologists who were first functionalists, then interactionists and finally conflictualists on the dynamics of professions (Abdourhaman, 2018). According to the latter, "professions" present a certain number of criteria such as autonomy, peer control, the ideal of service and a higher degree of university education. The contemporary issue of teacher professionalization arises from a manifest desire to recognize the long-scorned teaching body. But does the tribute to teaching activity really comes with the temporary professionalization revolution?

The tribute to the teaching profession is very old. It goes back almost to the depths of human civilization. Historically justified initially in the satire of Khety's Satire of the Trades written around 1940–1900 BCE. The teacher is described as an official and high dignitary of the Egyptian kingdom (Marshall, 2016). The aim of education was to train "scribes" who could subsequently specialize in various fields such as medicine, veterinary science, architecture, mathematics, astronomy, theology, law, painting, diplomacy, or translation (Mounier-Kuhn, 2020).

However, the authors demonstrate that this profession subsequently deteriorated when it reappeared in Greece between the 16th and 18th centuries as part of Protestant reforms and Catholic counter-reforms. Mainly carried out by women, the teaching activity is then linked to a certain vocation, a subjective impulse through which we feel called to fulfill an essential mission: that of teaching. The lack of training for these candidates was justified by the promotion of feminine virtues such as love of children, devotion, obedience, and the spirit of service and sacrifice. The working conditions of a profession were not there either. Women teachers were required to fulfill their mission regardless of their material condition, even in the most miserable conditions. Developments in teaching activity in Western history will also be initially marked by the rise of the first public and secular school networks and the integration of teachers into the public service. normal schools are created and gradually become compulsory (Tardif, 2013).

The "Age of the Profession" corresponds to the constitution of a professional identity of the teaching body, perceptible by external signs such as the training, swearing-in, solemn presentations of diplomas, special outfits, etc. (Maingari, 1997; Abdourhaman, 2018); but also perceptible by internal methodological rigor such as the definition of a pedagogical profile of the teacher as well as the definition of a knowledge base for the teaching profession (Tardif, 2013). Thus, the meaning of the professionalization concept in the logic of the

professionalization of teachers is mainly inspired by the definition of a professional group. It is indeed a question of changing the status of teaching from a trade to a profession as in the Anglo-Saxon sense. This evolution implies a university education of high intellectual level, the definition of a scientific and specific knowledge base allowing teachers to be considered as pedagogical specialists (Tardif 2022), as well as professional autonomy, or at least recognition, both legal and social, that the professional is best positioned to decide on the actions one must take in any professional situation (Wittorski, 2014).

Professionalization of Training

The conception of professionalism of training in higher education comes to complete the conception seen before. Indeed, among the criticisms made of higher education to demand its professionalization, its external effectiveness figures prominently. The current variation of professionalization suggests aligning traing training with employment. In a narrow vision, this conception would reflect the idea of "professional training" (Boussard, 2014; Wittorski, 2014) and in this logic, professionalization would use teaching as it would have used other organizations involved in training. However, in a more globalizing vision, and especially in connection with the problem of external inefficiency of higher education, it is rather a system for promoting employment responding to the social quest of states to fight against unemployment, underemployment and, by extension, poverty (Abdourhaman, 2018) supposed to link training to a specific need of the labor market.

In other words, professionalization conceived as a particular system for promoting employment, can be conceived on the one hand as the implementation and acquisition of a base of skills (knowledge, know-how and interpersonal skills) by learners (vocational training) or elsewhere in a more global way as a mechanism for regularizing education in order to produce graduates in quantities and numbers useful to the economy of a given region.

By summarizing, two complementary concepts emerge from what precedes the professionalization of teaching activity as a process of revalorization the profession of teaching and the training professionalization as a mechanism for improving the external efficiency of the higher education system. We use these conceptual bases to analyze articles and works relating to the implementation of the concept of market orientation in higher education. Our basic hypothesis is that the implementation of Market Orientation would indeed provide better operationality to the professionalization process.

Methodology

The context described above led us to undertake qualitative review of the literature based on the analysis of a series of articles and books. The authors suggest that Africa was not ready for a world uniformity of diploma as a BMD subsystem implemented. In professionalization of higher education, many African countries need to link higher training to political and economic needs. The authors also aim to support the professionalization goals of African countries. As a profession, educators need to construct a higher education subsystem that is Market Oriented. To verify this claim, the authors use a data collection and analysis strategy which is explained in this section.

Data Gathering

The authors have previously constituted a corpus of text to study relating to the synthesis of the concept of market orientation to provide a synthetic presentation. The authors then deepened the research by bringing together as many documents as possible relating to the adoption of market orientation in higher education. This research has mainly extended over the past ten years, providing the most updated information on the subject. But also, this choice is dictated by the relative recency of the use of the concept in higher education even if the literature reveals however that the implementation of the related techniques was introduced to higher education much earlier. As readers need to have more information about the educational subsystem for economic growth, the authors end chose some documents relating to the economic growing in some other regions in the world especially during "the Thirty Glorious Years" and the China experience.

Data Analysis

We submitted all the documents to a content analysis by proceeding to a complete reading of each document beforehand to determine the objectives and results obtained when it was a scientific study (article), but also, to determine the quintessence of the conceptual evolutions on the subject through the book chapters. The researchers share their interpretation of the patterns in the literature as they relate to implementation of Market Orientation in higher education.

Market Orientation and its Implementation into Higher Education

The concept of Market Orientation finds its foundations in the work of Kohli and Jaworsky (1990) and Narver and Slater (1990). It is then considered as "the implementation of the marketing concept" (Kohli & Jaworsky, 1990, p. 5). The latter designates "a philosophy which postulates that the long-term profitability of a company is better ensured by focusing its activities on satisfying the needs of the consumers who make up one or more target segments" (p. 5). Thus, its initial conceptualization is based on three essential dimensions: customer orientation, competition orientation and inter-functional coordination (Narver and Slater, 1990).

However, the concept of Market Orientation differs from that of Traditional Marketing in the sense that the concept of Traditional Marketing is solely customer-oriented and is generally confined to the marketing department, while the concept of Market Orientation is oriented towards the key players in the market and is seen as a cross-cutting culture that challenges all company functions at all hierarchical levels (Khan, Khan & Rafique, 2023). Initially made up of the components of customer orientation and competition orientation in its founding definitions, reflections on Market Orientation will be based on fundamental theories of organizations such as stakeholder theory and agency theory in order to evolve towards the birth of two new theoretical propositions.

Firstly, the question of the consideration of dimensions of market orientation was reconsidered by the progressive integration of all the stakeholders of the organization (Bugandwa, 2013), secondly, the Market Orientation has been understood from its foundation as an organizational culture solely guided by a principle of defensive management (Ngatno, 2019). This translates into a reaction to the non-completely satisfied needs of customers. However, organizational performance strategies will also translate into anticipating competitive decisions and forecasting markets (Schulze, Townsend & Talay, 2022). The integration of a proactive logic and by extension of an offensive management, thus makes it possible to define the concept of Market Orientation in a more complete and more structured way. This is why the concept of Market Orientation will be defined more globally like a managerial philosophy governing the behavior of all actors in an organization for the creation of greater value for the benefit of all stakeholders (Khan, Khan & Rafique, 2023).

A pure transposition of the Market Orientation model from the for-profit field (customer orientation, competition orientation, inter-functional coordination) to higher education raises great controversy. However, several studies have simply limited themselves to it (Hammond, Webster, & Hammond, 2020), while others have still made a real adjustment to take into consideration the specificities of the education markets in general and especially in the higher education field. The authors will first proceed with a presentation of the criticisms brought to a pure transposition of Market Orientation in higher education to better support the concept, before succinctly presenting the implementation model they support for Market Orientation adapted to higher education.

Criticisms of Pure Transpositions of Market Orientation to Higher Education

The criticisms made of the transposition of Market Orientation into an educational context are of two complementary orders and stipulate that teaching has no commercial scope; therefore, the student cannot be considered a customer.

The first criticisms of the importation of techniques and tools from commercial companies to educational institutions consist of the consideration that educational institutions would be considered more as non-profit institutions and therefore non-market (Dwyer, 2022). A non-profit organization can be defined as an organization established for altruistic, moral, social, educational, religious, philanthropic, health, etc. purposes and whose activities must not provide any economic advantage to its members and donors. It can be safely said that HEIs falls under the non-profit sector since educational institutions in general and especially higher education institutions (HEIs) serve the public good.

The second criticism arises from the fact that in Market Orientation considerations, the students are generally assimilated to the customer. This consideration is recurrent in Anglo-Saxon works due to the high tuition fees that completely cover the cost of education (e.g.: Webster, Hammond and Rothwell, 2017). However, most students and practitioners in French-speaking countries reject this consideration for two reasons. The first is conceptual and clearly poses the question: "Is the 'customer' concept semantically the right one to design students?" (Bugandwa, 2013, p. 70).

Drawing on stakeholder theory, supporters of Market Orientation in higher education will conceptualize a more digestible model adapted to higher education.

This managerial culture presupposes the questioning and involvement of various stakeholders (students, companies, universities competitors, public policy etc.) (Dwyer, 2022), allowing planners to think about educational actions for the benefit of all these actors (Bugwanda, 2013; Hammond, Webster, & Hammond, 2020). Actions can follow by cross-functional coordination which ensures the dissemination of resolutions and the creation of synergies within educational institutions (Mokoena, 2019). These practices are described by the expressions such as student-driven, competition orientation, enterprises and investors orientation, Orientation towards policymakers, cross-functional coordination and responsiveness (Bugwanda, 2013; Dollinger & Vanderlelie, 2020). Thus, a good implementation of a market-oriented culture makes it possible to generate an educational system that meets the envisaged contextual need. In this part we briefly present what each of the approaches to market orientation refers to according to the current literature and for each we have taken care to verify its application in the two economic growth models chosen as examples. Namely in particular the period of the Thirty Glorious Years and the Chinese growth experience.

Orientation Towards Policymakers

Orientation towards policymakers is supposed a perfect correlation between the needs of economic growth plans and educational goals (Dwyer, 2022). Firstly, the literature generally gives fundamental importance to the donors of non-profit organizations such as the government and government agencies, volunteers, etc. The public authorities, as the main financial provider of HEIs, it is important presumably to consider their interests which are generally of a societal nature.

In the medium term, the objective of higher education must be centered on the production in number and quality of graduate profiles corresponding to the planned needs of the economy. Indeed, according to the authors of the theory of human capital, we must invest more in education to stimulate and converge toward long-term growth (Moulin, 2022). In addition, public investment in education is accompanied by other positive effects since more educated people are healthier and have a longer life expectancy.

The French and Canadian experience of the Thirty Glorious Years Period (1945-1975) shows an "economization of higher education." A "welfare state" was quickly formed in both countries (Doret & Manifet, 2017; Bongrand, 2021). Indeed, according to the authors, it is a matter of "promoting education as a lever for economic policy." In France, we are witnessing vast transformations in higher education, marked first by the democratization of higher education, which was once elitist. This "democratization" is thus inseparable from the economization of the educational institution. In fact, the reform attempts to adjust the structures and operating methods of the public education service to the anticipated evolution of needs for qualified personnel. It is in this perspective that the Berthoin decree of January 6, 1959, the official kick-off of the reform, urges "investment to full benefit" in school, presented as an instrument capable of converting "human expansion" of the baby boom in "economic expansion 21" (Bongrand, 2021). This movement led at the end of the 1960s to the equating of training with employment in administrative nomenclatures.

The more recent Chinese experience (1980 to the present) is not an exception, in fact professional higher education has become "a pragmatic strategic choice which aims to take into account the main national characteristics". The government ensures its management and promotion. To this end, we note the launch of the construction of 100 professional higher education establishments in 2006 following a decision by the state council. Training is therefore oriented by the planning of the economy, and its design with industrial and commercial players as co-actors. (Yang and Lin, 2016). Indeed, professional higher education constitutes an exceptional alternative to higher education. It even tends to replace the latter by displaying an access rate of more than 50% of all national students in 2020 and constantly increasing.

Student-Driven or Student Orientation

Students' orientation will be defined as the degree to which universities try to consider the current and latent needs of their students (current and potential, and in a more extensive sense, their parents). Consistent with the Malcolm Baldridge Criteria for Education and based on the roles stated above, this orientation implies both the learning process and students' satisfaction. Students are the most cited stakeholders in the literature (eg: Bugandwa, 2013; Hammond, Webster, & Hammond, 2020; Dollinger & Vanderlelie, 2020; Muya, & Tundui, 2023). They play a vital and complex role in the existence and functioning of higher education institutions (Hammond, Webster, & Hammond, 2020). First, students constitute the raw material when they are admitted to higher education. Educators should then

use training and practice to produce well-trained and virtuous citizens. At this level, students' satisfaction is not a valid measure, because the end customer is society (public and private companies, educational institutes, hospitals, etc.). Thus, customer orientation applies here is not for the student but to other stakeholders who intend to use the students' skills (Aghajari, & Varij, 2023). Furthermore, students are actors in learning and co-producers of knowledge because they combine their efforts with those of the institution and those of the trainers to produce a particular finished product - themselves (Dollinger & Vanderlelie, 2020). In addition, they participate in the training process through their skills, and through the training previously acquired, and through their diligence.

From the previous analysis, the complexity of the role of students in their relationship with higher education institutions clearly emerges. However, it has the advantage of showing us that student orientation takes on meaning in higher education and can be conceptualized both in terms of students' satisfaction and in terms of improvement of learning (Meia, Stumpf, & Garessus, 2021). Little attention paid to students' requests reflects an asymmetry between training staff and learners (Serres, Escalié and Magendie, 2019).

According to the literature, everything suggests that student orientation was not a priority for higher education systems during the "Thirty Glorious Years" period. One of the justifying reasons can be found in the fact that the revolution in professional training was first carried out by young people, particularly in the departmental circles of young farmers aged 15 to 30 for whom young people must become apostles of knowledge, that is to say, "make training desirable" (Bongrand, 2020, p 40). Knowledge is then considered by the latter as the pivot of tomorrow's agriculture.

Indeed, according to the Chinese vocational training system, a modern vocational training system is not only one aligned with economic development but also one that "prioritizes student-centered development" (Yang and Lin, 2016, p. 148). However, this trend is quite recent, since around 2016, the training system was previously centered on the national strategy for balanced development. It therefore initially relied on the regional growth policy, the industrialization plan as well as small and medium-sized businesses in rural areas or booming activities in third- and fourth-tier cities (Jiang, 2015).

Enterprise Orientation

The role of companies in HEIs is perceived according to the literature in three main points: they are the first users of higher education products (training and research). They can be considered clients of these institutions through research contracts and lifelong training (Aghajari, & Varij, 2023). They are players in training thanks to internships in companies and the growing development of professional sectors which require their expertise. Thus, relations between higher education establishments and businesses go beyond simple financial relations, which means that companies are considered undeniably important stakeholders (Bugwanda, 2013).

For the two examples of development illustrated in this work, business orientation is an important dimension of professionalization in higher education. During the "Thirty Glorious Years," the transformation of the social role of school and the functionalization of the latter resulted firstly from increased investment on the part of industrial and agricultural circles (Bongrand, 2020). For companies in the 1950s, it was then a matter of integrating the "Training Within Industry" principle from the American economy. This principle is the basis of current life-long training. In China, businesses are the second pillar of vocational training after national development policy (Jiang, 2015). In 2014, President Xi Jinping reiterated this again in these terms: "We must continue the integration of production and education, cooperation between enterprises and establishments, the combination of work and study and the unity between knowledge and action, but also lead the community, especially industries and enterprises, to actively support vocational training and strive to build a vocational training system with Chinese characteristics." (Yang and Lin, 2016, p. 149).

Competition Orientation

The opening of education to the private sector as well as the globalization of education have brought with them the birth and growth of the concept of competition within higher education. Educational paths for an increasingly large proportion of students include an experience abroad (Moulin, 2022). These recent and profound transformations in higher education have the effect of fueling increased competition between students, between establishments and between national higher education systems. This competition, according to the authors, can be identified along three axes.

First, competition between higher education institutions in the same geographical area mainly linked to the democratization of higher education (Bongrand, 2021). Second, competition between national higher education systems and between institutions on an international scale. Indeed, with the globalization of higher education and especially the harmonization on an almost planetary scale of educational systems as promoted by the LMD system, educational paths are marked, for an increasingly significant part of students, by an experience abroad. Universities must now demonstrate their performance (university ranking) to attract the best minds or recruit internationally. Competition on an international scale therefore takes the form of rivalry sometimes in terms of performance (best rankings on a regional or international scale), sometimes in terms of marketing tactics to attract new recruits (awareness raising, promotional recruitment policies, etc.) (Bugandwa, 2013). The final form of competition is competition in the virtual market. It takes shape with the evolution of Information and Communication Technologies (ICT). It mainly targets the continuing education market. Competition orientation therefore requires full awareness of this state of competition between universities and between national higher education systems.

The competition orientation is perceived in terms of competition between national higher education systems. A large part of the literature on the Chinese higher education system reports that Chinese professional higher education constitutes a unique contribution to the global education system (Jiang Dayuan, 2015). This professional education then constitutes an "inimitable source of vitality" for higher education (Yang and Lin, 2016). For the period of Thirty Glorious Years, the question of institutional competition resulted only in the concern for the various governments to keep their workers in regional growth zones (Bongrand, 2021).

Employees Orientation

The importance of employees in creating superior market values has been demonstrated in traditional Market Orientation literature (Khan, Khan & Rafique, 2023). Employee satisfaction is defined as an organization's intention to serve the interests of its employees and meet their needs. (Yau et al., 2007 cited in Bugandwa, 2013). In all organizations, especially service organizations, employees represent the cornerstone of the success of any strategy. To improve the quality of education, universities must encourage staff interactions with students. The satisfaction of the latter may also depend on the way in which non-academic staff organize their services in the different departments. The importance of teaching staff in higher education has been demonstrated along at least two lines.

First, the quality of training depends mainly on the teachers and employees of an establishment. Indeed, several studies on student satisfaction and the qualitative perception of training have shown a correlation between the latter and the well-being of administrative staff and that of professors in an establishment (Serres, Escalié and Magendie, 2019). This result is, however, tempered because other studies affirm that students say they are satisfied with a teacher when the teacher pays attention to their difficulties and makes efforts to help them assimilate the course (Dollinger & Vanderlelie, 2020).

Students' perception of academic performance then depends on the relational climate with the teachers and staff of the establishment. Doctoral research carried out on students from 11 Tunisian universities demonstrates that organizational commitment has a significant impact on perceived quality (Bugandwa, 2013). Indeed, according to these authors, organizational commitment is an antecedent of perceived quality in higher education.

Inter-Functional Coordination

Cross-functional coordination involves a clear understanding and smooth flow of information about key stakeholders' expectations and organizational beliefs, culminated by communicating these expectations through formal and informal means (meetings, brainstorming, etc.) to all members of the organization (Bughanda, 2013). This assumes that the process of creating stakeholder value is not the work of a single function, but rather the entire organization. This consideration is very clearly in line with that of Kohli and Jaworski (1990). Ultimately, it is about improving the way in which the educational organization is supposed to respond to its market. It also refers to the sense of shared values and beliefs and their relationship to achieving organizational goals. Cross-functional coordination involves the degree to which information about stakeholders and the macro environment is shared across the organization.

Responsiveness

This last dimension of market orientation in education is not really a dimension. It corresponds to the culmination of the first six dimensions and consists of the response, in terms of training architecture and the higher education training system, to the needs of society represented by the main stakeholders (Dwyer, 2022). As presented in the literature, this last point refers to the dimension of responsiveness as defined by Kohli and Jaworski (1990). Higher education can no longer evade its essential mission of responding to the needs of society (Bughanda, 2013). Furthermore, it is necessary to clarify that, more than any other organization, higher education institutions should not limit their actions to responding to external pressures. Instead of being subjected to such pressures and suffering the consequences, they are encouraged to act proactively in their environment. This is particularly important for higher education institutions, as students and other stakeholders may misunderstand their needs (Aghajari & Varij, 2023). Higher education should strive to change the behaviors of stakeholders, such as explaining to students the quality requirements in higher education, helping them understand their role in the learning process, etc. They can then base their initiatives on the vision of overall national policies in terms of medium-term needs of the national labor market.

In summary, the response to the professionalization of higher education in a logic of adequacy between training and employment is mainly driven by the national vision of the human capital needs of the various economic sectors. The two examples taken for this work confirm this reflection. Conceptually, this first position can be seen as an orientation towards political decision-makers. This initial orientation toward political decision-makers makes it possible to specify the areas of activity to be prioritized in the professionalization strategy as in the case of China (Yang & Lin, 2016). It will be followed by orientations towards the other stakeholders mentioned above (enterprises orientation, educational staff orientation, competition orientation, student orientation) in order to support and improve the content of the programs and use of appropriate pedagogy. Functional coordination will determine the capacity to distill the objectives pursued within all the actors and at all functional levels and to generate an adequate response at all levels of the overall training structure.

Are we ready for global harmonization of higher education?

We have theoretically analyzed what the professionalization of higher education refers to. In short, it is about adapting to one's political and economic environment. For some, it is about the economization and functionalization of higher education (Bongrand, 2021). For others, it is about preparing students by integrating production, teaching and research in the service of development and employment (Yang & Lin, 2016). Nkuitchou (2022, p.518) further demonstrated that we cannot talk about the same human capital in two environments where the stages of economic development and the growth objectives are different. Ultimately, African countries would benefit from working on defining a higher education system representative of its values, culture, and economy.

Conclusion

Since independence, the main mission of higher education for sub-Saharan African countries has been the response to personnel needs as determined by public policy. However, with a view to aligning with international developments, this primary vocation of African universities has been qualified by a certain number of logics which are however not necessary for the economic and social construction of our nations. Throughout this article we have argued that, in fact, in a logic of growth as expressed by most countries of sub-Saharan Africa, higher education has remained a tool for the construction of human capital necessary to achieve societal objectives. The ambition for professionalization, as stated by the educational authorities, finds its full meaning. However, it lacks implementation in the daily experience of higher education institutions. The concept of market orientation as stated above lays some foundations. Overall, the implementation of a market-oriented culture within professionalization objectives, involves:

1. Understanding national development objectives and their translation in terms of human capital needs; this first step is qualified as orientation toward policy makers.
2. Selection and integration into the definition, implementation, and monitoring of training content of companies whose activities are close to national priorities which can be call Enterprises Orientation.

3. The popularization of the quality of training planned or implemented to captivate and retain students name Competitor Orientation.
4. The promotion of the teaching staff as well as the progressive and controlled integration of comments from students and their parents seen as Teacher and Student Orientation.
5. All this is supported at each stage by excellent inter-functional coordination.

The examples used in this work without pretension of exhaustiveness contribute to demonstrating that a synergy of actions as defined above will allow higher education to offer a response adapted to the expectations of society. As economists point out, African economies, mainly in sub-Saharan Africa are mainly made up of informal businesses which create significant obstacles to the continent's development challenges (Nkuitchou, 2020). This dissonance is supported by chronic under-industrialization, a still rudimentary agricultural system. Faced with these economic issues, should the professionalization system adapt to its informal economic environment? or should it be aligned with growth planning which is sometimes limited to the sole description in documents?

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The Transformative Nature of Graduate Education

Elizabeth Contreras[1] and Laurie Bedford[2]

Abstract

Doctoral education is a complex and sometimes intimidating process. However, it is also transformative. Transformational Learning Theory, developed by Mezirow in 1991, helps to explain how graduate education is transformative through embracing education in a cognizant and reflective way. Transformational Learning Theory states that learners change the perception of their experiences and interpret it differently as they progress in their learning. By helping students connect with the school community, their professors, and their own metacognitive process, Transformational Learning Theory helps explain the evolution students go through as they progress through doctoral programs. Written as a personal reflection on the transformative experience of doctoral education, this article explores Transformational Learning Theory in a real-world, practical manner, providing helpful strategies to apply the Transformational Learning Theory to the doctoral education experience, helping doctoral students embrace their own transformation.

Keywords: *Transformational learning, Graduate education, Doctoral students, Growth mindset, Discourse- reflection cycle*.

What does it mean to earn a doctorate? Does it mean to develop expertise in one specific, narrow area of a dissertation study? Does it mean to grow as an academic and evolve in one's academic acumen? Does it mean to contribute to the scholarly community and join the discourse of researchers in the world of academia through unique research that fills gaps in the overall intellectual knowledge base? Does it mean to acquire more qualifications that enable the progression to university professor or academic? Put simply, the doctoral experience and the process of earning a terminal degree is a combination of the answers to each of these questions and because of this is naturally transformational. I knew as a child that I wanted to earn a Ph.D., but it was not until thirteen years into my career as an educator that I finally achieved this ambition. What I discovered is that at its core, the doctoral journey is one of transformation. I began my journey with one interpretation of what it meant to be earn a doctorate and when I finished, I realized it was a much deeper experience than I had expected. My intention in this article is thus to examine and evaluate my experience in the doctoral journey and true growth that came once I embraced the transformational nature of the doctoral journey. In this article, I will relate my own experiences and reflection as a doctoral candidate. I will examine the discourse-reflection cycle, the need for community, and the best practices that assisted me in transforming from an educator with a master's degree to a doctor with a Ph.D. By juxtaposing my experience with the Transformational Learning Cycle, I will endeavor to help the novice doctoral candidate understand that the doctoral and dissertation process is transformational in nature and how to best embrace this philosophy.

Full listing of authors and contacts can be found at the end of this article.

Transformative Learning Theoretical Framework

Transformative Learning developed by Mezirow (1991, 1998) is the process of evolving assumptions and interpretations of a student towards their learning and is based on the experiences the learner goes through. Transformational learning according to

Mezirow (1998), evolves as a series of frames of reference that change based on the experiences of the student. The theory is based on the idea that students interact with their professors and fellow students in a discourse reflection cycle that helps inform the student's understanding of their learning. This is encapsulated in the Transformational Learning Process (Mezirow, 2000). According to Mezirow (2000) in the beginning of the process, students experience a disorientation phase in which they may feel confused or overwhelmed. When the student becomes self-aware, they progress to self-examination, assessment, recognition, and exploration. Once these stages are complete, the student's interpretation of their experience changes and they enter into a more proactive stage of planning a course of action. Once complete, the student begins to actively, and consciously acquire knowledge and begin to try out different roles. This leads to the stage of developing self-confidence. Finally, the student reintegrates into the process as they start a new stage in their development and the process begins all over again. This process helps the student to grow and transform as they progress from a stage of disorientation to self-confidence. This process, according to Mezirow (2000) is best facilitated when students engage in a discourse-reflection cycle. This involves interacting with professors and classmates productively and using their feedback to reflect on the learning experience. Such community connections help to form the basis of an inquiry process in which the student actively participates in meaningful research and reflection. Through the community connections, discourse-reflection cycle and inquiry process, students develop a growth mindset. This mindset helps them to become conscious of how their interpretations of their experiences have changed and the transformative process is complete.

Transformational Learning Cycle

To begin, I will review my path to the doctoral program to establish a foundation for how the doctoral process was transformative.. I earned my master's degree in history in 2004 at the age of 22. I decided to start working as a teacher instead of continuing my education. Ten years later, I determined that it was time to go back for my doctorate. However, the ten-year furlough in my education was long enough that when I went back, the systems had changed. Instead of a face-to-face program, I determined an online program worked best for my needs and I had to adjust to the unique nature of online learning. Between finishing my masters and starting my doctorate, the nature of education had changed, and I had changed as well. My interpretation of what I needed in a program had transformed from wanting a face-to-face program as in my masters to deciding on an online program for my doctorate. So too, I found the writing and citation format of APA instead of Chicago, the nature of research, and even the generally acceptable sentence structures were vastly different from what I was accustomed to coming from the world of history. I entered my doctoral program with a master's in history, and as an accomplished educator but realized that I was very much a novice researcher. My interpretation of where I was, as Mezirow's (1998) theory illustrates, had altered. I quickly recognized I would need to grow, evolve, adapt, and change. In simple terms, to be successful, I would have to transform. When I realized this, my progress in the doctoral program increased and I found it highly rewarding. It was clear that the feedback from professors on papers, the assignments I completed, and every interaction was part of the transformational process, taking me from accomplished educator and master historian to scholar and academic. Through their feedback, I was able to grow and my interpretation of what I needed changed to one of seeing every interaction as a constructive one and part of my process of growth. Transformative learning, according to Mezirow (1998), is based on the evolving interpretations and assumptions of the student as they progress through the program.

It is for this reason that the Transformational Learning Theory is so important for doctoral candidates to understand. Transformational Learning Theory, developed by Mezirow (1991) is based on the idea that learners' interpretations of their learning experiences evolves and changes as they progress through their educational journey. It helps to explain the nature of doctoral education as a process of evolution and metamorphosis. Thus, before examining how it relates to the doctoral process and my own journey, it is essential to understand what Transformational Learning Theory is and how it helps to shape the doctoral process. Transformational Learning Theory was developed by Mezirow in 1991. Based on a constructivist paradigm, Transformational Learning Theory provides insight into the process that doctoral candidates go through in that it helps explain how developing expertise, growing as an academic, and

taking the important step of entering the world of university research are evolutionary processes (Craig et al., 2001; King, 2002). In this lens, doctoral education is viewed as the process of gaining professional knowledge and skills that the individual can use to enhance their practice and the discipline. In other words, the doctoral candidate transforms from a master in their respective field to a scholar-practitioner by absorbing new ideas, information and experiences. Their interpretation of what they need and how they view themselves in the process grows and changes. The transformational nature of the doctoral program, is therefore, inherent in the doctoral journey.

However, beyond the cognitive experiences, doctoral education should also result in a personal transformation that includes shifts towards expanded consciousness and professional emotions (Stevens-Long, et al., 2012). This means that as the student progresses in the doctoral process, their interpretation of what they need and how they see their journey changes. While there are many macrostructures that define the doctoral and dissertation process (Anderson, Alexander, & Saunders, 2020), such as enrollment and writing proficiency requirements, a primary consideration is that while doctoral candidates may conduct and publish a formal study in their dissertation, the process is what facilitates transformation. The doctoral candidate is in a state of evolution or transformation, learning the processes necessary to become a contributing member of the academic community and in this process interpreting and reinterpreting how they view their experience. The doctoral candidate, upon entering the doctoral program, or even when defending their dissertation is not expected to be perfect. What is essential is not the flawlessness of the journey but how the process of working conducting research that culminates in a completed dissertation helps the doctoral candidate build the skills necessary to practice at a higher academic level. The dissertation process, like doctoral course work and the experience as a whole, is a training process meant to assess how adept the doctoral candidate adapts to circumstances, meets challenges, and solves complex problems. It is the ability to adapt, evolve, and respond that is both evaluated and at the center of the transformative process because it helps students to grow (Steven-Long et al., 2020). When doctoral candidates understand this, they can reflect on the learning process and become conscious of how their interpretations of their growth has changed (Mezirow, 1997), ultimately making the transition from apprentice researcher to advanced scholar (Garcia & Yao, 2019).

Discourse Reflection Cycle

When I began to consciously evaluate how my interpretation of my experience was changing, and was thus able to see the doctoral process as one of transformation, I was able to make real gains in my own knowledge base and develop a perspective that enabled me to grow. When I was younger, getting my master's degree, I was wedded to the words of my thesis and each time my Chair gave me advice and constructive criticism, I was offended and felt that he was judging the merits of my paper and my worth as a scholar and writer. However, when working through the doctoral program, it was clear, after ten years as an educator, that my professors, in providing me feedback were not judging my academic merit or criticizing my worth as a scholar but were instead attempting to guide me through constructive criticism to hone my understanding. This epiphany helped me to understand this as transformative experience. My interpretation of the writing process transformed as per the Transformational Learning Theory. I realized that if I were to reflect upon the feedback and discourse with professors, I could grow and develop competence in my ability to conduct rigorous academic research. This discourse-reflection cycle, when viewed through the lens of Transformative Learning as described by Mezirow (1991), assisted me in making the most of the discourse with my professors and assisted me in gaining the skill set and foundation necessary to embark upon my dissertation research. Without this frame of mind, my outlook would have stayed fixed and while I may have successfully completed my dissertation, I would not have made the gains necessary to join the academic community. But, by becoming conscious of my the transformative nature of my experience and by embracing feedback and using it to grow, my mind was open to change, and evolution was inevitable. Not only did I complete my dissertation, but I absorbed a wide variety of ideas, techniques, and methods from my various professors and developed a strong knowledge base from which to start my life as a professional at the doctoral level.

Therefore, what is the discourse-reflection cycle and how it is informative to the doctoral candidate and fit into Transformative Learning Theory? As candidates begin in the doctoral program, they are often unfamiliar

with academic processes. To help them become conscious of how their experiences inform their interpretation and reinterpretation of their learning and transform into scholars capable of conducing strong research, support from faculty is essential. Discourse and guidance from professors help doctoral candidates to successfully learn the research procedures and processes as well as write and present their findings in the way deemed acceptable by the academic community. The discourse-reflection cycle can happen when doctoral candidates converse through email, virtually or in-person with professors. It can also take place with other members in the university community. The key is that the initial interaction is followed by reflection about those conversations. The intent is for the doctoral candidate to take the advice and critiques provided and use them to reflect on where they are and where they need to go in their doctoral journey. Through communication and reflection, doctoral candidates draw on previous experiences to make meaning of new practices through constructivist discourse and reflection. During this process, doctoral candidates learn from the guidance of professors as well as their peers. By interacting with other doctoral candidates with shared needs and common goals, the doctoral candidate finds support, guidance, and inspiration. This can act as a catalysis for doctoral candidates to engage within the discourse reflection cycle and to internalize the meaning of each new experience and by doing so the student's interpretation of their learning process and their experiences as a student transforms (Swaggerty & Broemmel, 2016).

The key, however, is that communication is a purposeful and conscious reflection embedded in the process (Swaggerty & Broemmel, 2016). If the doctoral candidate does not value the feedback of professors and reflect upon it, the discourse reflection cycle may not occur, and transformation may be stymied. Reflection must focus on what is gained and how it helps the student to grow and change. Thus, emphasis on purposeful communication and thoughtful-conscious reflection are key to doctoral candidates being able to successfully complete the discourse reflection cycle and use it as part of their transformational process.

As related previously, embracing the discourse reflection cycle helped me embrace the transformational process. When I realized that the feedback was constructive in nature and that conversations with tutors, members of the IRB, and professors could help me to better understand not only the expectations but also the mechanisms at my disposal to complete my program, I was able to make great gains in my doctoral journey. By viewing each conversation as an opportunity to grow and useful to my development, my reflection was purposeful and deliberate. I took notes on feedback suggestions and used those notes early in the program for my next assignment and later in my dissertation as my guide for what I needed to do and include in my research. By using the discourse reflection cycle in this way, I was aware of how my interpretation of my learning and growth. This made the transformation from competent educator with a master's degree in history to a Doctor of Education. However, beyond the credential, I learned the process of researching and writing on the doctoral level, something that is and will continue to be a benefit in my journey as it continues into the world of academia.

The need for community connections

As intimated above, an integral part of the transformational process and an imperative aspect of the discourse reflection cycle is the need for community connections. Whether in a face-to-face or online program, doctoral candidates must become part of the university community. According to Cranton (2016) humans are by nature communal and developing strong communicative knowledge helps people within a community to understand the social norms, values, and code of beliefs within the community. Once graduated, doctors join a much larger academic community of fellow doctors and researchers, and this understanding of the importance and value of this community is essential to a successful doctoral program and dissertation process (Dowling & Wilson, 2017). Having a community helps doctoral candidates and new doctors to make purposeful connections. These connections help the individual to grow and change, this transformation, especially when deliberate and thoughtful changes the interpretation of the individual towards their experience. Many doctoral candidates, like myself, are enrolled in online doctoral programs (Garcia & Yao, 2019). In my experience, the connections made through the university community were not only integral but an essential aspect to my success in the program.

However, the unique nature of online learning can create barriers to participation in this community and can lead some doctoral candidates to not realize that a community exists. Because of the barrier of time and distance, online doctoral candidates can feel a disconnect between themselves and their professors

and other classmates (Sekulich, 2020). The ability to engage with professors and other doctoral candidates may be limited. This then disrupts the discourse-reflection cycle since the doctoral candidate is not as easily able to engage in dialogue with others in the academic community. This lack of connection can undercut the efficacy of the reflection process. The doctoral candidate may begin to garner a negative self-perception of themselves as a student and their transformation can progress in a negative manner. While the doctoral candidate may still be able to reflect on their journey, without the ability to see how fellow doctoral candidates are experiencing the doctoral program, online doctoral candidates can lose the social connections and the perspectives those provide that are a natural part of the traditional brick and mortar university. As Cranton (2016) explained, when students and professors communicate regularly, students feel more empowered and are better able to make use of the skills, knowledge, and information they need in order to be successful. However, professors often expect online doctoral candidates to initiate contact, while doctoral candidates feel a greater need for support (Sekulich, 2020). This discrepancy can leave doctoral candidates feeling unsupported in their efforts (Ray, et al, 2019). Such feelings of social isolation, while often more pronounced for international doctoral candidates, can impact all doctoral candidates, resulting in negative academic and personal learning outcomes (Ray et al., 2019). Subsequently, these experiences may interfere with a doctoral candidate's ability to successfully experience a positive transformational process and result in stagnation as a beginning scholar (Swaggerty & Broemmel, 2016).

Therefore, in the online environment, allowing time for both synchronous and asynchronous collaboration is helpful in bridging this gap and helping the doctoral candidate to feel the support needed (Swaggerty & Broemmel, 2016). When virtual interactions take place, doctoral candidates are better able to engage in critical reflection since they can broaden their perspective and help them become aware of their changing interpretations. They also learn from other doctoral candidates and benefit from the knowledge of their peers and professors. The discourse, although virtual is key to a successful online program. According to Swaggerty and Broemmel (2016), when doctoral candidates work closely with professors, whether in an online or traditional program, they are better able to understand the process and their sense of self-efficacy increases. They also can better engage in reflection, deepening their own connection with their learning and broadening their perspective. Cranton (2016) also explained that students in an asynchronous online discussion setting often are able to engage with peers in a more meaningful and personal manner in an online setting, allowing them to be more forthcoming with their struggles or feelings since they are not talking to people face-to face. Cranton (2016) referred to this as the "stranger on the train" phenomena and explained that because students in an online setting do not know their classmates and cannot see their face, they may be more likely to share information that they would otherwise keep private. This freedom to explore topics and feelings in a more open manner leads to greater reflection and can help students embrace the transformative process. Through interaction their interpretation and reinterpretation of their learning grows, leading them through the process of change inherent to the Transformational Learning Theory.

Doctoral candidates additionally benefit from opportunities to engage with other doctoral candidates and professors in synchronous face-to-face meetings and asynchronously through community forums, emails, or discussions boards, (Alexander et al, 2013). This ability to connect with and find mentors in professors can help the doctoral candidate in the discourse reflection cycle as well as the transformative process. Ultimately, when doctoral candidates work with professors in a mentoring relationship, they are more likely to experience holistic success since they can share ideas, discuss and evaluate their dissertation journey as a transformative process (Sekulich, 2020). By proactively seeking opportunities for community engagement, doctoral candidates can better develop a sense of meaning in their research and develop a strong sense of self-efficacy. This enables them to reflect in a meaningful manner and embrace the transformational nature of the program. As their interpretation of the process becomes reflective, they are better able to make meaningful gains in their academic progress.

Reflecting on my own experience, it took some time for me to realize that a virtual community existed at my university. I found, as Sekulich (2020) intimated, that my professors, while sending an automated welcome email and providing a welcome video on the homepage of the course, waited for me to reach out and establish contact. In the earlier courses, I did not engage with my professors or other doctoral candidates in any real meaningful way and my connection to the experience

was limited. However, by my second semester, I had realized that a community forum existed in the form of online discussion boards. I also discovered that professors and other school personnel held regular webinars and the tutoring center was available to assist with most any question from statistical analysis to writing help. When I started taking advantage of these outlets, my growth as a budding doctoral candidate became more substantial and I was able to better reach out to professors, engage with them, ask questions, and then use those interactions to help strengthen my own knowledge base. I became part of the virtual community and especially when writing my dissertation, this community was an integral part of my success since it enabled meaningful discourse and reflection which enabled true transformation. By becoming part of the community, I changed from simply going through the motions to being aware of how my interpretation of my experience was changing as part of the Transformational Learning Theory.

Strategies for Success

In order to help facilitate the transformational process and find success in a doctoral program, in addition to what has already been discussed, doctoral candidates need to be aware of certain strategies or best practices to help facilitate their learning. The first of these are research skills. Dowling and Wilson (2017) explained that when research skills are the focal point of a doctoral program, doctoral candidates are better able to hone their researching skills and develop the skill set necessary for successful completion of the dissertation. It is helpful when the program focuses on helping doctoral candidates understand how to write research questions, develop strong hypotheses, write up findings, and craft a strong literature review. Arsian-Ari, et al. (2017) explained that doctoral candidates are more successful when research skills are the focus early in the doctoral program and carried throughout until the dissertation. This enables the student to grow and their understanding of the writing and research process changes. This change is an inherent element of the Transformational Learning Theory. Therefore, when choosing a doctoral program, doctoral candidates should find programs that emphasize the research skills necessary to help them develop the skill set needed to complete their dissertation. However, if already committed to a doctoral program that may or may not focus on such skills, doctoral candidates can use each research assignment and project as an opportunity to develop their research abilities. By engaging with every assignment as if it were the dissertation, putting the same level of care and detail into it, doctoral candidates can, as the adage goes, practice as they play and thus when they arrive at the dissertation are better able to understand the task before them and can progress through it easier and more successfully.

To enable research to be effective, time management is also an essential tool. Time management is, in my opinion, the single most important aspect of a successful doctoral program. As Alexander, et al. (2013) asserted, developing a work-life balance can be difficult for doctoral candidates. The doctoral program is rigorous, demanding and can consume a great deal of time. Oftentimes, doctoral candidates can become overwhelmed by the process and devote too much time to it, neglecting self-care and burning out early, or they procrastinate the important tasks needed to complete a successful program and draw it out indefinitely. To alleviate either extreme, developing a work-life balance and good time management skills are necessary. In my case, I completed my doctoral program while still employed full time. I could not, therefore, devote the entire workday to my doctoral studies. As such, I set aside the first two hours of everyday to my doctoral studies. Upon waking each morning, I spent two hours working either on my course work or my dissertation. While during the execution of my study for my dissertation I spent more time in the field conducting surveys, I kept very strictly to this two-hour time frame. When the two hours ended each day, I saved my work and closed it. Key to this, however, was that during those two hours, I did not focus on anything else. I closed off email, silenced my phone, and concentrated only on my doctoral studies. This hyper-focus allowed me to work efficiently while internalizing the information needed to grow and transform as a doctoral candidate. I did not deviate from this strict routine and because of it, I finished my doctoral program in three and a half years. By making a conscious routine, I was aware of how the routine impacted my progress and changed it accordingly. Effective time management can, therefore, relieve stress and change the interpretation of the doctoral process from one of stress to one of growth. This is a key element to the Mezirow's (1991) ideas.

Within both strategies introduced here, key to both was support from professors and reflection. Mentoring, according to Dowling and Wilson (2017) and Alexander

et al. (2013) is key to helping doctoral candidates develop strong research skills and time-management skills. When professors share with doctoral candidates their strategies in both areas, doctoral candidates are better able to reflect on their own needs, strengths and areas of growth and can make the necessary adjustments to become successful researchers who can manage their time effectively. Added to this, reflection is key. When doctoral candidates engage in the discourse-reflection cycle to facilitate their development of an effective study schedule and research regimen, they are better able to see where they are successful and where they still need to grow. Honing one's skills as a researcher and paying attention to time management are inherent parts of the Mezirow's (1991) transformative process and help budding doctoral candidates to be successful.

Conclusion

Circling back to the opening questions, what does it mean to earn a doctorate? Does it mean to develop expertise in one specific, narrow area of a dissertation study? Does it mean to grow as an academic and evolve in one's academic acumen? Does it mean to contribute to the scholarly community and join the discourse of researchers in the world of academia through unique research that fills gaps in the overall intellectual knowledge base? Does it mean to acquire more qualifications that enable the progression to university professor or academic? When considering what it means to become a doctor and what it means to traverse through a doctoral program, transformation is inherent.

In my experience, the transformative process was propelled by seeking out connections within the university community and engaging in active, conscious, and critical discourse and reflection. This was assisted by developing strong time-management skills and balancing the demands of the doctoral process in a way that maximized my time spent studying and enabled me to make the critical steps necessary to transform from an educator with a master's degree to a doctor.

What is key, however is that this process of transformation, once discovered is evident in every step forward as an academic. To answer the opening questions progressing through the doctoral process should be done through open and conscious reflection. The candidate should be aware of how their interpretation of their progress is evolving and changing. If they do this, they can better reflect on the process and grow as a professional. Once entering the post-doctoral world, the new doctor continues to transform. I have found the Transformational Learning Theory especially helpful in describing this. Transformation does not end with graduation but defines every new development and evolution that one undergoes as one grows as a doctor.

By embracing the doctoral experience as one of transformation, I have been able to continue to consciously evolve and transform in my post-university life and will continue to do so. By examining the doctoral journey as one of transformation born through community engagement, discourse and reflection and strong research and time management strategies, one can become successful not only within the confines of the university and its program but afterwards as well.

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English as Foreign Language (EFL) Teaching and Learning in Cameroon: Decolonizing Francophone Teachers' Minds

Clement Kouam

Abstract

This article makes an argument for Francophone EFL (English as Foreign Language) teachers in Cameroon to recover from the 'Ukolonia' syndrome (Bokamba, 2011) and to use the indigenised variety of English as the model for teaching and learning instead of continuing to target the Standard British English accent. The study shows that the attempt to use an Inner Circle accent as a model leads to hypercorrection and limited fluency on the part of the learners. On the other hand, the use of the indigenised variety as a model by a few Anglophone EFL teachers results in better proficiency. The arguments are supported by (1) a questionnaire survey of 50 Franchophone EFL teachers, (2) classroom observation carried out in ten EFL classes five of which were conducted by Anglophone teachers and the other five by Francophones, and (3) the analysis of curriculum documents for teacher education. The study is underpinned by Bokamba's (2011) Ukolonia theory and Kachru's (1985) World Englishes framework. The paper argues that a decolonization of Francophone EFL teachers' mindset and the replacement of Standard British English by mainstream Cameroon English can enhance the EFL teaching/learning process significantly. The findings and the recommendations provided also constitute a good material for innovation in EFL teacher education and in classroom practice.

Keywords: *Cameroon, Cameroon English, Received pronunciation, EFL teaching/learning*

The Sociolinguistic Context of Cameroon

Cameroon is a multilingual country with 273 living indigenous languages (Eberhard, Simons, & Fennig, 2023) and numerous foreign languages, two of which (French and English) are colonial legacies inherited from the Franco-British colonial rule. Located at the intersection between West and Central Africa, the Republic of Cameroon is a blend of former East Cameroon (French colony from 1916 to 1960) and former West Cameroon (British colony from 1916 to 1961). While the former has remained essentially Francophone, the latter continues to be a dominantly English-speaking area. Although Cameroon had for long been a German protectorate (1884-1916) before the taking over by France and Britain following their victory over Germany during the First World War, the impact of the German language in the country is insignificant as compared to that of French and English. Besides being the most important *lingua francas* for both intranational and international communication, they are the only of ficial languages of the country. In the partitioning of the war trophy, Britain obtained one-fifth of the Cameroonian territory composed of two discontinuous strips of land along the Nigerian border while France acquired the remaining four-fifths (Echu, 2003).

The two colonial powers adopted different modes of administration in their colonies. Interestingly, many current developments in English in general and in attitudes and pedagogic concerns in particular are still a reflection of the colonial systems that were practised. For instance, despite the current scramble for English in the French-speaking part of Cameroon, Francophone EFL (English as Foreign Language) teachers' attitude still clearly shows their preference for the far-fetched Standard British English accent to the detriment of the more attainable Cameroon English model. Though other factors (e.g., variation in curriculum content for EFL and ESL teacher education) may come into play in accounting for this attitudinal behaviour, the French colonial system of indirect rule that attempted to create an idealised Europeanised African appears to be one of the tangible explanations.

Full listing of authors and contacts can be found at the end of this article.

Training and specificities of EFL and ESL teachers in Cameroon

Most Cameroonian teacher training colleges devote two series to the training of secondary and high school teachers of English, namely the English Modern Letters series and the Bilingual Letters series. While the former is overwhelmingly dominated by student teachers with an Anglophone background, Francophone students dominantly constitute the latter. Upon completion, graduates from the Bilingual unit are transferred to secondary and high schools to teach English and French as foreign languages (EFL/FFL). On their part, those from the purely English division serve as ESL (English as a Second Language) teachers. However, given the extremely large number of the Francophone student population, some ESL teachers are often solicited for the teaching of EFL.

The observation stage of the study showed that while ESL teachers' efforts are geared towards the upgrading of learners' communicative skills through indigenized Cameroon English, most of their Francophone EFL colleagues waste precious time, energy and resources targeting near-native English speech appropriation by the Francophone learners. Unfortunately, their efforts do not yield the expected results as they themselves do not master the native accent they want the learners to acquire. In other words, Francophone EFL teachers jeopardise the EFL teaching and learning process with hypercorrection, resulting from their unattainable goal to sound British or American. This paper seeks to explain the strong attachment of Francophones to native English speech, examine the consequences of this phenomenon on the EFL teaching and learning process and suggest solutions to the problem.

There seems to be a close relationship between the colonial modes of administration in the two parts of Cameroon and the attitude of English users towards English. While the French system of assimilation exposed Francophone Cameroonians to standard French, the British policy of indirect rule rather promoted an educational policy that deviated Anglophone Cameroonians from standard English. This is confirmed by Simo Bobda (2004) who equates the British policy to "linguistic apartheid'' and Bokamba (2011) who notes that the French, unlike their Belgian, British and German counterparts who appeared to be largely circumspect regarding their assimilation objectives, were very explicitly eloquent, with education as the means par excellence for achieving them. Thus, the attitude to accent in teaching French in Cameroon might have been transferred to the teaching of EFL.

Language policy in Cameroon

Although advocacies for linguistic decolonization have been receiving favourable echoes in many African countries (e.g., Botswana, Burundi and even Nigeria) where local languages now have official and other important statuses (Bokamba, 2011), the language policy in Cameroon is still geared towards the sole promotion of colonially inherited languages. The current language policy itself tends to be, to a great extent, a reproduction of colonial practices.

Language policies in the colonial era

The correlation between the language policy that held sway in East Cameroon during the colonial period and the yearning for the native English accent by Francophone teachers of English in Cameroon is obvious. This myth of the native speaker dates back to the French colonial period where the policy of assimilation prepared the indigenous people to target the colonial master's speech model. This contrasted significantly with the system of indirect rule applied by Britain in its colonies, former West Cameroon included.

The aim of the French policy was to replace the indigenous languages, cultures and civilization with the French one. Echu (2003) reports that barely one year after taking over Cameroon from the Germans, France instituted a special subvention for schools that used French as the language of instruction and those that taught in indigenous languages were closed. Thus, 47 schools opened by Sultan Njoya in the Bamun region were all closed down and his printing press destroyed. Many other schools (e.g., those run by the American Presbyterian missionaries, and in which Bulu was the language of instruction later suffered the same fate (Echu, 2003, 36). This policy quickly paved the way to the creation of many French-medium schools before independence (e.g., Lycée Leclerc, Lycée Joss Douala and Lycée Manengouba Nkongsamba). The French and trained Cameroonians ran such schools to acquire a native-like command of the French language. Looking at the drastic nature of the measures undertaken to promote the French model of education, one can logically suspect that such actions were aimed to serve a hidden agenda. It won't therefore be an exaggeration to conclude with Bokamba (2011) that the colonial culture assimilatory or brainwashing objectives were well elaborated and "touched on the means to achieve more important and fundamental objectives: Cheap African

labor and other economic benefits for France."

On their own, the British governed through Cameroonian traditional authorities. The use of indigenous languages (Bafut, Duala, Kenyang, Mungaka, etc.) as languages of instruction was a common phenomenon. Pidgin English, rather than Standard English, was promoted alongside these local languages (Echu, 2003). For Simo Bobda (2004), the British seem to have thought that Pidgin English was more suitable for Africans than standard English and at the same time a way to keep Africans away from their privacy. Kachru (1986) confirms this, noting that the acquisition by Africans of native-like proficiency in English made them suspect. Looking at the two colonial systems, it readily ensues that Francophones, through the system of assimilation, were moulded to look up to the native speech model, contrary to Anglophones who were trained to prioritise the communicative value of English rather than to long for Standard British English.

The language policy in postcolonial Cameroon

French became the official language in French-speaking Cameroon upon independence in 1960 and English enjoyed the same status in the English-speaking area following its independence in 1961. At reunification on 1 October, 1961, official bilingualism was instituted in the new federal republic. Cameroon, like many other former African colonies, obviously opted for this foreign language option in order to avoid a language conflict arising from the choice of an indigenous language on the one hand and the financial and material cost on the other (Bokamba, 2007; Echu, 2003). To promote the official bilingualism policy, the government made the teaching of English and French compulsory in the two subsystems of education inherited from colonisation. Since then, French has mainly been operating as a foreign language in the Anglophone subsystem. English has also been enjoying the same privilege in the Francophone subsystem. The following excerpt from the Constitution of 18 January 1996 better captures the current language policy in Cameroon.

> *The official languages of the Republic of Cameroon shall be English and French, both languages having the same status. The State shall guarantee the promotion of bilingualism throughout the country. It shall endeavour to protect and promote national languages.* (Article 1, paragraph 3)

Despite constitutional provisions which make clear that French and English have the same status and constitute the backbone of the country's language policy, it is obvious that French remains the main official language. The numerical advantage of French-speaking Cameroon (eight regions out of ten and seventy-five percent of the national population) favours this situation which has caused a lot of harm to national unity. Anglophones have long complained about linguistic marginalization and the posting of Francophone monolingual administrators, magistrate and teachers to their regions is often cited as one of the main reasons accounting for the Anglophone Crisis which has been going on since 2016. Hopefully, the new trend consisting of Francophones rushing for English is likely to reduce French dominance over English in the future in both public and social spheres.

As for the hundreds of Cameroonian languages, they continue to be relegated to the background even though more efforts are now made to promote them through formal education. But even here, they compete with other imported languages such as Spanish, German, Chinese, Russian, Italian and even the fading Latin. Also, even though it is not uncommon for public workers to speak their local language with collaborators or users of the same linguistic community, this practice is frequently denounced, and its promoters accused either of tribalism or of taking the administration hostage to the benefit of their village people. Bokamba (2011) warns against such a neglect of local languages in favour of policies that privilege the colonial master's language, observing that

> *If Africa is to reclaim its destiny and emerge from its "downward spiral" of missteps and misfortunes of the last fifty years or so, the utilization of key African languages in public domains represents not only a major rectification in the development trajectory, but also invaluable tools towards its advancement. The time to engage this process is now, and we, Africans alone, are its captains and navigators. As argued in Bokamba (2007), if the Ukolonia behavior discussed here, which is a curable syndrome via civic/cultural education, is not reversed, Africa will suffer a deeper level of marginalization, and it will certainly be trampled over by the ever-encroaching globalization of English, French, and Portuguese through multinational companies that are aggressively seeking unfettered access to African natural resources.* (pp. 162-163)

Indeed, English as a global language has penetrated Cameroon so profoundly that Francophones are increasingly neglecting local languages in favour of English. As a result, more and more kids grow up in the

French part of the country without the knowledge of their mother tongues.

English in Francophone Cameroon

It was not until the early 1990s that Francophones started developing real interest for English, the language that had become the first international language and the language of business and professional opportunities. Mbangwana (2004) depicts the unprecedented rush of French-speaking Cameroonians for English in the following terms:

> *Francophones who never bothered learning English through the bilingual training programme in the university, which was free of charge, started looking for money after graduating from universities to register for language courses, whether they were private language institutes such as the B & K Language Institute, British Council, or the American Cultural Center. All of these efforts were for acquiring the language that served like a passport to study or work abroad around the world.* (p. 25)

The passion of Francophone Cameroonians for English has led to a situation where they are now massively represented in EFL teaching in secondary education nationwide. This zeal for the language has even led to the emergence of a new variety of English known as *Cameroon Francophone English* and abbreviated as *CamFE* (Atechi, 2015; Ngefac, 2022; Safotso, 2018; Simo Bobda, 2013). Due to this new brand, the label *Cameroon Anglophone English* (CamAE) is now supplanting that of *Cameroon English* (CamE) in referring to the English of Anglophone Cameroonians. Although CamFE still necessitates an in-deph linguistic description, it is fast gaining ground. The exceptionally rapid growth of Cameroon Francophone English (which is normally an EFL variety) is also due to its proximity and even its co-existence with Cameroon *Anglophone* English (which is an ESL variety).

The place of CamFE and CamAE within English-speaking communities

English-speaking communities across the world obey to specific classifications. Crystal (2003) distinguishes between ENL (English as a Native Language), ESL (English as a Second Language) and EFL (English as a Foreign Language) communities. Kachru (1985) introduces the terminologies Inner Circle, Outer Circle and Expanding Circle in the place of ENL, ESL and EFL, respectively. Kachru's classification pays close attention to the types of spread, the patterns of acquisition and the functional domains in which English is used across cultures. It highlights, for instance, the difference between traditional native speakers (found in countries which represent the traditional seats of English) and the functional native speakers (who are those that speak English as from birth in Outer Circle countries). However, both classifications share significant similarities.

Crystal and Kachru both present the first community (ENL community/ Inner Circle) as including settings where English is mostly used as mother tongue and unique language by the population. Such countries comprise the United Kingdom, the United States of America, Australia, Canada and New Zealand. The Second group (ESL countries/ Outer Circle) includes former British colonies. In this circle, English enjoys a prestigious status because it is generally one of the official languages if not the only one. It occupies a preponderant position among the two or numerous languages which make the speakers' linguistic repertoire. Here, English often exists alongside many other languages and is significantly indigenised. It is generally assigned a very high status (official or co-official language). It is used as a medium of instruction and a language of administration. Countries which belong to this circle include Anglophone Cameroon, Nigeria, India, Malaysia, Singapore, Ghana, Kenya, Hawaii and South Africa. The third group (EFL countries/Expanding Circle) includes the rest of the English-speaking world. In this circle, English is used mainly for international communication. In such contexts, the English language is simply a subject in the curriculum and is used only for specific purposes. Francophone Cameroon, France, South Korea, China, Tunisia, Egypt, Indonesia, Saudi Arabia and Russia are some of the countries which belong to the Expanding Circle.

Francophone Cameroonians' attitudes towards Cameroon English

In spite of the fact that Francophone Cameroonians are now passionate about the English language and the English subsystem of education, they prefer native Englishes, especially British English, and reject indigenised CamE which they view as'pidginized." However, research has shown that targeting native English in Cameroon is unattainable. Kouam (2022) shows that the attempt by Franchophone Cameroonians to articulate native English features only results in hypercorrec

tion, defined by Labov (1966) as the tendency whereby speakers strive to articulate standard linguistic features, but end up producing features that are neither those of the standard variety they are targeting nor those of the mainstream variety spoken by members of their speech community and which they were trying to avoid. This phenomenon seems to be greatly compromising ELT efforts in the country's EFL context. While postcolonial theorists such as Wa Thiongo (1986) and Bolton, Kachru, Kachry, and Nelson (2006) advocate linguistic decolonization and a pronounced preference of indigenous African languages in education to enable the Africanisation of the educational industry, it is difficult to understand the preference of Francophone Cameroonians for native English models and the rejection of the indigenised accent which has the advantage of portraying the identity of the postcolonial user to a great extent. This attitude is a clear indication that the French colonial system of assimilation still holds sway in the minds of Francophone Cameroonians. It totally contradicts the aspirations formulated in decolonization voices.

For Bolton, Kachru, Kachry, & Nelson (2006, 230), learners should "target pronunciation which is easier to learn because it is more attuned to the phonology of their mother tongues, without forfeiting intelligibility," instead of struggling to produce the mannerisms of an idealised native speaker of English. These scholars encourage the promotion of pronunciation models with which speakers of the New Englishes are familiar and which are attained through formal education to ensure international intelligibility. Bolton, Kachru, Kachry, and Nelson (2006) corroborate Kramsch's (1999) recommendation that each variety of English must cater for both intranational and international communication. In the same connection, Firth (1964) recommends that second language learners of English be equipped with the educated variety of their local accents. He views "educated English" as follows:

> *By educated English we must not understand Standard English. Educated English shows a wide range of permissible variations. Speakers of this kind of English do not necessarily submerge all signs of social or geographical origin. Their accent is often unmistakably local or characteristic of a class. Educated English is spoken by all the classes of people all over the English-speaking world. This is the only kind of English that has the remotest chance of universality even in Great Britain itself.* (Firth, 1964, 196)

The quote above shows that targeting strict American and British accents in postcolonial settings to the detriment of the educated varieties of the local Englishes is a futility. Firth's (1964) view is shared by Achebe (1965) who opines that non-native speakers of English should passionately espouse their local English models and avoid useless emulations of native speech forms. He declares:

> *So my answer to the question 'Can an African ever learn English well enough to be able to use it effectively in creative writing?' is certainly yes. If on the other hand you ask 'Can he ever learn to use it as a native speaker?' I should say, I hope not. It is neither necessary nor desirable for him to be able to do so. The price a world language must be prepared to pay is submission to many different kinds of use.* (Achebe, 1965, 29)

Achebe (1965) thus sees indigenized varieties of English as hallmarks of the African identity and as varieties which Africans should go for. Unfortunately, the myth of the native speaker continues to be present and is sometimes encouraged by ELT professionals as is the case with Simo Bobda (2004, 25) who points out that "the educational and professional survival of the ambitious African at the beginning of the third millennium still largely depends on how well he or she accommodates to Inner Circle Englishes". He upholds that it is a truism that school curricula in Africa must seek to promote this accommodation. The Cameroonian scenario is perfectly in line with this recommendation. Ngefac (2011, 40) observes that "in most English Language textbooks used for the teaching of English in Cameroon, drills on Standard British English accent abound and no drills are provided for educated Cameroon English pronunciation." Although the situation has improved a little bit now, with more and more literary works and a few teaching materials designed based on CamE, most current English Language textbooks, if not all (e.g., *Interactions in English*) still reflect Inner Circle English norms.

Methodology

Fifty (50) Francophone and five (5) Anglophone EFL teachers from ten (10) secondary and high schools in three French-speaking regions of Cameroon were recruited as participants for this study. They were selected among seventy-four EFL teachers who made up the EFL teaching staff of the ten schools. The regions selected included Centre, Littoral and West. Different

research tools were used to collect data. A short questionnaire was designed to thoroughly identify teachers and elicit their claims about the English accent they promote for educational practices. It was given to Francophone EFL teachers exclusively. A survey of the curriculum was also done to check if student teachers from both the Bilingual Letters series (future EFL teachers) and the English Modern Letters series (prospective ESL teachers) are subjected to the same English Language courses during their training. The purpose was to subsequently find out if there was any correlation between pronunciation choice in the classroom and the content of the curriculum that served for their instruction. In other words, is there any relationship between pronunciation practice in the ELT classroom and the nature of the courses taught at the teacher training school? An observation of five EFL classes conducted by Francophone teachers also helped to determine the extent to which the pedagogic model practised by Francophone EFL teachers reflects their claims in the questionnaire. This model was then compared to what obtains in the EFL teaching situations conducted by the five selected Anglophone teachers.

As concerns theoretical considerations, Bokamba's (2011) Ukolonia theory and Kachru's (1985) World Englishes model are the perspectives from which the study was carried out. Bokamba (2011, 161) defines Ukolonia as "a psychological syndrome that obfuscates the rational thinking of a patient in a postcolonial society and causes him/her to evaluate himself/herself in terms of values and standards established by the former colonial masters' culture(s)''. This reflects Francophone Cameroonians' attitude towards Cameroon English; an attitudinal tendency that clearly reveals the internalized colonial mentality that characterizes these English users. As for the origin of this slave mentality, Bokamba (2011) explains:

> *Ukolonia resulted from the long-term brainwashing that characterized the explicit or implicit policy of assimilation of Africans to Western cultures, especially through education, religious practices, and administrative practices. Through these agencies, African customs and cultures were viewed as inferior to their Western counterparts, and thus devalued and stigmatized as "backward"; while, in contrast the Western modes of life were valued, promoted, and incentivized as worthy of emulation.* (p. 161)

From the above description, it is clear that Ukolonia remains a widespread practice in Cameroon. Even the school curricula seem to serve the needs of the West more than those of Cameroon.

Concerning Kachru's (1985) World Englishes model, it acknowledges the irreversible indigenisation process undergone by English out of its traditional seats, and establishes the New Englishes as autonomous varieties with characteristic features. Therefore, it contrasts with frameworks such as Error Analysis, which view all deviations from traditional native Englishes as errors and, consequently, as uninvited guests in any ELT situation. In this perspective, it is actual communication and intelligibility which are the watchwords, and not necessarily how much a speaker can twist their tongue to approximate native speech models. Besides, the model denounces the monopole that Inner Circle Englishes still have in many non-native environments. For Kachru (1985), Inner Circle speakers cannot continue to be the exclusive norm-setters in a context where the English language has transcended many national, international and continental boundaries to emerge as a global lingua franca. In this development process, Ngefac (2012, 169) points out, English has significantly embraced the contextual realities of postcolonial contexts, due to the process of nativisation through which each New English setting "has acquired new norms of correctness, which very much reflect the twists and turns the language has undergone in such contexts". Many Outer Circle countries and even some Expanding Circle ones are claiming their Englishness, thereby manifesting their wish to move from norm-depending to norm providing English settings. This can only be made possible through frameworks such as the present ones.

Data Analysis and Findings

The analysis of the data collected yielded interesting findings.

Representation of Francophones in EFL teaching

One of the issues which need to be surveyed accurately in the EFL teaching sector in Cameroon is that of 'who teaches English as a Foreign Language in Cameroon'. The answer to this question is likely to shed more light on the speech orientations millions of Francophone Cameroonians trained in secondary and high schools receive every year. In other words, if EFL teachers are mostly *Anglophone* Cameroonians, the learners will obviously tend to be accustomed to Cameroon Anglophone English. On the contrary, if the EFL teaching staff is dominated by Francophones as pre-

dicted in this study, there is a likelihood that Cameroonian learners from the Francophone sub-system of education will be adepts of Cameroon Francophone English, which also entails that their likelihood to exhibit hypercorrection in their English speech will be very high. This is because CamFE has been observed to be a variety with a great deal of hypercorrect features. Not having the means to carry out a large-scale survey to determine the exact percentage of Francophone EFL teachers serving nationwide, we could, at least, do this verification from the ten schools we consulted for the investigation. In each EFL Department (commonly referred to as *Anglais Department*), the number of teachers was determined. Then a distinction was made between those who had a Francophone background and those with an Anglophone background. The table below provides a picture of the representation of Francophones in the ten EFL departments that were visited.

As shown in Table 1, EFL teachers are mostly Francophones (up to 67.5% of the EFL teachers that were met in the schools that were sampled). The overall teaching staff of the ten EFL Departments that were visited was made up of seventy-four (74) EFL teachers. Out of this number, up to 50 had a Francophone background. While in some departments we could have a fair number of Anglophones (e.g., 4 out of 10 teachers met in Government Bilingual High School Obala),

Table 1. Representation of Francophones in EFL teaching

Distribution of EFL teachers (n=74)	Frequency	Percentage
Francophones	50	67.5%
Anglophones	24	32.5%

in others (e.g., Government Technical High School Nkometou-Centre where 6 EFL teachers could be found), all were Francophones. These figures clearly denote the predominance of Francophone teachers in the teaching of English to Francophone Cameroonians. As mentioned earlier, a questionnaire was administered exclusively to the fifty Francophone teachers. This aimed at eliciting their preferred English accent for ELT.

Francophone EFL teachers preferred English accent

Teachers were expected to choose their preferred English accent for educational practices out of the three options that were proposed, namely (1) the Standard British English Accent, abbreviated as SBE and also known as Received Pronunciation or RP, (2) the Cameroon English (CamE) Accent and (3) a Mixture of SBE and CamE accents. The table below displays their choices.

Table 2 indicates that up to 38 (76%) of the teachers went for the native accent (Standard British English). While 9 (18%) were in favour of a mixture of native and Cameroon English accents, only 3 (6%) showed a preference for the indigenised Cameroon English accent. These figures are very indicative of Francophone Cameroonians' very negative attitude towards Cameroon *Anglophone* English and their strong attachment to Western speech models. Given that there is often a gap between what one prefers and what they actually have or do, it was considered suitable to seek to know what they think they teach. Their claims are displayed in Table 3.

Table 2. Francophone EFL teachers preferred accent.

Accents	Frequency	Percentage
SBE	38	76%
CamE	09	18%
Mixture of SBE and CamE	03	6%

It is quite interesting to note that as many as 28 Francophone EFL teachers (56%) out of 50 claimed they teach nothing but the Standard British English accent. This claim makes one wonder if what these teachers claimed they are teaching was actually what they taught. Such a preoccupation could only be addressed through classroom observation that was carried out at a later stage of the data collection process. Nineteen (38%) acknowledged that they teach a mixture of native and CamE accents and only 3 (6%) recognized that they teach the indigenized Cameroon English accent. From all indications, teachers' claims are not genuine but simply a way for them to show that they abide by the official recommendations to promote traditional native English norms.

Kachru (1986, 117) thinks it's not only useless but impossible to implement Inner Circle English standards in postcolonial environments. That is why he disagrees with non-native speakers who boldly claim they speak Received Pronunciation. The scholar makes it clear that "no member of the Outer Circle speaks RP," and upholds

Table 3. Francophone EFL teachers' claims about the accent they teach.

Accents	Frequency	Percentage
SBE accent	28	56%
CamE accent	3	6%
Mixture of SBE and CamE accents	19	38%

that "even if he could, he would lack those mannerisms distinct of a native speaker". In the same vein, Todd (1982, 289) had earlier observed that "virtually no African speaks RP." It should be noted that even in Britain, RP features are now very scarce as research shows that less than 3% of the British population now uses RP in its pure form. Despite this literature contradicting teachers' statement that they teach Standard British English, it was important to seek empirical evidence through classroom realities.

The EFL teaching scenario in Cameroon

Classroom observation involved ten EFL classes, five of which were conducted by Anglophone teachers and the other five by Francophone teachers. It ensued from the ten classes attended that Levis' (2005) Nativeness and Intelligibility principles are two paradigms holding sway in the Cameroonian English language teaching industry nowadays. It was so obvious to note that English language teachers with an Anglophone background are mostly guided by the Intelligibility Principle and insist on the local CamE while those with a Francophone background are mostly guided by the Nativeness Principle, despite on-going signals that the promotion of native English models in Cameroon is not yielding the expected fruits.

Anglophone EFL teachers' focus

An appraisal of what constitutes the target in EFL teaching situations for each of the two categories of English language teachers that were observed showed that Anglophone EFL teachers' efforts are aimed at developing learners' communicative skills through a pedagogic model which enables them to understand and to be understood by other English-speaking users. These are teachers who are basically trained to serve as ESL teachers. They proved to be more attuned to the promotion of educational practices that favour a realistic, pragmatic and attainable speech model to the learners. Without forfeiting intelligibility, they train learners to speak English as naturally as they speak their Cameroonian first languages.

Francophone EFL teachers' focus

These are Francophones trained in Bilingual series to teach English to other Francophone Cameroonians. Classroom observation demonstrated that their objective is geared towards the attainment of native or native-like speech. They pretend to be teaching nothing but native English. However, observation showed that their attempts to approximate these Inner Circle Englishes rather lead them to hypercorrection. For instance, **/mɔˊrᵊl wɛn/** (instead of **/mɒˊdʒul wʌn/**) was provided by a Francophone EFL teacher as the American English pronunciation of *module one*. In the same vein, **/rɪdʒikt/** (instead of **/rɪdʒɛkt/**) was brandished by another Francophone EFL teacher as the SBE rendition of *reject*.

The phonological rendition of *th* in words such as *this* and *mathematics* are other glaring examples that were observed, as the sequence was hypercorrectly articulated by Francophone EFL teachers as /v/ and /f/, respectively, to the detriment of their SBE counterparts /ð/ and /θ/ and their CamE forms /d/ and /t/. This is further evidence that the increasingly high percentage of hypercorrect speech features in Cameroon Francophone English is as a result of Francophone EFL teachers' Ukolonia mindset which vividly depicts neo-colonialism as it cherishes and idealises what is foreign but despises and rejects what is local.

General observations

While Anglophone EFL teachers simply ensure that their learners speak English in a way that is intelligible to the listeners, their Francophone colleagues are interested in ensuring that the learner articulates words following Standard British English and American English patterns. Interestingly, the pronunciation model provided by the teachers themselves does not, in most cases, reflect the variety they are struggling to teach. The learner finally does not gain much because the efforts to sound British or American limit their fluency significantly. This could explain why Francophone Cameroonians are very good at English grammar but avoid speaking due to the fear to make mistakes (Safotso, 2022). In fact, they are very often interrupted by their Francophone EFL teachers who constantly come in to "correct" their English pronunciation.

It also transpired from classroom observation that Francophone students trained by Francophone EFL teachers are far less fluent in English and, consequently, less officially bilingual than the few trained by Anglophone teachers, whose target is actual communication. A palpable example came from a speech exercise done in two Première classes in GBHS Obala where learners were expected to say the sentences aloud stressing the words in bold so as to give the sentence the rhythm or cadence it deserves. While the Premiere D1 learners, taught by an Anglophone EFL teacher, could easily and fluently repeat the sentences following their teacher's

local English accent, those of Premiere D2 found it very difficult arriving at a pronunciation their Francophone trainer was imposing on them. In most cases, Francophone teachers' speech was flawed by hypercorrection due to their unsuccessful attempts to respect SBE segmental and suprasegmental rules. At the same time, learners, whose speech organs could not get rid of the sound systems of French and their mother tongues, could not afford to emulate the teacher whose own efforts to sound native were actually fruitless. For the sentence, *It would be **great** if all **Cameroonians could have** access to **the** internet,* (*Interactions in English 1eres*, p. 258) for instance, the Francophone EFL teacher provided the following as reference pronunciation: *It would be **gr**[i]**t** if all **C**[ɛ]**meroonians** [kɪd] [**hɛf**] access to* [**vɪ**] *internet*. On the other hand, the digest Cameroon English pronunciation the Anglophone EFL teacher provided to her learners enabled the latter to repeat with a high degree of fluency. The glaring contrast characterizing the teaching approaches used by Francophone and Anglophone EFL teachers led to the scrutiny of their training programmes.

The Syllabus for Teacher Education

The syllabus used in training EFL teachers in Cameroonian higher teacher training colleges shows some significant differences from the one used to train ESL teachers. The main contrast arises from the fact that while ESL student teachers have all their courses in English from Level One to Level Five (except one French course that is supposed to upgrade their French proficiency), their EFL counterparts have 50% of their curriculum content constituted of French subjects and the other 50% being made of English subjects.

Looking at the English subjects, both ESL and EFL student teachers have in common a course entitled *English Speech and Usage*, which focuses on SBE. But unlike their ESL mates, EFL student teachers are not taught a key course entitled *World Englishes*, which aims at exposing the learners to the different varieties of English. The course promotes indigenized Englishes, contrarily to *English Speech and Usage*, which only provides drills on Standard British English and, to an extent, American English. No drill on CamE or any other local variety is thus provided to prospective Francophone EFL teachers. The correlation between the course entitled *World Englishes* and the acceptance or rejection of the New Englishes such a Cameroon English cannot be belaboured. It is a course which values the New Englishes and highlights their place within the World Englishes arena. Consequently, the course contributes to build self confidence in New Englishes speakers, thereby making them proud of the indigenized Englishes. Such a course is likely to help Francophone EFL student teachers get rid of the *Ukolonia* (slave) mentality (Bokamba, 2007, 2011) which highly characterizes them.

Needless pointing out that while in secondary and high school, most of the present student teachers acquired from their own Francophone EFL teachers what was fallaciously presented to them as native English. The same fallacy is, unfortunately, reinforced through exposure to the course entitled *English Speech and Usage* whose sole aim is to acquaint prospective EFL and ESL teachers with Inner Circle English norms. The presence of this course in the curriculum serving in the training of English language teachers is due to the fact that it is a traditional native English variety, namely Standard British English, which continues to serve as reference model for English language teaching practices across Cameroon despite the fact that researchers have been raising an alarm to denounce a policy which promotes a language variety which is not at the reach of Cameroonians and cannot actually convey Cameroonian experiences. From the numerous research endeavours carried out to assess Cameroonians' familiarity with the British variety of English, it occurs that they significantly lack the mastery of this model. Even teachers who are called upon to teach it have proven beyond any reasonable doubt to be ignorant of it. This has led to publication titles such as *When the blind lead the blind: The fallacy of promoting Standard British English in Cameroon* (Ngefac, 2012).

The absence of EFL teachers' exposure to World Englishes can only lead to the situation prevailing in the Francophone English-speaking community in Cameroon nowadays, where speakers twist their tongues to sound British or American in their English speech and make clear attempts to avoid uttering features that associate them with the local Cameroon English. Unfortunately for them, it is so obvious that even when they successfully articulate some isolated words or sentences in accordance with traditional native English norms, difficulties handling aspects such as intonation and connected speech quickly expose their masquerade and reveal to the limelight that they are simply trying their hand in something their speech organs are unfamiliar with. The decolonization of Francophone EFL teachers' linguistic mindset thus appears as a necessity.

The urgency of decolonising Francophone EFL teachers' mindset

Francophone EFL learners in Cameroon are paying a huge price for the colonial linguistic indoctrination subtly led by such enemies of indigenised Englishes as Prator (1968), Quirk (1985) and Honey (1997), who saw the promotion of the New Englishes as a heresy. Looking at the current English language scenario, how sustainable can Quirk's (1985) call for the use of a "single monochrome standard form that looks as good on paper as it sounds in speech'' actually be today? What would Honey (1997) think of his own declaration that if speakers of English in the New Nations create their own standard, they are likely to be excluded from the global scene because they cannot exercise the same level of competence as other members of the world English-speaking community? These advocates of a New Englishes genocide thought they could continuously impose Inner Circle English norms all over the world. It is left to Outer and Expanding Circle users to realise that they outnumber the traditional native speakers by far and this numerical advantage must permit them to set and follow norms which capture the cosmology of the specific non-native English-speaking countries. Unfortunately, some non-native speakers (e.g., Francophone Cameroonians) continue to be at the forefront to combat the Englishes that carry the colours of their sociocultural realities.

The following report by Platt, Weber & Ho (1984, 170) is a clear indication that the decolonisation of many non-native English speakers' linguistic mindset is a matter of utmost importance. The scholars indicate that in a workshop on the English language in Singapore, a speaker with a conspicuous Singaporean accent passionately affirmed: "I speak RP." Surprisingly, his statement rather provoked laughter and protest from the British audience. Such behaviours make one wonder why speakers of the New Englishes undervalue the varieties of English that they speak and rather want to identify themselves with foreign models. Ngefac (2012) attempts an explanation to this state of affairs, hypothesising that the reason which has influenced some Cameroonians to change their black skin using chemical products in order to look white like their ex-colonial masters is the same reason at the base of their negative attitude towards the languages that are rooted in the sociocultural and sociolinguistic realities of their country. He upholds that such people believe the greatness of Cameroon lies "in the ability of Cameroonians to prove that they master ex-colonial languages as much as, or even more than traditional native speakers of the languages" themselves.

When will Africans actually realise that "when an African speaks American English, the credit goes to America," as rightly pointed out by Micheal Ndemanu in May 2023 during the Second World Conference on Transformative Education held in Ghana? There are many Anglophone Cameroonians who successfully carry out their daily activities worldwide using their indigenised CamE accent. Just like no language can portray one's identity better than their mother tongues, no English variety can depict the sociocultural realities of a new English setting or express the ways and thoughts of its users better than the local variety. It is equally obvious that it is only through their native or indigenised languages that individuals can actually showcase their highest degree of creativity, self-confidence and performance.

What can justify the persistence of colonialist visions like Simo Bobda's (2004) equating the language policy applied by the British in Cameroon during the colonial period to a linguistic apartheid, and advocating "not just English per se, but Standard British English" in Cameroon? This is a vision which takes on the British administration for keeping Africans away from "good English". For its author, the British should have drilled Africans on Standard British English. Africans in general and Francophone Cameroonians in particular should stop seeing native English speech as more prestigious, correct and intelligible than their local varieties. Doing so is ignoring Kachru's (1992, 67) call on all English users around the world to "realise that this new role of English [as an international language] puts a burden on those who use it as their *first* language, as well as on those who use it as their *second* language." That is to say, it is not the duty of non-native speakers alone to speak English in a way that ensures international intelligibility. Francophone EFL teachers in Cameroon should be acquainted with this and should equally think of some powerful declarations from such post-colonial thinkers as Achebe who were able, as far back as in the 1960s, to perceive indigenized varieties of English as real forces to reckon with. They should be aware that the English language has become a global resource and the possession of every community that in any way uses it regardless of what any other individual or community may feel or think about the matter (McArthur, 1999).

In a world dominated by the West, Africa must strive to get its own share through fights of various

natures, including linguistic struggles. It is no news that language is power. American imperialism has been very successful thanks to the spread of the English language. If Africa cannot totally rely on indigenous languages to face the rest of the world, its indiginised English varieties can play a major role. Kouam (in production) strongly believes that Cameroonian and African natural resources are appealing enough to America and Europe. If the indigenised African varieties of English appear to be the sole means of communication through which discussions regarding these resources can be held, the Western World will not resist. They will embrace indigenised African English models. Francophone EFL teachers' mindset, as it stands, is contrary to African transformative development initiatives and visions. It must be reshaped through decolonisation. The best method to deconstruct and reconstruct Francophone EFL teachers' English linguistic mindset in Cameroon remains the teaching of the course entitled World Englishes to EFL student teachers. The teaching of such a course will definitely influence their attitudes towards indigenised English varieties.

Fewer and fewer studies now brandish traditional native speakers of English as sole norm-providers and non-native speakers as followers of the established norms. Instead, most works (e.g., Levis, 2005) require that the Nativeness Principle, which used to prevail in the teaching of English pronunciation in both native and non-native contexts, should now pave the way to the Intelligibility Principle, which best addresses all contexts of second or foreign language teaching/learning. Francophone EFL teachers in Cameroon should follow this principle which simply requires learners to be intelligible. Therefore, language policy makers in Cameroon should recommend mainstream Cameroon English for both ESL and EFL teaching to the detriment of Standard British English. Studies have shown that CamFE contains many features of CamE and very few features of SBE even though CamFE speakers paradoxically display a very negative attitude towards CamE and a very positive one towards SBE. The codification process of CamE is far advanced. The legitimate features of its educated variety as well as features that can be considered as mistakes and excluded are well known. More textbooks need to be designed based on its educated variety to enable a smooth teaching of this local English model.

Conclusion

Although English is mainly a colonial heritage for Cameroonians and other Africans, postcolonial nations should develop pride for its local varieties, as they are emblematic of our sociocultural realities. As for now, there is almost no alternative to English as a global lingua franca. It would be fallacious to think that a Cameroonian indigenous language can guarantee the instrumental role that English fulfils today. The issue is thus that of the variety that should be promoted. In the Cameroonian context, CamE should be the target in ELT rather than Standard British English. If the Cameroonian EFL teaching stakeholders (who are mostly of a Francophone background) emulate their fellow Anglophone colleagues in the teaching of an accent which is at the reach of the learners and is rooted in their sociolinguistic and sociocultural realities, Francophone Cameroonian learners will develop greater competences in oral communication. The exposure of prospective Francophone EFL teachers to World Englishes, as is already the case with ESL teachers, can seriously play in favour of this. The present situation which is characterized by the unattainable objective of approximating native Englishes ignites frustrations in the students, as they remain unable to communicate actively in the language. Also, embracing CamE rather than SBE can only reinforce national integration. There is thus a necessity to join Wa Thiongo (1986) in his call for a decolonization of the mind. Levis' (2005) Intelligibility Principle should also be the watchword in the Cameroonian EFL teaching industry nowadays given that the Nativeness Principle which has so far been followed by Francophone EFL teachers simply leads to hypercorrection, a phenomenon which was observed to be compromising Francophone learners' ability to speak English naturally and fluently.

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Translations as a Transformative Form of Language Support to English Additional Language Speaking Students at a South African University

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Abstract

This paper reports on an innovative translation intervention strategy piloted in the first semester of 2017 in the business faculty at a historically black university in South Africa. The pilot study covered the implementation and monitoring of translating instructions, questions and explanations into two of the students' first languages in the formative assessments in the first-year Management 131 subject. The pilot project was situated within a qualitative, interpretive research paradigm. The research design used for the pilot project was a case study design. A total of 259 first-year students (both English home language and additional language-speaking students) completed a survey. The findings show that the translations in their home languages assisted the students in comprehending the instructions and course content. In so doing, it levelled the playing field and enabled them to perform optimally, resulting in an increased pass rate in the subject. Additionally, the English-speaking students felt the intervention was a much-needed innovation. Also, other additional language-speaking students requested translations to be done in their home languages as well. The findings provide evidence that students who are English additional language speakers need innovative and transformative language interventions to succeed in their respective degree programmes at post-secondary institutions. The implication is that other colleges and universities should consider doing the same for their students to increase the retention and success rates of undergraduate students in higher education.

Keywords: *First-year students; English additional language; Translations; Language support, Intervention strategy; Academic success.*

Introduction

The South African constitution recognises eleven official languages for its multi-racial and multi-cultural population (Department of Basic Education, 2013; Republic of South Africa, 1996). IsiZulu (one of the eleven languages) is the most spoken language, with 11.58 million speakers (23%), followed by IsiXhosa, 8.15 million (16%), and Afrikaans, 6.85 million (13.5%). English is spoken by 4.89 million people (10%), followed by Sepedi with 4.62 million (9.1%), and Setswana with 4.07 million (8%) (Census, 2011; South Africa Information, 2018). However, based on South Africa's colonial past, English, as the fourth most spoken language in South Africa, is perceived as a 'global language', and hence, it is the preferred mode of communication and interaction in academia, trace, the economy and technology (Brenzinger, 2017; Hurst & Mona, 2017; Xue & Zuo, 2013; Xuyen & Trang, 2021). Consequently, English is used as the medium of instruction in primary schools (from Grade 4 onwards) and most high schools and post-secondary institutions in South Africa (Council on Higher Education, 2014; Department of Basic Education, 2013).

The preference for English as the medium of instruction in schools and tertiary institutions in South Africa is problematic on at least three accounts. Firstly, it goes against the language policy and developmental plan for South Africa because it does not promote mother-tongue education. Globally, much research has been done on the issue of having to learn and construct new knowledge in one's home language versus in an additional language (Bada, 2017; Brock-Utne, Desai & Qorro, 2006; Gentry, 2022; Mgqwashu, 2011; Xuyen & Trang, 2021). The research findings show that

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learners who learn and construct new knowledge in their home language achieve a greater degree of academic success than learners who are English additional language speakers (Bada, 2017; Hoxha & Sumner, 2021; Hurst & Mona, 2017; Mgqwashu, 2011).

Secondly, the multilingual language policy is hindered by public funding constraints and a lack of educational resources (such as a lack of libraries and technological equipment in some schools) (Brenzinger, 2017; Heugh, 2013). Hence, not adhering to and implementing the approved language policy makes it contradictory as the intention is "praiseworthy," but action is lacking. More recently, the education policy debate has gradually shifted from access to schooling to improving the quality of learning and teaching at post-secondary institutions because more students are failing nationally than succeeding in their respective degree programmes (Council on Higher Education, 2014; 2016; Masino & Nino-Zarazua, 2015; Pather, 2018).

Thirdly, it is also about social justice imperatives because the emphasis on English, which is the colonial language, is to the detriment of developing the indigenous languages in South Africa (Hurst & Mona, 2017; Masino & Nino-Zarazua, 2015; Mgqwashu, 2011). From a social justice perspective, the authors advocate for the liberation and empowerment of the poor and marginalised groups in society and for the provision of quality education that could lead to economic emancipation and development for all (Council on Higher Education, 2014; 2016; Leibowitz, 2009; Masino & Nino-Zarazua, 2015).

It was for the above reasons, among others, that the post-apartheid government in 1995 embarked on a transformation process to eradicate the inequalities of the past through the acknowledgement of eleven official languages (Ministry of Education, 2001). However, while the intention was good in theory, the status quo remains three decades after democracy. The 2015 and 2016 student protests highlighted the need for decolonisation, and the #RhodesMustFall movement specifically foregrounded the language issue and the fact that the colonial language still dominates the medium of instruction at most higher education institutions in South Africa.

The authors argue that transformative learning theory principles should be applied in post-secondary education in South Africa. Transformative learning is based on the premise that human beings interpret their experiences uniquely and that how they see the world results from their perceptions and experiences (Cranton & Taylor, 2012). It is a process of examining, questioning, and revising those perceptions, so critical thought and self-reflection are part of it. The goal should be to teach students to become self-aware and critical, to question norms and perceptions and, in the process, to be transformed (Cranton & Taylor, 2012).

Based on the above context, this paper reports on a pilot project conducted during the first semester of 2017 in the business faculty at a historically Black university in South Africa. The pilot project covered the implementation and monitoring of translations as an innovative intervention strategy that aimed to provide language support to new first-year students who were additional language speakers of English in the faculty. Hence, the paper attempts to fill the gap of English additional language speaking students' challenge to construct meaning in a language that is not their mother tongue (Landsberg, 2005; Mgqwashu, 2011). While much research has been done on the challenges that these learners face in the learning process, not many studies focus on providing intervention strategies to assist them (Bada, 2017; Heugh, 2013; Hurst & Mona, 2017; Pather, 2018). The authors contend that these students need language support to succeed at post-secondary institutions in their respective degree programmes. The innovative translation support intervention strategy discussed in this paper is one such attempt.

Context of the Pilot Project

The university where the pilot project was conducted is one of four institutions of higher learning in one province in South Africa. The apartheid government established the university to provide for the higher education needs of the Coloured population in South Africa. The university's language of learning and teaching was Afrikaans, one of the eleven official languages. However, because this university was directly involved in the struggle against apartheid, it became known as the "University of the Left" (Walker & Badsha, 1993) and opened its doors to African and Asian students as well (Letseka & Maile, 2008; Volbrecht, 2002). Most of these students came from working class communities and under-resourced public schooling (McGhie, 2012; Mgqwashu, 2011; Venter, 2020). To accommodate the African students who had different home languages, the university changed its language policy to a bilingual one with Afrikaans and English as the languages of learning and teaching (Academic Development Centre, 1998).

As a result of a steady increase in the number of African students over the years, there was a gradual move to English as the only language of learning and teaching at the university, but it was not without disparities and concerns among the university staff and management (Academic Development Centre, 1998; Volbrecht, 2002). In order to resolve the issue, the university management accepted a multilingual approach at its Council meeting held in June 1992 that reads: "Regarding the lingua franca to be used particularly by students, it was generally agreed that students be encouraged to write in the language they feel comfortable with" (Volbrecht, 2002, p. 217). Despite this decision, the university moved overwhelmingly to English as the only language of learning and teaching by the end of 1992. According to Dyers (1996), the reasons for the shift to English were:

- Most lecturers perceived English as the most viable academic lingua franca at that point in history;
- The majority of the lecturers were English-speaking or bilingual (English and Afrikaans), and only a small minority of the lecturers were IsiXhosa-speaking;
- Most students at the time were IsiXhosa-speaking (44%), and surveys conducted among students suggested that most IsiXhosa-speaking students preferred receiving instruction in English rather than in IsiXhosa.

English as the official language of instruction and communication meant that only English was used in lectures and tutorials, tasks, assignments, tests and examinations, and written material and learning resources used by staff. Ironically, the language of the colonisers and the oppressors who instigated discrimination and injustice became the language of teaching and language at this university and still is to this day.

This situation poses language learning challenges for the students (Hurst, E. & Mona, 2017; Landsberg, 2005; McGhie, Moodley & Naidoo, 2015). Since 1993, students who are additional language speakers of English have to learn and construct meaning in English at an advanced level. It is no wonder, then, that the overall throughput rate of the university's students is below the national South African benchmark mark of 29% (Council on Higher Education, 2016; 2017). It is against this backdrop that the authors advocate that transformative learning should take place where the status quo is challenged and students be empowered through the use of language support interventions in their home languages. Such interventions can provide students with extra assistance to understand better the content of their different subjects and the instructions, questions and explanations they receive for tasks, assignments and tests. In this way, they will know what is required to complete these assessments correctly and, as a consequence, strengthen their chances of passing their assessments and their subjects well. Moreover, first-year students need more academic support than senior students, as they also have to deal with transitional and adjustment challenges (Council on Higher Education, 2017; Letseka, Cosser, Breier & Visser, 2010; Pather, 2018).

Aim and Objectives

The aim of the pilot project was two-fold. First, the authors wanted to provide translations as a transformative intervention strategy in the students' home languages to aid new first-year students' understanding of instructions, questions and explanations in their assignments so that they would know what and how to do their assignments correctly. Secondly, by implementing the intervention strategy, the authors wanted to strengthen first-year students' chances of succeeding academically. The objectives were to:

- legitimise the other two official languages used in the province (Afrikaans and IsiXhosa) in order to strengthen students' understanding and academic integration; and
- increase students' academic performance and success in their different subjects.

To achieve the aim and objectives, the main research question was:

Can the provision of translations as a transformative intervention strategy enhance students' academic success?

Literature Review

The student movements, #FeesmustFall and #RhodesmustFall in 2015 and 2016, were outcries from the students to South African universities' management and the Department of Higher Education to adhere to the Bill of Rights in the South African constitution and the language policy (Republic of South Africa, 1996). Tinto (2009, p. 2) explains, "To be serious about student retention, universities would recognize that the roots of student attrition lie not only in their students and the situations they face, but also in the very character of the educational settings in which they ask students to

learn, namely the classrooms, laboratories, and studios of the campus."

This quote implies that university management and staff should be mindful of the learning contexts they create for their students and the institutional culture and practices that could alienate them. It means that university management should place the students first and provide the necessary resources and support to assist students' social and academic integration into the university environment (Tinto, 2006, 2009). The authors agree with Tinto that student success does not happen by chance (Tinto, 2009). According to him, student success results from an intentional, structured and proactive set of coherent, systematic, and carefully aligned strategies, with the first year of university studies as the most critical period to make it happen (Tinto, 2009). As a consequence of this commitment, providing translation as a transformative language intervention strategy to English additional language speaking students is one form of language support that could increase students' pass rates.

Cummins (2007, 2008) explains that a minimum of five to seven years is needed for English additional language learners to catch up academically, that is, to acquire the language proficiency needed in English to succeed at the tertiary level. Cummins (2007, 2008) distinguishes (based on research that was conducted into the role of language proficiency and bilingualism in academic achievements) between conversation proficiency (what he used to term BICS – basic interpersonal communicative skills) and academic proficiency (formerly termed CALP – cognitive academic language proficiency).

Cummins (2008) further explains that language proficiency in a social situation (BICS) is characterised by interpersonal interaction and requires only basic interpersonal language proficiency from the communicator. Meaning is negotiated by the participants in the conversation and conveyed through language. The context within which the communication takes place supports conveying meaning. Interpretations are embedded in the situation and often associated with non-verbal clues. He explains that CALP is usually language in its primary and written form, and it is not, for example, possible to obtain additional information from non-verbal clues (Cummins, 2008). He argues that more advanced language skills than those required for an informal, personal conversation are needed to read or write a scientific report or academic assignment (Cummins, 2008).

As such, the shortcomings in additional language speaking students' language skills would inhibit their achievements in academic tasks much more than it would in the case of interpersonal communication (Cummins, 2007, 2008). For this author, academic language proficiency refers to an absolute concept of expertise in understanding and using the specific language employed in an educational context and required to complete academic tasks (Cummins, 2008). Consequently, he argues that academic language proficiency means that one has 'the language knowledge together with the associated knowledge of the world and metacognitive strategies necessary to function effectively in the language of communication and instruction at the university level (Cummins, 2008).

An inference can be made from Cummins' explanation of what 'knowing a language means' - that English additional language speakers have a demanding and daunting task ahead of them when they embark on the learning journey at the post-secondary level. Most of these students have difficulty achieving good grades in their subjects, not because they are 'dumb' or 'weak' or 'lazy' (labelling terms often ascribed to these students by some academics), but simply because English is not their home language (Gentry, 2022; Hoxha & Sumner, 2021; Masino & Nino-Zarazua, 2015). Hence, the English language proficiency of additional language speaking students is not developed sufficiently to enable them to perform well in their different subjects, which is why they need transformative and innovative language intervention support.

Methods

The pilot project was situated within a qualitative, interpretive research paradigm (Creswell & Creswell, 2018; Yin, 2014). There were two reasons for this choice. The first was based on the fact that the authors wanted to assist English additional language-speaking students in their daily lived experiences of having to study and construct meaning in English, which is referred to as their 'natural setting' (Babbie & Mouton, 2010; Creswell & Creswell, 2018; Yin, 2014). The second reason was that qualitative research acknowledges that reality is socially constructed, as people's experiences happen within personal, cultural, historical and social contexts (Babbie & Mouton, 2010; Hennink, Hutter & Bailey, 2011). The students' meaning-making process happened within a colonised set-up where they had to acquire and construct advanced knowledge in English. This meant that their own personal,cultural,

historical and social contexts had to be replaced with a 'foreign one' as they had to learn the English language and the associated knowledge and metacognitive strategies necessary to function effectively, as Cummins (2008) explains. These principles are also in line with transformative learning theories – that meaning is negotiated and should be questioned and critically analysed to effect change and allow students to use their agency (Cranton & Taylor, 2012).

The research design used for the pilot project was a case study design (Stake, 2006; Yin, 2014). A case study design assisted in understanding and gaining insights into first-year, English additional language speaking students' language needs, and in decolonising the usage of English as the medium of instruction at the university (Stake, 2006; Yin, 2014). The authors' approach to decolonising the usage of English through the provision of translations was based on Le Grange's (2016) notion that decolonisation is the phenomenon that encompasses providing language support to first-year students. Thus, the authors propose that the provision of translations as a language support intervention strategy for English additional language speaking students can be used as an initial step towards the decolonisation of the use of English in higher education institutions in South Africa and globally.

The pilot project was rolled out in all the first-year subjects in the university's business faculty at the beginning of the first semester in 2017. The lecturers teaching first-year subjects were invited to send their instructions, questions and explanations of their different tutorial assignments (which form part of the formative assessments during the course of the semester) to the teaching and learning specialist who coordinated and facilitated the translation thereof into Afrikaans and IsiXhosa (the two dominant languages spoken in the Western Cape Province where the university is situated). Notices were placed on the university's online student learning platform inviting the students to download the translated assignments. Announcements about this service available to the students were also made in the different lectures during the semester.

The teaching and learning specialist sent the tutorial assignments to a team of translators recommended by the subject lecturers and selected based on a proficiency test. Regular meetings with the translators and the different lecturers were held to ensure that the translations were on par with the English versions. In addition, there was ongoing email communication between the teaching and learning specialist and the lecturers to monitor and quality assure the process. Lecturers from six different departments in the faculty participated in the process. At the end of the semester, a report was drawn from the students' learning management system that indicated how many students downloaded the translations in the six departments. The report reflected that the most downloads (782) occurred in the Management (Man 131) first-year subject. Based on the fact that the most downloads occurred in this subject, the authors decided to use the information of all the first-year students who were registered for Man 131 as data for this paper. The results are divided into five data sets.

Data Set 1 consists of a breakdown of how many IsiXhosa-speaking students and how many Afrikaans-speaking students downloaded the instructions in the Man 131 subject. Data Set 2 presents a breakdown of the students' home languages, and Data Set 3 gives an account of the two tutorial assignments, which were translated into IsiXhosa and Afrikaans.

Finally, two surveys were conducted towards the end of the first semester to establish the students' and academics' views and experiences of the language support intervention strategy. In keeping with ethical principles, the staff and students were invited to participate voluntarily in the survey. The surveys were sent to all the academics and first-year students in the faculty. For this paper, only the students' responses are analysed and discussed. The responses of the staff will be discussed in another paper. A total of 259 first-year students (both English home language and additional language speaking students) completed the survey. The students had to indicate if they were English home language or additional language speaking students. However, only 100 of the students answered all the questions and provided explanations for their answers. Thus, only the 100 responses (23 English home language and 77 additional language speaking students) were analysed and reported on in this paper.

Four questions were asked in the student survey. These ask whether or not students:

1. Were aware of the language support programme;
2. Downloaded the translated instructions, questions and explanations of the tutorial assignments from the university's student learning management system;
3. Thought that the translated instructions, questions and explanations in the tutorial assignments improved their understanding of the content of their subjects (they had first to tick a box, (Yes or No),

and then explain their answers); and

4. Whether they thought there was a need for such an intervention (again, they had to tick a box (Yes or No) and then explain their answers).

The students' responses to the four questions were quantitative (yes/no answers) and were entered into Excel software to present the number of similar and different responses visually. These responses are referred to as Data Set 4.

The students' explanations to the last two questions were qualitative in nature and analysed through content analysis, using a three-stage, open coding process (Henning, 2004). The first stage involved a general reading and noting of the explanations on a Word document. The second stage involved a second, closer reading where similar responses were categorised under main themes and entered on another Word document. The last stage of the open coding process involved a further reduction of the responses into sub-themes on a new Word document. The authors worked through the responses carefully and requested another colleague to check and verify that the responses were correctly documented on the three Word documents. These explanations are referred to as Data Set 5.

Results

The results from the four quantitative data sets are presented first and, after that, the themes and sub-themes identified in the qualitative data set.

Data Set 1: Downloaded IsiXhosa and Afrikaans translated tutorials in Management 131

As stated in the previous section, 782 downloads were made. Of these, 263 downloads were made by the IsiXhosa-speaking students for tutorial assignment 1 and 243 for the second tutorial, while the Afrikaans-speaking students made a total of 164 downloads for tutorial 1 and 112 downloads for tutorial 2. Table 1 reflects the downloads in percentages.

The percentages for the IsiXhosa downloads are more or less on par with the number of students who reported that IsiXhosa is their first language (refer to Data Set 2). This, however, is not the case for the number of Afrikaans downloads made, as only 47 students declared that Afrikaans was their first language (refer to Figure 1). Possible reasons for the discrepancy are discussed in the next section.

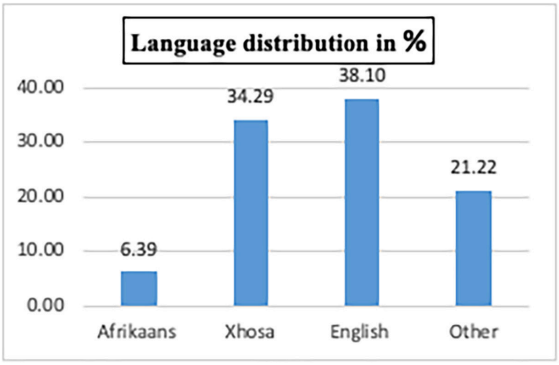

Figure 1. Percentages of different languages spoken by students registered in Management 131, 2017.

Data Set 2: Language distribution of registered first-year students in Management 131

A total of 735 first-year students was registered in Management 131 in the first semester of 2017. Of the 735 students, 47 indicated on their registration information that they were Afrikaans-speaking students (6.39%), 252 IsiXhosa-speaking (34.29%), 280 English (38.10%), and 156 other language speakers (21.22%). Figure 1 gives a visual presentation of the percentages.

Figure 1 shows that 61.90% (that is 6.39 + 34.29 + 21.22) of the students registered in Management 131 were English additional language speaking students, and 38.10% were English home language speakers. This finding reflects the university's general trend of language distribution (Institutional Planning Office, 2017).

Data Set 3: Comparison of students' performance in the two tutorial assignments

Figure 2 illustrates the students' performance averages in the two tutorial assignments translated compared with the English-first-language-speaking students' average results.

The results indicate that the Afrikaans-speaking students' average was 78.6%, the IsiXhosa-speaking students was 71.90%, and the English mother tongue students' average was 76.21%.

Table 1. Downloaded IsiXhosa and Afrikaans translations

IsiXhosa translations	Afrikaans translations
Tutorial 1: 263 downloads (33.6%)	Tutorial 1: 164 downloads (20.9%)
Tutorial 2: 243 downloads (31%)	Tutorial 2: 112 downloads (14.3%)

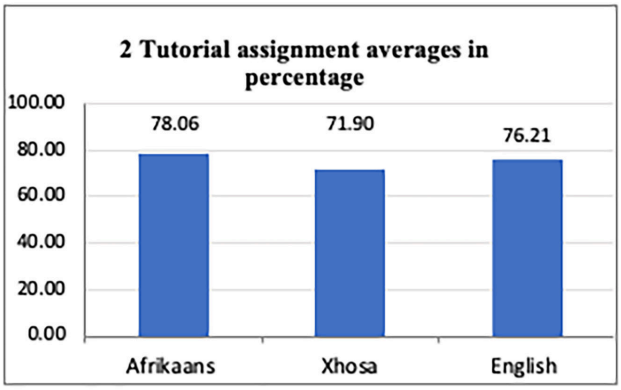

Figure 2. Students' performance averages in percentages for the two tutorial assignments

Table 2: Students' responses to four survey questions

Questions asked	Number of responses	
Were you aware of the language support programme?	Yes: 71	No: 29
Did you download the translated instructions, questions, and explanations for the tutorial assignments?	Yes: 39	No: 61
Did these assist you in better understanding the work in the module?	Yes: 39	No: 0
Do you think that there is a need for such an intervention?	Yes: 92	Not sure: 8

Data Set 4: Quantitative responses from the students' survey

Table 2 reflects the 100 students' responses to the four questions asked in the survey.

The results show that 71 students (71%) were aware of the language support programme, while 29 said they were unaware. Thirty-nine of the 100 students downloaded the translated tutorials, and 61 did not. One can infer that the 23 English home language students were part of the 61 who did not download the translations because there was no need to do so. Hence, the remaining 38 were English additional language speaking students, which could mean that they considered downloading the instructions as 'extra work' and decided not to download the translations. Alternatively, it could have been some other language-speaking students who did not download the translations as they were not in their first languages. However, it should be noted that the other Afrikaans downloads (see Table 1) could have been made by some of the remaining 159 students whose responses were omitted, as explained in the Methods section.

The results further reflect that the students who used the translated assignments' instructions, questions and explanations indicated that the translations assisted them in better understanding the work covered in the module. Lastly, most students (92%) thought there was a need for such an intervention, and they provided reasons for their stance in Data Set 5.

Data Set 5: Students' explanations of the answers given to the last two questions

Two main themes were identified from the students' explanations for their answers to Questions 3 and 4: (i) positive explanations and (ii) challenges identified. Four sub-themes were identified under the first theme and two under the second theme. These are described below.

Theme 1: Positive explanations.

Sub-theme 1: Better understanding of the subject matter

The thirty-nine students who downloaded the translated assignments explained that it assisted them in understanding the content of the subject better. Below are examples of pertinent responses received:

- *It helps me a lot as I did not understand at first.*
- *It helps because I understand the work better.*
- *I understand the work much better*.

Thus, the fact that students felt that the translations assisted them in better understanding the content of the subject could be one of the contributing reasons why the Afrikaans-speaking students' performances in the two tutorial assignments were better than the English mother tongue students' performance.

Sub-theme 2: Receiving translated assignments was advantageous

Thirty-two students responded positively and said receiving the assignments in their first language was 'great'. Below are specific sentiments expressed by the students:

- *The program is doing a great job!*
- *The translated tutorials are a good idea.*
- *This is a great service and students are lucky to have this service available.*

These comments imply that the students were satisfied with the intervention. In addition, the third response implies that the students did not think of the intervention as a right they had. Instead, receiving the

tutorial assignments in IsiXhosa and Afrikaans was perceived as 'being lucky', which could be inferred as 'being privileged'. An inference can be made that the students did not expect to receive translations in their first language as they knew that the university used English as its medium of instruction. Also, language support interventions in the form of translations are not standard practice at the school level (the policy does not require schools to implement such interventions), which could be another reason why the students regarded it as a 'privilege' (Department of Basic Education, 2019).

Sub-theme 3: Empathy showed by English home language speaking students

Another positive response was that the 23 English home language speaking students who completed the survey showed empathy towards students who were additional language speakers of English. They explained that having the tutorial assignments translated into IsiXhosa and Afrikaans was an innovative idea because these students would better understand what the assignments were about, which could assist them in doing better in their modules. Certain students provided the following recommendations for the way forward:

- *I feel it will benefit second language students tremendously.*
- *I think the translated tutorials do assist students, as English is not their first language.*
- *Basically, I think translated tutorials are good because some students struggle to understand in English.*

Moreover, one student felt that this initiative could lower the dropout rates. An inference can be made that the student was aware that learning in English is challenging for additional language speaking students and that it could be one of the reasons why many students fail and do not complete their degree programmes on time. Thus, the student thought that receiving the tutorial instructions and explanations in Afrikaans or IsiXhosa would aid the students' understanding and strengthen their chances of passing their subjects, which correlates with the aim and objectives of this paper.

Sub-theme 4: Creating equality

One student noted:

- *I think they are a good venture, they create a sense of equality.*

The comment from the student implies that he/she thought that the translations levelled the playing field.

That is, students who were additional language speakers of English could make sense of and understand the tutorial assignments better because it was in their mother tongue (similar to students who received it in English and who were English home-language speaking students). In this instance, an inference could be made that this response alluded to decolonising the curriculum and breaking the dominance of English in the classroom, on the one hand, and providing these students with an equal opportunity to pass their respective subjects, on the other hand.

Theme 2: Challenges identified

Sub-theme 1: A need to translate the assignments into other languages

Nine students suggested that the assignments' instructions, questions and explanations should also be translated into other languages and not only into IsiXhosa and Afrikaans. Below are some of the students' suggestions:

- *IsiZulu must be catered for.*
- *I think all 11 languages should be catered for.*
- *Consider adding other languages.*

These students' responses indicate a need for language support and that IsiXhosa and Afrikaans speaking students benefited from the support, but they did not. It thus provides evidence for the argument in this paper, which is that English additional language speaking students need transformative language support interventions to improve their understanding of instructions, questions and explanations given in tutorial assignments, tests and examinations in their different subjects.

Sub-theme 2: Not making use of the translation provided

Seven students indicated that they did not download the translated assignments because they were "lazy" and thereby not "creating more work" for themselves. The students concurred with the response below:

- *I was too lazy to download the translations.*

This response is not uncommon, as there will be students who do not want to make the extra effort to help themselves. At least they were honest in explaining why they did not use the support provided

Discussion

The analysis in the previous section focuses on three main issues, namely:

1. The language distribution of the first-year students who were registered for the Management 131 subject;
2. The results of the students in the two tutorial assignments that were translated, and
3. The students' survey responses, which can be grouped into three findings: First, the translations aided the students' understanding of the content in the module. Second, it was an innovative transformative idea to provide language support in the form of translations to English additional language speaking students. Third, translations of the formative assessments should also be provided to students who speak other South African languages.

Figure 1 shows the language distribution of the first-year students registered for the Management (MAN 131) subject in the first semester of 2017, where most of the downloads occurred. However, if one compares this finding with the results in Table 1, it is only the IsiXhosa finding that correlates with the number of students who reported IsiXhosa as their first language. Table 1 reflects that only 47 students indicated that Afrikaans is their first language, but 163 Afrikaans translations were downloaded for the first assignment and 112 for the second.

A possible reason for the discrepancy in the Afrikaans downloads could be that the same students could have downloaded the translations more than once. It could also be that some of the students who indicated that they were English home language speakers downloaded the translations as well because they came from Afrikaans-speaking home environments. This inference points to the dominance of English and the fact that it is regarded as the 'language of choice' (Bada, 2017; Heugh, 2013; Xue & Zuo, 2013). Moreover, both students and their parents regard English as 'superior' to the other indigenous languages, as it is seen as the 'global language that can open doors' and as a result, parents would intentionally use English to communicate with their children so that the children can become fluent in the English language (Dyers, 1996, 2001; Xue & Zuo, 2013). That is why the children, when they come to university, regard English as their first language, despite their parents speaking Afrikaans (Dyers, 1996, 2001). It could be argued that the preference for the English language is one of the reasons why the other indigenous languages in South Africa are not further developed and strengthened (Masino & Nino-Zarazua, 2015; Matsinhe, 2004; Mgqwashu, 2011).

However, this inference also speaks to Cummins' (2008) division of BICS and CALP and his explanation of language proficiency in a social situation (BICS), which is characterised by interpersonal interaction and requires only basic interpersonal language proficiency from the communicator because meaning is negotiated by the participants in the conversation and is conveyed using language. As such, students who come from an Afrikaans-speaking background and switched to English only will have BICS that is better developed than their CALP. As a result, they will think that they have mastered the English language and will regard themselves as English mother tongue students. However, when it comes to CALP, they will need assistance, which could be why more Afrikaans downloads were made (163 and 112) than the number of students (47) who reported they were Afrikaans-speaking.

The second finding that emerged from the data is the results presented in Figure 2. The results reflect that the Afrikaans-speaking students' performance (78.6%) was higher than the English-speaking students (76.21%), followed by the IsiXhosa-speaking students' performance (71.90%). Thus, the results validate what the students reported in the survey – the translated tutorial assignments improved their understanding of what was required of them and, in so doing, enhanced their performance in the two assessments. In addition, the fact that their results compared favourably to the results of their English counterparts is further proof that the transformative translation intervention strategy produced the desired result. When students are empowered to understand better instructions, questions and explanations given in formative assessments, they could perform close to, or better than, the English mother tongue students, as the results showed. This finding is also in line with what Cummins (2008) argues for - that English additional language speaking students require language support to succeed academically since they have to learn the language of instruction and, at the same time, learn the academic content. It also speaks to an element of transformative learning in that the students were provided with the opportunity to read and understand the instructions in their own language, and not in the colonial language.

However, the authors are mindful that other factors (such as having sufficient time to complete the tutorial assignments and consultation with the lecturer and

tutors) could have also contributed to the students' good performance. Also, since this was a pilot project, there were no previous findings that could be used to compare or benchmark the students' performance. The only comparison that could be made was with the overall pass and failure rates of the MAN 131 subject in 2016, where there was a 74.2% pass rate and a 25.8% failure rate. The pass rate of MAN 131 in 2017 was 89.5%, and the failure rate was 10.5% (Department of Management, 2017). This means that there was an increase of more than 15% in the pass rate in 2017. The authors propose that the provision of translations in the students' mother tongues contributed to the increase in the pass rate in the module in 2017.

Lastly, the fact that the English home language students and the students who downloaded the translated assignments felt that the intervention strategy was an innovative and much-needed step, underscores the need for students to be taught in their native language as it will improve and enhance their understanding of what they read and learn (Cummins, 2008; Department of Basic Education, 2018, 2019; Whiteside, Gooch & Norbury, 2017). This need for mother-tongue education is further highlighted by the nine students who indicated that translations into their first languages should also be provided since they spoke some of the other eleven languages.

Smith (1999) and Chilisa (2012) advocate that the concepts of "deconstruction and reconstruction" question that which is understood as "the norm" in order to rewrite history so that indigenous people's norms, traditions and cultures rightfully be acknowledged as legitimate and valid. Similarly, transformative learning pedagogy emphasises the need to question and challenge experiences and perceptions from a colonial nature. These should be critically analysed, and students should be empowered and encouraged to exercise their agency in a transformative manner. In this regard, the additional language-speaking students exercised their right to construct meaning in their home languages, which form part of their culture, values and traditions. They were pleased that they were provided with the opportunity to receive the instructions, questions and explanations of the tutorial assignments in their mother tongues. Therefore, the translation intervention strategy validated the students' knowledge and lived realities, which is what Gentry (2022), Hurst and Mona (2017) and Cranton and Taylor (2012) also argued for.

Equally important is the comment by another student - "…they [the translated instructions, questions and explanations] create a sense of equality." The two responses (an innovative idea and equality) drive the message home – that indigenous languages should be acknowledged, respected, and embraced so that transformative learning can occur. The authors propose that students and the broader communities in South Africa and elsewhere should be allowed to practise their right to be taught in their home languages. If that is not feasible (as is the current situation in South Africa), transformative language support interventions should be in place to assist these students, which is what Tinto (2009), Cummins (2007, 2008), Strydom and Mentz (2010) and Whiteside et al. (2017) (amongst others) suggest should happen.

Conclusion and Recommendations

Three overall findings could be inferred from the analysis and discussion of the data collected for this pilot project.

- There are still more students who are English additional language speaking students in the business faculty at the university than those who are English mother tongue speakers;
- The translation intervention strategy aided the English additional language speaking students' comprehension of the instructions, questions and explanations received in the tutorial assignments. In so doing, it levelled the playing field and enabled them to perform optimally, which increased the pass rate in the Management 131 subject.
- The acknowledgement from English-speaking students that the intervention strategy was an innovative idea, together with the additional language speaking students who suggested that it should be done for their languages as well, is a strong indication that there is a need for transformative language support for students whose first language is not English.

Therefore, it is recommended that more language support interventions be created and implemented for additional-language-speaking students of English to assist them in better understanding the content of their different subjects.

A second recommendation is that the faculty and the university management attempt to provide more financial support so that translation interventions are also offered to students who speak the other official languages.

The last recommendation is that the translation support intervention should also be extended to second and third-year students so that they, too, can benefit from an enhanced understanding of instructions, questions and explanations in their assignments and be able to perform as well as the English home language speaking students and even better, as was the case for the Afrikaans-speaking students.

The authors acknowledge that this was a pilot project, and they did not have a control group or a pre-and post-test to compare the results. However, the fact that the students passed the two assignments well, none of them failed, and the overall pass rate in the module increased by 15% demonstrates that language support interventions are essential enablers for students who are not mother-tongue speakers of English at post-secondary institutions.

Therefore, the findings discussed draw attention to the fact that higher education institutions globally should take the lead in supporting and advocating for language support interventions in the form of translations for both formative and summative assessments for their students who are non-native speakers of English. In so doing, undergraduate students' retention and success rates would increase. Finally, providing innovative translations as a form of language support will instil a sense of equality among all students regardless of their home languages. Such provisions will assist with the quest for transformative education.

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The Impact of Story: One Preschool's Experience using Story Cubes as a Culturally Relevant Oral Language Strategy

Laura Strong[1] and Michelle Amodei[2]

Abstract

Storytelling is a universal practice which can be traced back to the beginning of human existence. Research on language development indicates that storytelling strategies are beneficial for supporting oral language development in young students (Kennedy, 2016). Story cubes, used as a reflective, culturally relevant instructional strategy, is highly motivating because they encourage students' personal, relevant contributions while addressing the language needs of Dual Language Learners. When acquiring a second language, these students face unique challenges in overall acquisition of literacy skills (Amodei & Strong, 2019). This article describes a study conducted at a trilingual preschool. Four preschool teachers and 60 PreK students ages 3-5 years participated in the study designed to explore the use of story cubes in their classrooms as a culturally responsive and reflective strategy. Accomplished through small and large group engagement with story cubes, researchers collected qualitative and quantitative data using observational field notes, Likert scale questionnaire responses and narrative interview transcript responses.

Keywords: *Storytelling, Early childhood, Oral language, Culturally relevant strategies, ELL/DLL, Story cubes*

Miss Ana takes a colorful object out of the basket and rolls it on the carpet in front of the thirteen preschoolers in her trilingual classroom. They lean forward expectantly, waiting for the cube to stop tumbling so they can see which side faces upward. "Love", Miss Ana whispers softly, crossing her hands over her heart. The children wiggle around and scoot closer to inspect the brightly colored hearts on the top of the cube.

"How can you show someone you love them?" Miss Ana asks, observing the thoughtful gazes and raised hands.

"Give them a million presents!" Emilio shouts.

"Tell them 'I love you,'" Nedra adds.

After a few more children volunteer to share their experiences, Miss Ana rolls the cube again. This time, the upward facing facet depicts a different emotion: "scared".

"What is another word for scared? Was there a time when you felt scared? Can you tell us a story about that?" Miss Ana prompts.

Amir states anxiously, "When I thinked there was a monster in my closet, I said to my dad to come and get it out...".

One by one, students share stories describing their emotions, including "excitement" and "happiness". The teacher ends their sharing time by promising to use the cubes again later, after snack time.

Oral stories, like the ones in the vignette above, have been shared universally across cultures for centuries, regardless of social class, languages spoken, or knowledge and skills of the people. Sharing stories has been essential to the development of humankind as far back as can be traced by historians (Del Negro & Kimball, 2021; Zipes, 2012). Storytelling encourages both receptive language learning (listening and understanding) and expressive language learning (gesture and talk). It provides an opportunity for language learners to develop listening skills prior to production of expressive language, and then offers a low-stress environment in which to practice oral language (Bateman, et al,

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2017). It is well-established that oral language skills in a person's first language (L1) are a significant contributor to the development of second language (L2) knowledge and skills (Tabors, 2009). Young Dual Language Learners (DLL), therefore, face specific challenges when learning a second language because their home language is not yet fully developed. Teachers of young DLL students must possess and implement a variety of instructional tools that are meaningful, engaging, culturally responsive, tactile, and have the capacity to allow students to make personal connections.

Theoretical Framework

Two Theories

The theoretical lenses through which this study is framed include culturally responsive pedagogy (Ladson-Billings, 1994) and transformative learning theory (Mezirow, 2003). According to the literature (Lynch, 2016), culturally responsive pedagogy is a student-centered approach to teaching and learning. This theory aligns with pedagogical approaches which seek to empower students through strategies which include "concepts that are related to the personal interests and experiences of students" (Howard, 2010, p.4). As outlined in the culturally responsive elements of teaching (Howard, 2010), the first principle states that "students are affirmed in their cultural connections" (p. 4). Teachers serve as the "cultural liaison" between students' cultures and the school's culture. Teachers are tasked with building a "communication bridge" by which equitable opportunities are made available to students and fosters development of bicultural citizenship (Howard, 2010). Fusing both the elements and strategies described as culturally responsive pedagogy, the participants (teachers) in this study were able to use storytelling and story cubing strategies to support building that communication and cultural bridge for dual language learners. Teachers and students mutually benefitted from the implementation of these student-centered strategies**.**

The second theoretical framework's central construct includes reflection, a critical component of transformative learning theory (Mezirow, 1990). Though his original work focuses more on adult learning, Mezirow (1990) posits "the most significant learning experiences…involve critical [reflection]—reassessing our own orientation to perceiving, knowing, believing, feeling, and acting" (p. 13, as cited in Taylor, 2017, p. 77). In this study, teachers implemented storytelling and story cubing strategies which targeted these specific opportunities for students. The practical activity of reflecting on their own individual orientations to their cultures, their worlds, their beliefs, and feelings provided outlets of expression, oral communication practice, and connections to their peers and the classroom community. Young dual language learners who faced challenges due to language barriers improved oral language skills embedded in the reflective storytelling and story cubing approaches.

Oral Traditions

Oral traditions exist in every culture around the globe. In many African countries, elders pass along the stories of their ancestors through weekly tribal meetings. Youngsters eagerly anticipate their role in the stories they have become familiar with hearing and look forward to the chance to be included in the performances (Tuwe, 2016). In several Latino communities, students are taught very early the importance of remembering and maintaining the heritage of their people. Through storytelling, families share the rich culture and traditions of historically significant events and triumphs they have faced. These stories are woven into the fabric of their lives (McCabe, 1997). These cultural practices are significant components to the modern, developmentally appropriate, early childhood classroom because they are a natural motivator, and complement a culturally responsive pedagogy. McAdams (1996), explains that "stories create a shared history, linking people in time and event as actors, tellers, and audience" (p. 28). Young DLL students benefit from opportunities to practice oral language, and engaging in *storytelling* activities is one meaningful way to provide this practice.

Second Language Learning

Young students who are learning a language in addition to their native one will develop needed language and literacy skills differently from their peers who are not learning an additional language. Most often, students who are three years of age and older learn a second or additional language through the process of sequential acquisition (Tabors, 2009). Sequential acquisition of a language occurs when a person already has a dominant home language. The process of learning that new language will be different than exposure to a native language from a young age, particularly in the area of vocabulary skills and interpersonal communication (Hammer et al., 2014). The use of storytelling strategies

can be highly effective for learning new vocabulary, understanding new contexts, and according to Isik (2016), help students to feel connected to their social environment. The ability to create stories or narratives plays a significant role in a DLL's language acquisition because they enable those social connections students need in classroom settings (Demir & Goldin Meadow, 2015).

Sorting through the complexity of second language acquisition in the early childhood classroom can be made easier when there is an intentional focus on encouraging young students to practice speaking and listening in both L1 and L2 (Limlingan et al., 2020). When students have opportunities to practice oral language in both their home and emerging languages, they are at a distinct advantage as they progress into elementary school where the cognitive demand is higher as they are expected to read and write with fluency in their acquired language (Tabors, 2009). Research indicates that when young students can create and articulate narratives competently, they are more likely to experience future academic success (Kennedy, 2016). To this end, teachers of young students need strategies that are engaging, meaningful, and flexible to support students in creating and sharing their narratives about a variety of topics and themes.

Story Cubes as an Instructional Strategy

Story cubes offer teachers and students multiple ways to engage in language development that is interactive and meaningful. Storytelling using cubes is highly motivating because the student's contributions are personal and relevant. In the seminal educational work by Montessori with young learners at the turn of the twentieth century (as cited in Stapleton, 2014), the use of hand-held objects allowed them to excel and learn language. Educators who provide their students with such manipulatives and hands-on learning experiences are really helping to reinforce concepts and instruction that is delivered visually and auditorily (Copple & Bredekamp, 2009).

The benefits of story cubes as a storytelling tool are wide-ranging. They are an effective, creative tool used by educators to serve a variety of students and purposes, especially by educators who subscribe to Constructivist learning approaches in early childhood classrooms. From all linguistic and cultural backgrounds, students benefit from the broad possibilities story cubes offer. Al-Hazza and Bucher (2008) believe that story cubes, which are based upon Arab students' literature, can help bridge the gap between cultures. According to Golsteijn and den Hoven (2013), communication can be strengthened by photo cubes, which is a variation of story cubes. Townsend (2011) wrote that Rory's Story Cubes has become one of the most popular games purchased on Amazon. Other products, such as: roll-a-story, foam story starter cubes, wooden blocks, and wipe-off marker/foam blocks are available from multiple sources. Simply searching a few key words online will yield several sources where these items can be accessed or purchased.

Research Questions

Two questions guided the research study:

1. In what ways can story cubes enrich the oral language development of Dual Language Learners (DLLs), ages 3-5 years?
2. How can teachers implement story cube strategies to mediate the relationship between DLLs' social engagement and experiential story telling practice to increase oral language production?

Methodology

Participants

Because the study required a linguistically diverse population, demographic location was a primary consideration for choosing this population to sample. Located in a diverse, urban area, each of the 4 classrooms consisted of approximately 85% Dual Language Learners. Four female teachers, one of whom was bilingual in Spanish and English were the respondents to the study. Four Pre-K classrooms in a trilingual urban preschool were the sites of the study, within which 42 students, ages 3-5 years, engaged with story cubes.

Research Design

This triangulated mixed-methods study was designed by equally weighting both quantitative and qualitative data concurrently (Gay et al., 2006) to determine how preschool teachers at a trilingual early childhood program use story cubes as a language development tool with their DLL students, and to assess the effectiveness of these practices. The quantitative tool used was a five-question survey using a 5-point Likert scale (appendix A). Additionally, qualitative data were collected using three open-ended questions (appendix B), and a template for observational field notes (appendix C) collected by two principal investigators.

Teachers received resources on strategies for using story cubes with their students, and the researchers spent time in their classrooms observing activities that

included using them. Teachers were supplied with materials including cube templates on card stock and booklets with suggested activities and instructions for use of the cubes.

Procedures

Co-investigators conducted a preliminary overview and training with a group of six preschool teachers and the director of the school, four weeks prior to data collection. The training booklet consisted of eight suggested strategies designed by the co-investigators and grounded in research for developmentally appropriate practice with young language learners. Teachers were encouraged to choose a few strategies or feel free to implement their own creative ideas using the story cubes. Site approval for collecting data was obtained prior to visiting and observing the four preschool classrooms. Of the six, four preschool teachers agreed to include the use of story cubes as part of their small and large group activities. Permission was granted in writing by the participating program for the principal investigators to observe and collect photographs and field notes while students engaged in the activities.

On two separate occasions occurring four weeks apart, co-investigators visited the classrooms to observe teachers implementing strategies and preschoolers engaging with the story cubes. Co-investigators collected observational data through field notes as preschool teachers and students interacted with the story cubes and engaged in various storytelling activities. Teachers were given a list of suggested activities for engaging with students in story cubes; however, teachers were also encouraged to be creative and implement original uses. A standardized template served as an observational protocol tool; this was used by each investigator to increase inter-rater reliability.

Following each field observation of data collection, principal investigators conducted in person interviews with preschool teachers. The interviews consisted of 5 Likert scale questions which measured the degree of satisfaction for increasing oral language production using the story cubes. Additionally, three open-ended questions were asked which prompted teachers to provide narrative descriptions of their experiences.

Measures, Data Collection, & Analysis

Familiarization of the data from field notes and narrative interview transcript responses enabled the researchers to code the qualitative data and identify emerging themes to conduct thematic analysis of the data. Quantitative results obtained from the Likert-scale questionnaire were also used to reinforce the relevance of identified themes. Co-investigators tested the hypothesized model in which storytelling cube implementation mediates the relationship between engagement with social and experiential hands-on storytelling practice and oral language production.

Data Analysis

Principal investigators combed through multiple data sources. Familiarization of the data from field notes, and narrative interview transcript responses enabled the researchers to code the qualitative data and identify emerging themes to conduct thematic analysis of the data. Qualtrics was utilized to summarize qualitative data from interviews; additionally, this software was useful in synthesizing quantitative results. Quantitative results obtained from the Likert-scale questionnaire were also used to reinforce the relevance of identified themes.

Findings

The Likert scale results indicated teachers' high regard for the use of the cubes with a range of 3 to 5 on individual statements with 1 being ineffective and 5 being highly effective.

In addition, analysis of open-ended questions resulted in preliminary thematic threads:

1. Increased engagement of students.
2. More complex use of oral language.
3. Heightened social connections among students and teachers.
4. Intentional use of open-ended prompting that enhanced oral language production.

Open-ended interview questions yielded insightful responses from the preschool teachers' experiences. T1 indicated that intentional teacher prompting seemed to encourage an increased amount of oral language production. Specifically, she mentioned that dual language learners who were usually more reluctant to speak had

Table 1. *Likert Scale Responses*

Statement (S)	S1	S2	S3	S4	S5
Teacher A		3	3	5	5
Teacher B	5	4	5	4	5
Teacher C	5	5	5	5	5
Teacher D	4	4	5	3	5

an increase in production when using the Emoji Cubes strategy. Also, more complex use of oral language was linked to teacher prompting with story cubes. T2 described students' resulting oral language use as, "… using more background knowledge when describing", and that they moved beyond "yes or no" answers when viewing pictures on the cubes. Overall, all teachers indicated an increase in the engagement level of the preschoolers, noting that some strategies using the cubes were more "popular" than others. In addition to the strategy highlighting emotions, students told stories about "community helpers" such as firefighters, police officers, doctors, etc. and demonstrated an increase in social connections as a result.

Conclusions and Discussion

Overall, principal investigators observed multiple positive outcomes. Students were engaging in oral language with increased frequency. Students interacted with peers and teachers to share creative stories, built communication bridges, and reflected on the world through their own unique cultural lens. As teachers reflected on the implementation of the culturally responsive strategies, they indicated they enjoyed using the story cubes, and students were highly engaged. Consistent results across data collection methods indicated that students benefited socially from engagement with others as they participated in the story cube activities, and that oral language production was increased as they participated in the reflective storytelling and story cube activities.

While data analysis revealed emerging themes of increased engagement, complex use of oral language, increased social connections and intentional teacher-prompting which resulted in increased oral language production, the researchers believe further investigation is needed that considers language learners of varying ages from infancy through elementary school-aged students, and additionally, utilizes larger sample sizes. Due to limitations of the study, such as small sample size and individual location which contributes to lower generalizability of results, the researchers are confident that a larger sample size at multiple locations could improve validity and reliability of study results. Possible implications for future study include increasing the number of participants, selecting both rural and urban locations for comparison of implementation and outcomes, and developing an observation protocol which measures pre- and post- oral language production as part of the quantitative measurement.

The goals of this study were to learn how the use of story cubes could benefit young dual language learners and how their teachers could implement those culturally responsive strategies. Throughout this project, researchers not only documented benefits of oral language usage, but also gained new insights to the multifaceted ways in which young students in the observed classrooms were able to make enhanced social connections with their peers and teachers. Story cubing strategies show potential for impacts on young students' language development, but also for their social/emotional growth. Based upon the study results, researchers believe that providing young students and their teachers with a variety of story cubing strategies will increase oral language usage and provide opportunities to explore culturally relevant, meaningful, creative, and reflective ways of self-expressive communication.

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Appendix A

Teacher Interview Questions

LIKERT SCALE RESPONSES:

1. On a scale of 1-5, how beneficial was this activity for student's use of oral language with 5 being highly beneficial and 1 being no benefit at all?

   1 2 3 4 5

2. On a scale of 1-5, how effective was this activity for engaging students in storytelling with 5 being highly effective and 1 being ineffective?

   1 2 3 4 5

3. On a scale of 1-5, Dual Language Learners (DLL) students used more expressive oral language during the activity with 5 being significantly more expressive oral language used and 1 being significantly less oral language used.

   1 2 3 4 5

4. On a scale of 1-5, students use of language remained focused on the activity with 5 being always focused on the activity and 1 being never focused on the activity.

   1 2 3 4 5

5. On a scale of 1-5, using story cubes to encourage oral language was a good use of instructional time with 5 being very good use of instructional time and 1 being not useful at all.

   1 2 3 4 5

OPEN-ENDED INTERVIEW QUESTIONS:

1. Share some examples of how students expanded use of oral language with the story cubes.

2. What ideas do you have for using story cubes in your classroom? How would you expand on this activity?

3. Can you describe how this activity supported DLL oral language growth?

Appendix B

Observation Protocol

Date	Class
Time	Observer

Description of Activity	Student Behaviors/Use of Language	Teacher Feedback

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The Transformative Development Potential of Higher Education in the 4th Industrial Revolution:
A strategic innovation ecosystem approach for technological development and knowledge transfer in the 21st century Cameroon

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Abstract

Strategic innovation ecosystems have complex forces for the transformative development of human society through higher education. The sustainability of socio-economic development of Cameroon requires a robust national and regional innovation ecosystem in which higher education plays an important role in value and wealth creation. The challenge with Cameroon's higher education is a transition from the traditional rigid bureaucratic system to a more dynamic performance-based management ecosystem that can mainstream resilience and recognise excellence. The study adopted the innovation ecosystem approach to explain the transformative potential of higher education, using correlational research design. We selected nine advanced schools of technology, engineering, and management from public and private sectors across four regions of Cameroon, including a purposive and simple random sampling of 370 respondents. Spearman correlational ranking tested our three hypotheses. All three hypotheses were significant at PV=0.000 or 95% with the predictive coefficient of 59.7%, 55.8% and 71.3% respectively. We concluded that the transformative potential of higher education is evident through development of technological knowledge networks, innovation/knowledge clusters, and transformative digital governance in enhancing transformative learning. We recommend that higher education institutional leadership should consider these transformative development indicators as institutional benchmarks for higher education quality assurance, responsiveness assessments, and governance practices. These can ensure the emergence of the clustered innovation ecosystems and competitive intelligence at the national and regional university environments that contribute to sustainable socio-economic development of Cameroon and Africa.

Keywords: *Strategic Innovation Ecosystem, Technological transfer, Transformative Development, Fourth Industrial Revolution, Competitive intelligence, Strategic institutional governance*

Introduction

The sustainability of socio-economic development in Africa requires a robust national and regional innovation ecosystem. Higher education plays an important role in mainstreaming the national and regional development agenda through knowledge production and open innovation ecosystems (Yan, Wang, Yan & Zhai, 2020). In this light, the challenge with Cameroon's higher education is a transition from the traditional rigid system to a more dynamic knowledge society and value creation ecosystem. Over the years, there have been many policy innovations at system level since 2005 leading to new institutional governance (Njebakal, & Teneng, 2017). However, there exist institutional discrepancies in building a robust institutional knowledge actualisation and crystallisation for higher education innovation ecosystem (Fagerberg, 2015). There have been many limitations to research and development in fostering technological innovation and relevant core competencies that respond adequately to competitive leverage of the fourth industrial estate (Fagerberg, 2015).

The fourth industrial revolution is marked by indicators such as virtual reality, the internet of things, artificial intelligence, and block-chain innovations. These variables have had significant but disruptive contribu-

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tions to knowledge management, pedagogic innovation, quality assurance and strategic institutional governance in higher education today (Igel, Ullrich, & Kravcik, 2018). The transformative development in education in Africa and in Cameroon, in particular, requires an endogenous knowledge and competencies built on competitive intelligence as means of guaranteeing new technological transformation for a sustainable and inclusive growth (Arbeiter, & Buča, 2021). These innovative processes need well-developed pre-incubators, incubators, science parks, clusters and international research collaboration networks in scientific knowledge sharing and exchange (Ablaev, 2018). Therefore, adopting the cluster innovation ecosystem, transformative digital governance, digital knowledge networks and strategic-competitive intelligence in innovation development and knowledge provide strategic institutional capabilities of higher education to contribution to sustainable socio-economic development of Cameroon and Africa (Bell, 2016).

Theoretical Framework

Strategic Innovation Ecosystem

> *"The innovation ecosystem is defined as groups of symbiotically interacting 'players' which include companies and other players such as the providers of knowledge, resources, and 'rules of the game'. It is the companies which constitute the economic 'engine' of the ecosystem since they create value for consumer-users, output, and employment."* (Fransman, 2014, p. 5).

The higher education innovation ecosystem will integrate pedagogical innovation research systems, community development systems, and institutional governance systems. The symbioses of these complex transformative systems provide avenues for knowledge distillation and valorisation (Johansen, 2018). According to Godin (2015) the early history of the the term "innovation" gives a pejorative connotation to the concept. To him, the term was first used by anthropologists and sociologists, and it has been popularised by economists and the management world.

> *"Everyone agrees that innovation is crucial for the performance over time of both companies and countries. However, there is far less agreement regarding two key questions: - How does innovation happen? - How can we make innovation happen?"* (Fransman, 2014, p. 5)

Innovation therefore is an important indicator in the transformative development of knowledge economy through higher education. This concept deals with the creation and development of ideas, products, organisations and quality management (Spinoglio, 2015). The implications of globalisation through the development of information and communication technologies demands organisations to be more innovative to be competitive in the local and global knowledge environments (Fransman, 2014). In this line, the "strategic innovation" is crucial to aligning organisational processes and ensuring the success of its managerial operations (Palmer & Kaplan, 2007). Bridging the ecosystem and strategic innovation framework will give an organisation a sustainable strategic performance in the organisational management in the disruptive knowledge ecosystem. The University as a non-profit organisation in the 21st century must adapt to new knowledge changes in order to be relevant to its environment. The effective and efficient deployment of resources depends on institutional innovation strategic ecosystems (Reichert, 2019).

According to Kotsemir, Abroskin, and Dirk (2013), the traditional reading of innovation from the Schumpeterian concept see innovation as "a historic and irreversible change in the production of thing and creative destruction." (p. 4) Our faculties and departments still lack the disruptive and creative destruction potential because there are no practical sites for innovation especially from the organisational configuration standpoint. University knowledge production should be able to build an irreversible change that brings values and wealth creation to the community (Brennan et al 2014). Innovation is the "establishment or enlargement of organisation processes, methods assimilation, and exploitation of novelty" (Spinoglio, 2015, p. 5). Newness and change are the driving forces of innovation which can be manifested in organisational structures or processes. But when institutions are hostile to innovation, rigidity will continue to plague its effective functioning (Lawal, 2017). Innovation is also seen as "incremental." This is the process in which new products emerge. So, as total quality management in educational reforms are built on the strategic innovation, it is then the responsibility of strategic leaders at the corporate level to design the development of strategic innovation (Palmer & Kaplan, 2014) as well as, foster the development of an innovation ecosystem (Reirchart, 2019). These approaches are more pragmatic in skills and competency development. The ecosystem reinforces the university

capacity in knowledge production and dissemination and the interconnected knowledge networks and collaboration. The concept of innovation has received varied scholarly attention since the dawn of the 20th century. Most scholars used innovation and creativity interchangeably, but from the onset they were never use as related terms (Godin, 2015). Innovation is perceived by some scholars as an extension or the modification of invention and production of new ideas (Godin, 2015).

This definition is very applicable in knowledge production and dissemination when it concerns research and development. To improve university teaching, curriculum innovation in Africa is key in the production of relevant content and not the duplication of the western norms. Lotz-Sisitka, (2015) notes that innovations bring competitiveness to the organisation. Also, distinctive innovation deals with development and re-engineering of knowledge, content methodologies and approaches, and disruptive innovation. The term also includes assimilation, transformation, exploitation, and translation of new knowledge in the practical context (Godin, 2015).

> *"Innovation ecosystem as co-innovation networks, in which actors from organizations concerned with the functions of knowledge production, wealth creation and norm control interact with each other in forming co-evolution and interdependent relations (both direct or indirect) in cross-geographical contexts, and, through which new ideas and approaches from various internal and external sources are integrated into a platform to generate shared values for the sustainable transformation of the society."*(Cai, Ma, & Chen, 2020, pp.)

Alkhanbouli (2022) explored the typology of innovation ecosystems based on the university innovation ecosystem in the United Arab Emirate universities. The study explored university incubators and research centres with entrepreneurial mentality. In this typology. The research identified six innovation ecosystems: corporate innovation ecosystem, digital innovation ecosystem, city-based innovation ecosystem, high-tech- SMEs centre ecosystem, hyper-local innovation ecosystem, and university-based innovation ecosystem. In the context of Cameroon all these typologies of the ecosystem can be applicable. These micro innovation ecosystems are interconnected in building the macro higher education innovation ecosystem. Cai, Ma, and Chen (2020) outlined the overarching framework of higher education and innovation ecosystem. Knowledge economy ecosystem, new knowledge and technologies employs an ambidexterity in the exploration and exploitation of knowledge. In the knowledge innovation ecosystem, system relation to the university and economic development are very important. in this way, higher education become a driving engine of economic growth in the macro innovation ecosystem (Fagerberg, 2015). Tierney and Lanford (2016) think that these new trends in public life demands knowledge, innovative frameworks, and social intelligence competences in institutional knowledge management (Viviers, Saayman, Muller, & Calof, 2002). Yan, Wang, Yan, & Zhai (2020) examined the open innovation ecosystem of higher education. In their research, they suggested that the higher education open system concerns the university capability to create open sources of knowledge that contribute to innovation outcomes. The open innovation ecosystem enhances the flow of ideas knowledge, information and data. The open innovation provides opportunities, efficiency in research transformation and valorisation as well as commercialisation. Knowledge-driven innovations in internationalised environment create avenues for the organisational competitive advantage and institutional visibility. The study concluded that the open innovation ecosystem could have a positive effect on the development of higher education. This kind of innovation provides auto-financing strategies and wealth creation opportunities for the universities to fulfill their third mission through knowledge and technological transfer. The research also found that the university innovation ecosystem influences a student's creative potential as they navigate the innovation ecosystems with creative ideas and exchange avenues (Bocket et al 2020).

Ansgar, Bernardo and Gerhard (2016) examined the role of innovation in public policy. Even though innovation has been perceived as more of a business concept, the concept is well-rooted in public policy and corporate governance. Disruptive environmental changes and extensive globalisation informs innovations in public policy. The sustainability and relevance of public policy today relies on the continuous strategic innovation processes in institutional governance. Higher education public policy has equally undergone the innovation processes. The knowledge driven Fourth Industrial Estate demands incessant innovative strategies which mutually build strategic innovation ecosystems for the university in the effective implementation of public policy and

university contribution to national and regional economic development. In the innovation ecosystem, sustainable strategic management is one of the driving forces of imaginative thinking in policy development. In this view, balancing production and governance innovation are some ambidextrous strategies that an institution may harness in order to remain responsive to external environmental exigencies (Akin ,2016). Vlasov (2021) analysed the influence of massification on internalisation and state funding on higher education on innovation development. The internalisation of funding leads to infrastructural development which can mitigate massification challenges, creativities, and innovative competences for the fourth Industrial Revolution (Nakano & Wechsler, 2018).

Stukalenko, et al, (2016) analysed innovation technologies of learning in the modern education teacher's professional preparedness. Higher education innovation ecosystems enable stakeholders to build clusters and incubators which enhance pedagogic transformative proficiency and professional preparedness for the fourth industrial complex (Lawal, 2017). Rashidi, Azma, Sami, and Sobhoni (2020) note that universities in disruptive advanced technologies knowledge-based organisations can only adapt to national and regional economies by reinforcing national relation with industries. They set out to develop a value creation university framework based on higher education innovation indicators. They employed exploratory and taxonomical approaches. The result of the study showed that financial and pragmatic strategies have positive effects on university adaptability. Also, social outcomes and intra-organisational platforms equally have positive effects. Value creation and higher education have positive impacts on institutional change and competitive intelligence (Pellissier & Nenzhelele, 2013).

Lappalainen, Markkula, and Kune (2015) focused on finished construction clusters on building a regional innovation ecosystem. This study involves action research methods, digital modelling, co-development process parallel research, development and innovation, pathfinders, prototype development, radical innovation, human development, and leadership. These are key ecosystem indicators in a knowledge-based economy. In this perspective, Brito (2018) explored deeper understanding and the dynamics of the university as a promoter of the development of innovation ecosystems. In this setting, universities are perceived as leaders and integrators into this ecosystem. Their contributions are in three-dimensions: knowledge, transformative talent of the university, and university industrial linkage as well as long-term relation strategy. However, the Cameroon higher education institutions still need much resource deployment and policy effectiveness for this structural transformation to take place. Institutional leadership in higher education in Cameroon must consider these new strategic innovation approaches to ensure sustainable structural configuration and system innovation. There is also a need for the integrators of diversity of actors' resources and competences. From this approach, we urge that the university role in the innovation ecosystem be adaptive, complex, and dynamic in order to ensure sustainable strategic innovation and knowledge valorisation processes. This strategic management dimension can guarantee sustainable social economic development, specifically in Cameroon and in Africa in general (Cabeza-Pullés, Fernández-Pérez, & Rodán-Bravo, 2020).

Statement of Research Problem

Cameroon, and, in general, Africa, are still facing many challenges in embracing the Fourth Industrial Revolution due to the lack of digital infrastructure that adequately ushers in this industrial estate. The consciousness of African governments and higher education institutions is crucial in this direction. This is kind of industrial estate needs a digital technological cluster, a security cluster, knowledge management clusters, and high levels of digital governance to inform decision-making through data analyses. The combination of these variables will morph into a robust strategic innovation ecosystem. Therefore, to what extent does transformation potential of higher education from the strategic ecosystemic approaches respond to technological development and knowledge transfer in the emerging fourth industrial complex in Cameroon?

Research Objectives

i) To examine the relationship between digital technological knowledge networks and transformative learning in Cameroon's higher education.
ii) To examine the relationship between innovation/ knowledge clusters and transformative learning in Cameroon's higher education.
iii) To examine relationships between transformative digital governance and transformative learning in Cameroon's higher education.

Research Questions

i) What is the relationship between digital technological knowledge networks transformative learning Cameroon higher education? ii) Is there a relationship between innovation/knowledge clusters and transformative learning in Cameroon's higher education?
iii) Is there a relationship between transformative digital governance and transformative learning in higher education in Cameroon?

Research Hypotheses

i) Ha1: There is no significant relationship between digital technological knowledge networks and transformative learning in higher education in Cameroon.
ii) Ha2: There is a significant relationship between innovation and knowledge clusters and transformative learning in Cameroon in higher education.
iii) Ha3: There is no significant relationship between transformative digital governance and transformative learning in Cameroon in higher education.

Significance of the Study

This study is important in that it highlights the current technological and economic changes that are affecting higher education in Cameroon. The adoption of an innovation ecosystem approach to explain digital technological knowledge networks, innovation/knowledge clusters, and transformative digital governance demonstrates the importance of these variables in the Fourth Industrial Revolution. This variable addresses the needs of transformative education at the higher education level. It is necessary for universities in Cameroon to build innovation ecosystems that will create avenues for wealth and value creation, knowledge management and technological infrastructure, as well as human capital. There is need for continuous development of new skills and competences such that higher education can adapt to the complex-dynamics of digital innovations.

Research Methodology

In this study we used the quantitative approach with correctional research design

Sampling Procedures

This study was conducted in nine public and private higher education institutions across four regions of Cameroon. The target population was students in public and private higher education institutions from four regions of Cameroon. These regions include the northwest, southwest, littoral and the centre regions.

Table 1. Sample Distribution

Region	Selected Institution (deidentified)	N
Southwest	Biomedical management institution	25
	Technology & management inst.	20
	University regional campus	35
North-western	Polytechnic campus	45
	University regional campus	50
	Private university inst.	30
Littoral	Advanced engineering university	45
	Polytechnic school	25
	Technology school	25
Centre	Development studies local campu	20
	Advanced engineering school	30
	Technology and management school	20
	Total	**370**

(Sources: higher education annual statistics report, 2022)

Table 1 presents the accessible population comprised of 10,185 students. The respondents were selected through simple random sampling and purposeful techniques that allowed every member of the target population to be selected. In this regard, research students were more involved in pedagogical, administrative, and research activities. In this study, only colleges of technology and engineering were considered. Statistics were drawn from the 2021 Higher Education Annual Statistics. We worked with a sample size of the 370 respondents. After administering 435 copies of questionnaires, 370 questionnaires were submitted with a retention rate of 85.52%. Therefore, 370 respondents were engaged in the study, of which 224 (60.5%) of the respondents were males and 146 (39.5%) of respondents were females.

Data collection instrument

The instrument used for data collection was a questionnaire that was analyzed to measure the relationships between variables. The questionnaire was operationalised into four sections containing the construct of the study. These constructs had seven items each. After the development of the questionnaire, it was submitted for expert evaluation of content validity, clarity, and coherence were confirmed. We also administered the questionnaire to ten students within the target population of the students at 0.85. The questionnaire was shown to be consistent and reliable for our study.

Reliability of the Instrument

After one month of pretesting the questionnaire, it was redistributed to the respondents. From obtaining the copies of the questionnaires, the responses were computed into the SPPS software in which we obtained a reliability coefficient stability score of 0.86. the coefficient showed the coherence and reliability of the instrument after recurring tests.

Data Presentation and Interpretation

Relationship between digital technological knowledge networks and transformative learning

Table 2. Questionnaire Responses - Digital Technological Knowledge Networks

N/I	Statements	$\bar{X}$	SD
1	Your institution promotes digital collaboration and knowledge networking ecosystems	3.35	2.80
2	There exists open access to digital knowledge sharing opportunities and talent development	3.49	3.04
3	Your institution has effective industrial partnerships	2.98	2.22
4	There exist continuous or digital lifelong learning programmes in your institution	3.20	2.56
5	Your institution promotes the development regional of digital knowledge ecosystem	2.73	1.86
6	Your institution creates attractive environment for digital investment	2.93	2.15
7	There are digital opportunities for the commercialisation of research findings	3.19	2.54
	Sum Total	**3.12**	**2.45**

(Strongly Disagreed=1, Disagreed=2, Agreed=3, strongly Agreed=4)

Table 2 shows patterns in respondents' views on digital technological knowledge networks in higher education in Cameroon. The seven items designed to measure digital technological knowledge networks had a mean above 2.5. In the first item, 349 (94.6%) of the respondents generally agreed that "Your institution promotes digital collaboration and knowledge networking ecosystems." The second item shows that 348 (94.1%) of the respondents generally agreed with the statement, "There exists open access to digital knowledge sharing opportunities and talent development in your institutions". For the third item, 333 (90.0%) of the respondents generally agreed that. "There exist continuous or digital lifelong learning programmes in your institution." In the fourth item, 321 (86.7%) of the respondents agreed that their institution promotes the development of regional digital knowledge ecosystems. In the fifth item, 224 (60.5%) of the respondents generally agreed with the view that their institution promotes the development of regional digital knowledge ecosystems. The sixth item shows that 277 (74.4%) of the respondents agreed on the opinion that their institution creates an attractive environment for digital investment. Finally, in the seventh item, 323 (87.3%) of the respondents generally agreed that there are digital opportunities for the commercialisation of research findings. From the results of the research question one, the majority of the respondents generally agreed at an overall percentage of 84.7% that digital technological knowledge networks have significant relation with transformative learning in higher education with a cutoff mean of 3.1 and with a standard deviation of 2.4, which is above a normal cutoff mean of 2.5. Digital technological knowledge networks have significant influence over transformative learning capabilities in higher education.

Relationship between innovation/knowledge clusters and transformative learning

Table 3 presents the results from the respondents' views on innovation/knowledge clusters in higher education in Cameroon. Among the items are ones designed to assess innovation/ innovation clusters in higher education in Cameroon. All seven items had a mean above the normal cut off mean of 2.5. In the first item, 284 (76.8%) of the respondents generally agreed that their institution encourages entrepreneurship and start-up ecosystems. The second item shows that 319 (86.2%) of the respondents generally agreed with the statement, "There are emerging technological-based ventures." For the third item, 327 (98.3%) of the respondents generally agreed with the statement, "There is accessibility to funding and mentoring in innovative research." The fourth item indicated that 189 (51.1%) of the respondents agreed that "There are knowledge brokers and accelerators within the innovation clusters." The fifth item shows that 267 (72.2%) of the respondents generally agreed with the view that "There is the concentration of knowledge and expertise within

Table 3. Questionnaire Responses - Innovation/Knowledge Clusters

N/I	Statements	$\bar{X}$	SD
1	Your institutional encourages entrepreneurship and start-up ecosystems	3.12	2.43
2	There are emerging technological - based ventures	3.03	2.30
3	There is accessibility to funding and mentoring innovative research	3.06	2.32
4	There are knowledge brokers and accelerators within the innovation clusters	2.49	1.55
5	There is the concentration of knowledge and expertise within clusters	2.77	1.92
6	Knowledge clusters have industrial-relevant skills and competences	2.91	2.13
7	Your institution ensures the Stimulation of local economic growth through research and cooperation programmes	2.95	2.18
	Sum total	**2.9**	**2.12**

(Strongly Disagreed=1, Disagreed=2, Agreed=3, strongly Agreed=4)

clusters." The sixth item shows that 255 (66.9%) of the respondents agreed with the opinion that "There is the concentration of knowledge and expertise within clusters and knowledge clusters have industrial-relevant skills and competences." Finally, in the seventh item, 288 (78.0%) of the respondents generally agreed that "Your institution ensures the stimulation of local economic growth through research and cooperation programmes." For research question 2, findings portrayed that the majority of respondents generally agreed (75.6%) that innovation/knowledge clusters have significant relations with transformative learning in higher education, with a cutoff mean 2.9 and with a standard deviation of 2.1, which is above a normal cutoff mean of 2.5. Innovation knowledge clusters have significant contributions towards building a transformative learning capability in Cameroon's higher education.

Relationship between transformative digital governance and transformative learning

Table 5 describes respondents' perceptions on transformative digital governance in higher education in Cameroon. In the seven construction items to

Table 4. Questionnaire Responses - Transformative Digital Governance

N/I	Statements	$\bar{X}$	SD
1	There is availability up-to-date and quality digital infrastructures in your institutions	2.98	2.20
2	There is effective steering of electronic management systems in the internal management processes	2.47	1.53
3	Your institution fosters data analytics for informed digital decision making	2.76	1.90
4	There are facilities for content personalisation and mobility	3.03	2.30
5	There is online dashboard/ or portal for institutional change management	2.80	1.96
6	There is a digital framework for transparency and accountability in institutional management performance	2.93	2.15
7	There exist digital collaboration and engagement in soliciting feedback, ideas and suggestions for the best institutional management performance	2.84	2.02
	Sum total	**2.83**	**1.87**

(Strongly Disagreed=1, Disagreed=2, Agreed=3, strongly Agreed=4)

measure transformative digital governance, six of the seven items have means above 2.5 which is a normal distribution. In the first item, 275 (74.3%) of the respondents generally agreed that there is availability up-to-date and quality digital infrastructures in their institutions. The second item shows that 187 (50.5%) of the respondents generally agreed with the statement that "There is effective steering of electronic management systems in the internal management processes." For the third item, 218 (64.3%) of the respondents generally agreed with the view that their institution fosters data analytics for informed digital decision making. The fourth item, 213 (80.3%) of the respondents agreed that there are facilities for content personalisation and mobility. In the fifth item, 253 (68.4%) of the respondents generally agreed with the view there is online dashboard/ or portal for institutional change management. The sixth item shows that 288 (87.8%) of the respondents agreed on the opinion that There is a digital framework for transparency and accountability in institutional management performance. in the seventh item, 276 (74.6%) of the respondents generally agreed that there exist digital collaboration and engagement in soliciting feedback, ideas and suggestions for the best institutional management performance. Drawn from the results of the research question three, the majority

Table 5. Questionnaire Responses - Transformative Learning Capabilities

N/I	Statements	$\bar{X}$	SD
1	There is higher need for open access in knowledge sharing process	3.17	2.51
2	Continuous curriculum development and innovation is requirement in knowledge transfer	2.90	2.10
3	Project-based and experiential learning approaches foster knowledge creation	2.74	1.88
4	Problem- solving and strategic thinking competences promote the development of products	2.79	1.95
5	Knowledge resources mobilisation enhance efficiency in knowledge development and transfers	2.12	1.12
6	Strategic monitoring and evaluation ensure quality and incremental innovation	3.01	2.30
7	The creation of effective communities of practices facilitates knowledge transfers	3.13	2.45
	Sum total	**2.84**	**2.04**

(Strongly Disagreed=1, Disagreed=2, Agreed=3, strongly Agreed=4)

of the respondents generally agreed at an overall percentage of 71.4% that transformative digital governance has a significant relationship with transformative learning in Cameroon higher education with a cut off mean 2.8 with standard deviation 1.87 which is above a normal cut off mean 2.5. Transformative digital governance has significant contribution in building transformative learning capabilities sin higher education.

Table 5 presents respondents' views on transformative learning capabilities in Cameroon higher education. Based on the items designed to measure this variable, all the 7 items have a mean which is above the normal cutoff mean of 2.5. This implies that the respondents generally agreed on the importance of transformative learning in Cameroon's higher education in the Fourth Industrial Revolution. In the first item, 298 (81.2%) of the respondents generally agreed that there is a higher need for an open knowledge sharing process. The second item shows 286 (77.3%) of the respondents generally agreed with the statement that "Continuous curriculum development and innovation is a requirement in knowledge transfer." For the third item, 260 (70.3%) of the respondents generally agreed with the view that project-based and experiential learning approaches foster knowledge creation. The fourth item, 253 (68.5%) of the respondents agreed that problem-solving and strategic thinking competences promote the development of products. In the fifth item, 168 (61.6%) of the respondents generally agreed with the view that knowledge resources mobilisation enhances efficiency in knowledge development and transfers. The sixth item shows that 310 (83.7%) of the respondents agreed on the opinion that strategic monitoring and evaluation ensure quality and incremental innovation. In the seventh item, 315 (85.2%) of the respondents generally agreed that the creation of effective communities of practice facilitate knowledge transfer. The findings of the of the dependent variable shows that, the respondents generally agreed at an overall percentage of 75.4%. More so, all the items designed to measure transformative learning in Cameroon's higher education with a cutoff mean of 2.8 with a standard deviation of 2.04, which is above a normal cutoff mean of 2.5. This implies that higher education stakeholders should foster transformative learning capabilities in higher education.

Hypotheses Testing

H01: There is a significant relationship between digital technological knowledge networks and transformative learning in Cameroon's higher education.

H02: There is a significant relationship between innovation/knowledge clusters and transformative learning in Cameroon's higher education.

H03: There is a significant relationship between transformative digital governance and transformative learning in Cameroon's higher education.

Table 6 shows a significant correlation between digital technological networks and transformative learning capabilities in higher education in Cameroon. ($r=0.597$, $p = 0.00$, $\alpha = 0.005$). The correlation coefficient signifies that a unit increase of digital technological networks influences transformative education capabilities at 59.7%. Therefore, the Spearman's rank correlation coefficient suggests that an improvement in digital technological knowledge networks will lead to an exceptional increase of transformative education capability in Cameroon's higher education. Institutional managers should strive to promote the development of digital technological networks by means of boosting transformation in learning.

Table 6 also shows the correlation between innovation/knowledge clusters and transformative education

Table 6. Correlation Between Variables

Spearman's rho Correlations (ρ)

		Transformative learning capabilities	Digital technological knowledge networks
Transformative learning capabilities	ρ	1.000	.597**
	Sig. (2-tailed)	-	.000
Digital technological knowledge	ρ	.597**	1.000
	Sig. (2-tailed)	.000	-

		Transformative learning capabilities	Innovation/ knowledge clusters
Transformative learning capabilities	ρ	1.000	.558**
	Sig. (2-tailed)	-	.000
Innovation/ knowledge clusters	ρ	.558**	1.000
	Sig. (2-tailed)	.000	-

		Transformative learning capabilities	Transformative digital governance
Transformative learning capabilities	ρ	1.000	.713**
	Sig. (2-tailed)	-	.000
Transformative digital governance	ρ	.713**	1.000
	Sig. (2-tailed)	.000	-

*** Correlation is significant at the 0.01 level (2-tailed); N=370*

capabilities in higher education in Cameroon. (r=0.558, p=0.00, α =0.005). This implies that there is statistically significant relationship between innovation/knowledge clusters and transformative learning in Cameroon's higher education. The spearman correlation coefficient signifies that innovation/knowledge clusters impact transformative learning capability in Cameroon's higher education correlated at 55.8%. Therefore, the Spearman's rank correlation coefficient indicates that an incremental unit of development in innovation knowledge clusters should yield a corresponding increase in the transformative education in capabilities in Cameroon's higher education.

The third block in Table 6 shows the correlation between transformative digital governance and transformative education (r=0.713, p=0.00, α =0.005). There is a statistically significant correlation between transformative digital governance and transformative learning in Cameroon's higher education. The correlation coefficient means that transformative digital governance has an influence on transformative learning capability in education at 71.3%. Therefore, the Spearman's rank correlation coefficient reveals that the effective implementation of transformative digital governance may lead to an extraordinary impact on transformative education capabilities in Cameroon's higher education.

Discussion

Digital Technological Knowledge Networks

Digital technological knowledge networks have an important role in Cameroon's higher education in knowledge transformation and economic growth. The findings of the study revealed at the level of descriptive statistics that the respondents generally agreed at 84.7% on the different measurements of technological knowledge networks (Reirchart, 2019). These findings were shown to corroborate Sivasankaran and Karthikeyan (2021). This signifies that the promotion of digital collaboration and knowledge networking ecosystems, open access to digital knowledge sharing opportunities, talent development, continuous or digital lifelong learning programmes, institutional promotion of the development of regional digital knowledge ecosystems, and an attractive environment for digital investment are indispensable in the sustainability of an institutional technological knowledge network and transformative learning capabilities in higher education in Cameroon (Sivasankaran & Karthikeyan, 2021). Also, the inferential statistics revealed that digital technological knowledge networks have a significant relationship with transformative learning in Cameroon's higher education with a predictive coefficient of 59.7%. Our study corroborates with Akan (2020) which focused on developing hyper-local innovation ecosystems (Yan, Wang, Yan, & Zhai, 2020). Findings demonstrate that higher education in the regionalisation and decentralisation processes work with regional and local authorities in developing a robust and completive innovation ecosystem. Findings also show that digital technological knowledge networks in the innovation ecosystem will facilitate value creation (Cai, Ma, & Chen, 2022). Therefore, higher education has a transformative potential in the emerging Fourth Industrial Revolution.

Innovation Clusters

Innovation/knowledge clusters in higher education stimulate entrepreneurial initiative and build a robust innovation ecosystem. From our findings, innovation and knowledge clusters have a significant relationship with transformative education capabilities in

Cameroon's higher education. This relationship affects transformative learning capabilities at 55.8%. Clusters and incubators are the building blocks of a national and regional innovation ecosystem. Higher education institutions are motors that drive these ecosystems through innovation production and dissemination (Reirchart, 2019). These results show the positive effect of innovation clusters on knowledge and competences development (Yan, Wang, Yan, & Zhai, 2020). Therefore, entrepreneurship and start-up ecosystems, emerging technological-based ventures, accessibility to funding and mentoring innovative research, knowledge brokers and accelerators within the innovation clusters, concentration of knowledge and expertise within clusters and industrial-relevant skills, competences and the stimulation of local economic growth through research and cooperation are indispensable indications of innovation clusters in the micro-meso-macro innovation ecosystems. These findings are supported by Bocket et al, 2020.

To further confirm these innovation ecosystem benchmarking indicators, the descriptive statistics show that 75.6% of respondents generally agreed that innovation/knowledge clusters have a significant relationship with transformative learning in higher education in Cameroon, which is above a normal cutoff mean. Innovation knowledge clusters have significant contributions towards building a transformative learning capability in Cameroon's higher education (Sivasankaran & Karthikeyan, 2021). Knowledge and innovative cluster promote knowledge and technological transfer (Bocket et al, 2020).

Transformative Digital Governance

The integration and sustainable appropriation of transformative digital governance strategies is central to transformative education capabilities in the Fourth Industrial Revolution in Cameroon's higher education. The findings of our study reveal that transformative digital governance has a predictive coefficient of 71.3%. These results implied that, availability of up-to-date and quality digital infrastructures, effective steering of electronic management systems, internal management processes, data analytics for informed digital decision making, content personalisation and mobility, online dashboard or a portal for institutional change management, a digital framework for transparency and accountability in institutional management performance and digital collaboration, and engagement in soliciting feedback, ideas and suggestions for the best institutional management performance are key digital governance assessment methodology indicator(Vlesov, 2021). The development and provision of digital infrastructures in an institution of higher education improve efficiency and cost-effectiveness in the institutional resource-based management. Moreso, the respondents generally agreed at an overall descriptive score of 71.4% that digital transformative digital governance has a significant relationship with transformative learning capabilities in higher education. Transformative digital governance strategies will foster tremendous transformative learning capabilities in higher education (Lotz-Sisitka1 et al, 2015). Digital governance indicators in higher education are primordial in shaping research development, pedagogical innovation, knowledge flows, and institutional steering for quality assurance and community outreach (Brito, 2018)

Conclusions

This paper evaluated the relationship between transformative development in the Fourth Industrial Revolution and transformative education capabilities in Cameroon's higher education as a means of fostering technological development and knowledge transfer for the strategic innovation ecosystem approach. At a more in-depth level, the paper focused on digital technological networks, innovation/knowledge clusters, transformative digital governance, and transformative education capabilities. The strategic innovation ecosystem theory demonstrated that higher education is a major stakeholder in the leading national and regional innovation ecosystems through decentralisation and regionalisation in Cameroon's higher education (Reirchart, 2019). The promotion of digital collaboration and knowledge networking ecosystems in the community and at inter-university levels fosters ecosystem development, open access to digital knowledge sharing opportunities just as talent development creates transformative communities of practice, and continuous or digital lifelong learning programmes. These also foster entrepreneurship and start-up ecosystems, emerging technological-based ventures, and accessibility to funding and mentoring innovative research.

Knowledge brokers and accelerators are innovation opportunities that build students' communities and create a competitive knowledge environment, as well as promote excellence in research and development. Further, they offer developing data analytics tools for informed digital decision making, harnessing content-personalisation and mobility frameworks. Also crucial

are an appropriation of online dashboard/or portal for institutional change management, a digital framework for transparency and accountability in institutional management performance pragmatic digital approach to transformative education. We therefore conclude that higher education knowledge and innovation practices from an exosystemic approach have indispensable contributions to transformative education in Cameroon's higher education. Consequently, institutions of higher education must develop transformative digital governance, technological knowledge, and benchmarking frameworks to ensure continuous improvement, sustainability, competitiveness, visibility in knowledge production, and commercialisation in Cameroon's higher education (Njebakal, & Teneng, 2017).

Recommendations

Policies makers and institutional administrators should consider concentrating investments on technological infrastructures that pay attention to the realities of the emerging Fourth Industrial estate while equipping human resources with digital capabilities through knowledge networks and innovation clusters that create a competitive leverage for universities in the global knowledge society. Also, providing students with up-to-date digital tools resources which are fundamental to the formation of the responsive human capital is a crucial component. That said, effectiveness, efficiency, transparency, and equity of institutional governance also depend on the appropriation and crystallisation of digital technology into a university management system. This digitalised infrastructure will facilitate data analytics, which could greatly contribute to informed decision-making in higher education. Institutional administrators must continuously improve their knowledge infrastructures and network ecosystems for a transformative education.

New Perspective

This study focuses on technological knowledge networks, innovation and knowledge clusters, transformative digital governance in higher education in the emerging Fourth-Industrial Revolution. A future study has the possibility of extending the research to Artificial Intelligence (AI) and its implications in transformative education in Africa or in Cameroon's higher education.

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Students' Use Behaviors of E-Learning Management Systems in Ghanaian Public Universities: What do the demographics say?

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Abstract

It is crucial to identify and offer intense training to groups of students who underutilize e-learning management systems. This study used a quantitative research methodology to evaluate demographic differences in students' use of e-LMS in Ghanaian public universities. A questionnaire was used to collect data from 531 students. The techniques for data analysis included independent t-tests, mean computation, percentage estimation, and standard deviation estimation. Based on age and educational level, the results showed that there were no statistically significant variations in how students used e-LMSs. Nevertheless, a statistically significant variation in their use behavior with regard to gender and academic major was established. Particularly, social science majors and female students in Ghana's public universities showed low use behavior of e-LMS. Therefore, it is recommended that students majoring in social sciences and those who are female undergo enhanced training on using the e-LMS platform.

Keywords: *Demographic characteristics, e-Learning management systems, Use behavior*

Introduction

It is impossible to overestimate the importance of technology in education, particularly in higher education, where it has become an absolute necessity rather than an option. Technology integration has become crucial for every educational organization in the twenty-first century (Alshehri, 2020). When compared to conventional classroom approaches, technology has a number of benefits for education that greatly speed up the teaching and learning processes (Aldowah, Ghazal, Umar, & Muniandy, 2017). With the use of digital tools, educators may more quickly and effectively impart knowledge, look for answers to students' learning problems, and offer assistance. Technology also gives teachers the tools to interact with students who may be dispersed across various geographical regions. Additionally, technology helps students study more efficiently and gives them the tools they need to take charge of their own education. Through digital tools, students have access to a wide range of educational resources, enabling them to customize their learning to meet their unique needs. Due to the crucial role that digital tools play in the administration and delivery of higher education, numerous educational institutions throughout the world have made significant investments in digital technologies to assist teaching and learning. The e-learning management system is one such piece of technology that is essential to many academic endeavors (Kasim & Khalid, 2016; Wichadee, 2015).

E-learning management systems are comprehensive software solutions created for the creation, management, and dissemination of educational information to students (Lang & Pirani, 2014). These systems are referred to by a variety of titles in the academic community, including virtual learning environments, course management systems, and learning content management systems (Ghilay, 2019). The varied names associated with these platforms naturally reflect their main objectives, which center on course management and learning facilitation. Numerous studies also offer various viewpoints on e-learning management systems. They are frequently portrayed as self-contained online learning platforms with storage capabilities that enable instructors to create and distribute educational content while also keeping track of student involvement (Tseng, 2020). They also function as centralized hubs for uni-

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versities, enabling academic institutions to efficiently plan and manage online teaching and learning (Nicholas-Omoregbe, Azeta, Chiazor, & Omoregbe, 2017). As Sharma, Gaur, Saddikuti, and Rastogi (2017) suggested, these systems can also distribute instructional information through the Internet, enabling flexible lesson planning to accommodate students who are spread out geographically. E-learning management systems are web-based solutions that encourage teacher-student interaction and collaboration, foster the dissemination of knowledge, and strengthen the learning process. Colleges use these systems to perform both synchronous and asynchronous e-learning activities, as well as hybridized deliveries, giving online education a flexible and all-encompassing approach.

The variety of e-LMSs used in higher education institutions is expanding because of the development of information and communication technologies. Because there are so many alternatives, different institutions choose particular systems (Xhaferi, Bahiti, & Imeri, 2015). Notable e-learning management systems include Moodle, eCollege, Canvas, Sakai, and WebCT (Annamalai, Ramayah, Kumar, & Osman, 2021; Matarirano, Jere, Sibanda, & Panicker, 2020). These e-LMSs provide a wide range of functionality, such as discussion forums, gradebooks, announcement tools, and file management capabilities, to help students and educators navigate virtual learning environments (Biney, 2020). Additionally, some of the applications might include extra functionality, including content creation, delivery, management, assessment, email, chat, list servers, instant messaging, and discussion forums (Akay & Gumusoglu, 2020).

Through e-learning management systems, educators have access to a variety of big data like never before. To incorporate learning analytics into the teaching and learning process, these systems automatically generate enormous amounts of data, which are subsequently examined using statistical tools (Ismail, Hamid, & Chiroma, 2019; Matsebula & Mnkandla, 2017; Lenar, Jamila, Ego, & Rustem, 2019). Predictive algorithms and forecasting tools that draw on data from educational institutions are used in e-learning management systems. Institutions can better understand students' learning patterns and forecast their chances of success by carefully evaluating the data kept in log files within these systems (Yu & Jo, 2014). Importantly, in these learning environments, several elements, including study time, peer relationships, adherence to study schedules, and frequency of downloads, have a significant impact on students' academic development. Dashboards in e-learning management systems track and assess students' academic progress over time, producing important metrics including completion rates, involvement in the e-LMS, attendance data, and the likelihood of academic success. These indicators give educational authorities the ability to glean important insights into the growth and achievement of their students. Institutions use the data collected from teacher and student actions inside these systems to improve and hone their pedagogical strategies.

The broad adoption and effective implementation of e-learning systems in educational institutions depend on their acceptance by three crucial stakeholders: educational institutions themselves, teachers, and students (Edumadze et al., 2014). However, it is crucial to acknowledge the notable discrepancies in students', instructors', and administrators' readiness to use e-LMSs (Ansong, Boateng, & Boateng, 2016). The level of e-learning system use in higher education institutions is determined by elements like the educational content's quality and the accessibility of necessary resources like chat platforms, forums, and collaborative features. Several studies (Ayouni, Menzli, Hajjej, Maddeh & Al-Otaibi, 2021; Kuadey et al., 2022; Mtebe, 2015; Juhanak, Zounek & Rohlikova, 2019) have confirmed the widespread adoption of e-LMSs at institutions of education and universities around the world. They also highlighted the growing adoption tendency in both well-resourced and under-resourced institutions. The high adoption of e-LMSs has failed to transfer into proportionate students' use behavior of the platforms in sub-Saharan Africa (Dampson, 2021; Mtebe, 2015). While studies (Dampson, 2021; Tagoe & Cole, 2020; Asamoah, 2020; Sahoo, Odame, Reddy & Khan, 2020) acknowledge the general underutilization of e-LMSs in public universities in Ghana, there is a dearth of knowledge and empirical findings on the influence of demographic factors on the overall non-use of e-LMSs by students. Therefore, it is necessary to thoroughly examine various demographic groups to determine those contributing to the underutilization of e-LMSs within Ghana's public universities. In fact, analyzing student usage behavior based on demographic categories can give university administrators insightful information that will help them customize support programs to meet the specific requirements of these groups. Furthermore, a thorough comprehension of the variations in students' use of e-LMSs has enormous promise for developing applicable regulations and enhancing training meth-

ods in higher education. Thus, the research questions this paper sought to answer are:

1. *What are students' use behaviors of e-learning management systems?*
2. *What statistically significant differences exist in students' use behaviors of e-learning management systems based on their demographic characteristics?*

To add contextual knowledge to the research questions, the ensuing section presents a review of studies related to the themes extracted from the research questions.

Students' use behavior of e-LMS

The words "use behavior," "actual use," or "actual usage" are widely used interchangeably in numerous studies in the field of information systems. These phrases jointly express the idea of a firm commitment to using a certain technology or information system (Black, 1982). Students' usage behavior of e-learning management systems in the specific context of education serves as a visible indication of their persistent dedication to utilizing these educational platforms (Yakubu & Dasuki, 2018). The importance of behavioral intentions and perceived behavioral control in determining the actual use of information systems is stressed by theoretical frameworks like the Technology Acceptance Model (Davis, 1986), the Theory of Planned Behavior (Azjen, 1991), and the Unified Theory of Acceptance and Use of Technology (Vankesh, Thong, & Xu, 2016). These theories stress that people's intentions and perceptions of their level of control over their behavior are the primary forces behind their actual interactions with technology. Assessment of students' use behavior of the teaching and learning platform is a crucial component of this study. Such an assessment not only clarifies the degree of their contact with the systems but also provides priceless information about the platform's overall influence on their academic endeavors. As a result, a thorough examination of students' actual use behavior serves as a vital benchmark for determining the usefulness and efficacy of the platform in improving the educational experience of students. Numerous studies have acknowledged students' actual use behaviors of e-LMSs in advanced countries as extremely high. However, these same studies have pronounced that the application is underutilized in the sub-Saharan African context (Dampson, 2021; Tagoe & Cole, 2020; Asamoah, 2020; Mtebe, 2015). Some groups of students are the cause of the underutilization and must be identified.

Gender segregation in e-LMS use

In several studies examining students' uses of technology, the influence of gender as a demographic element has been examined. According to Cai, Fan, and Du's (2017) research, the gender gap in technology use has only minimally closed, indicating that there is still a significant gap between males and females. In a similar vein, Mumporeze and Prieler's (2017) study indicated that women utilize technology on average less than men do, and Qazi et al. (2021) discovered that men are more likely to use ICTs than women. Additionally, Alshorman and Bawaneh (2018) found that men tend to have more positive sentiments toward their use of technology than do women. Men utilize learning management systems more actively than women, according to Borokhovski, Tamim, Pickup, Rabah, and Obukhova (2019). In addition, Lim et al. (2020) used factorial invariance analysis to distinguish between how men and women use e-learning management systems. Dahlstrom & Bichsel (2014) reported that men and women use technology equally, which is in opposition to these findings. They asserted that inequalities in attitude are to blame for the disparities in technology use. Dahlstrom and Bichsel's (2014) assertion is supported by the studies (Alshorman & Bawaneh, 2018; Yalman, Basaran, & Gonen, 2016). There are few studies that prove the distinctions between male and female students' uses of e-learning management systems in Ghana's public universities. Thus, this current study proposes the hypothesis:

H_{01}: There is no statistically significant difference in students' use behaviors of e-learning management systems based on their gender.

Age segregation in e-LMS use

Numerous studies have shown that age can have a variety of effects on how people use technology. Researchers (Scherer, Siddiq, & Teo, 2015; John, 2015; Guillén-Gámez, Lugonesb, & Mayorga-Fernándezh, 2019) have noted that age influences how people utilize technology. According to Cabero and Barroso's (2016) research, younger males tend to excel at technology and utilize it more frequently than their older counterparts. This assertion was supported by a similar study by Gudmundsdottir and Hatlevik (2018), which emphasized that younger students have better technology usage abilities than older people. Guillén-Gámez, Lugonesb, and Mayorga-Fernándezh (2019) backed up the conclusions made by the studies (Cabero

& Barroso, 2016; Gudmundsdottir & Hatlevik, 2018) by emphasizing that younger students use technology more frequently than their older peers. Furthermore, Onyeaka, Romero, Healy, and Celano (2020) discovered that younger students engage with a larger variety of technologies than their older counterparts and have more expertise in using technology. In contrast, John (2015) found that those over the age of 30 had more favorable opinions about their usage of technology than people under that age. Despite these diverse findings, only a small number of studies have looked at how age affects how students use e-learning management systems. Particularly, there has not been much coverage of the higher education scene in Ghana. Consequently, to investigate this assertion, the following hypothesis has been formulated:

H_{02}: There is no statistically significant difference in students' use behaviors of e-learning management systems based on their age.

Educational level segregation in e-LMS use

Students are normally divided into two groups in universities all around the world: undergraduates and postgraduates. There are differences between how these two groups of students use technology. Several studies have examined these student groups' perspectives on how they use e-learning management systems. For instance, postgraduate students exhibit a high level of proficiency when utilizing e-learning management systems, according to Buthelezi and Wyk's (2020) research. Postgraduate students, on the other hand, exhibit little involvement with e-learning management systems (Kite et al., 2020). According to Dahlstrom and Bichsel's (2014) research, undergraduates did not show a lot of enthusiasm for using e-learning management systems in practice. In contrast to Sahoo, Odame, Reddy, and Khan's (2020) finding that undergraduates are skilled at using these systems, Firat's (2016) study emphasized distinct usage habits with regard to undergraduates' use of e-learning management systems. It is clear from reading these studies that we still don't fully grasp the differences between undergraduates and postgraduates in terms of how they use e-learning management systems. To address this gap, the following hypothesis has been formulated:

H_{03}: There is no statistically significant difference in students' use behavior of e-learning management systems based on their educational level.

Academic major segregation in e-LMS use

Academic majors are split into two groups in Binyamin's (2019) taxonomy of university courses: science and social science. According to Binyamin, science students concentrate on fields like medicine, applied sciences (like computer science and engineering), and natural sciences (like biology, physics, and chemistry). In contrast, social science students focus on the humanities (such as history, religion, education, languages, and management). Ngah et al.'s (2022) study pointed out that there are variances in how students use technology. Students studying pure science outperformed those studying social science in terms of technology use. This occurrence was explained by the fact that students studying pure science are engaged in practical activities and want to employ technology. Despite this categorization, a limited number of studies have explored the variations in technology usage based on these divisions. Consequently, this study aimed to investigate the disparities in students' use behavior of e-LMSs based on their academic major. To examine this assertion, the hypothesis below has been formulated:

H_{04}: there is no statistically significant difference in students use behavior of e-learning management systems based on their academic major.

Methodology

All students enrolled in Ghanaian public universities who had used their institution's e-Learning Management System (e-LMS) for at least a year comprised the study's target population. The accessible population involved three public universities in Ghana because of their use of structures that enable students to collect data for academic purposes. However, Saunders, Lewis, and Thornhill (2019) advise using a multistage random sample strategy, which the researchers did because of the geographically scattered distribution of students within the universities. The faculties, along with their corresponding departments, made up the study's natural clusters. The sampling procedure was conducted in stages, with the first stage involving the selection of one faculty (within a specific division in a college) from each of the three universities using the lottery method. The second stage involved choosing one department from each of the three faculties selected using the lottery technique once more, without replacement. In the final stage, student participants were selected using simple random sampling with the randomizer software as suggested by Creswell and Creswell (2018).

The accessible population, which included 4,002 students, consisted of those from the three universities that were selected during the initial sampling phase. Using a chart created by Krejcie and Morgan in 1970, a sample size of 825 was determined. After a thorough assessment of the literature, a paper-based questionnaire was created and given to the respondents. This decision was because, as Binyamin (2019) suggests, print versions have a higher response rate than online distribution. A five-point Likert-type scale was used to rate the adapted questionnaire items. Three ICT lecturers reviewed the questionnaire items to make sure they were valid. The questionnaire's pre-testing produced a reliability index for Cronbach's alpha of 0.957. The respondents were given a total of 825 questionnaires; however, only 598 of these were filled out and returned. Sixty-seven questionnaires were declared unsuitable for further analysis after a preliminary evaluation because of missing values and suspicious patterns. Consequently, 531 questionnaires, accounting for 64.4% of the total, were included in the final analysis. Research question 1, which was descriptive, involved looking at frequencies, percentages, averages, and standard deviations. Contrarily, an independent t-test was used to analyze research question 2, which was inferential in nature.

Data analysis

Demographic data

The study elicited students' gender, age, educational level, and academic major as demographic data. Table 1 presents the demographic data of the respondents.

Data in Table 1 show that males and females made up 54.4% and 45.6%, respectively, of the total number of respondents. The mean age of the respondents was 23.82. Students below the mean age and students above the mean age were (302) 56.9% and (229) 43.1%, respectively, of the total respondents. Undergraduates were 449 (84.6%), whereas postgraduates were 82 (15.4%). Students who had science as their academic major were 197 (37.1%), whereas those with social science as their academic major were 334 (62.9%).

In summary, the analysis of Table 1 suggests that, firstly, there were more male respondents than female respondents. Secondly, the number of students below the mean age exceeded those above the mean age. Thirdly, undergraduates outnumbered postgraduates. Lastly, there were more respondents with a background in the social sciences compared to those with a pure science background in this study.

Students' use behavior of e-LMS

Frequency, percentage, mean, and standard deviation were computed from the data on students' use behavior of e-LMS. Table 2 depicts the results.

Table 1: Demographic data

Gender	Frequency	Percentage
Male	289	54.4
Female	242	45.6
Total	**531**	**100**
Age	**Frequency**	**Percentage**
Below-mean age	302	56.9
Above-mean age	229	43.1
Total	**531**	**100**
Educational level	**Frequency**	**Percentage**
Undergraduate	449	84.6
Postgraduate	82	15.4
Total	**531**	**100**
Academic major	**Frequency**	**Percentage**
Science	197	37.1
Social science	334	62.9
Total	**531**	**100**

Table 2: Students' use behavior of e-learning management systems

Statement	Strongly Disagree No. (%)	Disagree No. (%)	Unsure No. (%)	Agree No. (%)	Strongly Agree No. (%)	Mean	SD
I use the university's e-LMS frequently.	25 (4.7)	111 (20.9)	104 (19.6)	192 (36.2)	99 (18.6)	3.43	1.149
I depend on the university's e-LMS for my studies.	36 (6.8)	125 (23.5)	108 (20.3)	180 (33.9)	82 (15.4)	3.28	1.179
I tend to use the university's e-LMS for as long as is necessary.	21 (4.0)	53 (10.0)	104 (19.6)	236 (44.4)	117 (22.0)	3.71	1.043
I use many features of e-LMS.	22 (4.1)	86 (16.2)	144 (27.1)	198 (37.3)	81 (15.3)	3.43	1.061
Total Mean (Std. Dev.)	**104 (4.9)**	**375 (17.7)**	**460 (21.7)**	**806 (37.9)**	**379 (17.8)**	**13.85**	**4.43**
Mean of Means						**3.46**	**1.11**

Mean ranges: 0-1.49 (strongly disagree); 1.5-2.49 (disagree); 2.5-3.49 (unsure); 3.5-4.49 (agree); 4.5-5.0 (strongly agree)

The data in Table 2 show that students agree (M = 3.43; SD = 1.149) that they use their university's e-LMS frequently. Again, the data in Table 2 show that students were unsure (M = 3.28; SD = 1.179) that they depend on the university's e-LMS for their studies. Moreover, from the table, students agreed (M = 3.71; SD = 1.043) that they tend to use their university's e-LMS for as long as is necessary. Finally, the data in Table 2 show that students were unsure (M = 3.43; SD = 1.061) of the fact that they tend to use many features of their university's e-LMS.

Summarily, Table 2 shows that students were unsure (M = 3.46; SD = 1.11) of their use behavior of their university's e-LMS. It is, thus, deduced that in public universities in Ghana, students are unsure of their usage behavior of e-LMSs.

Table 3: Independent sample t-test of students' use behavior of e-LMS based on their background characteristics

Gender	No.	Mean	SD	t	df	Sig (2-tailed)
Male	289	3.567	0.9309	2.864	529	0.004*
Female	242	3.336	0.9257			
Age groups	**No.**	**Mean**	**SD**	**t**	**df**	**Sig (2-tailed)**
Below-mean age	302	3.476	0.9326	0.400	529	0.690
Above-mean age	229	3.443	0.9395			
Educational level	**No.**	**Mean**	**SD**	**t**	**df**	**Sig (2-tailed)**
Undergraduates	449	3.444	0.9431	-1.012	529	0.312
Postgraduates	82	3.558	0.8874			
Academic major	**No.**	**Mean**	**SD**	**t**	**df**	**Sig (2-tailed)**
Science	197	3.643	0.942	3.472	529	0.01*
Social Science	334	3.355	0.915			

* = Significant at $\alpha = 0.05$

Students' use behavior of e-LMS in terms of their demographic characteristics

The results of the analysis of students' use behavior of e-LMSs based on their demographic characteristics are presented in this section. The demographic characteristics are gender, age, academic level, and academic major. The results are shown in Table 3.

Table 3 reveals a statistically significant difference ($p = 0.004; \alpha = 0.05$) between males and females in their use behavior of e-LMS. The table indicates that the mean of males (M = 3.567; SD = 0.9309) is higher than the mean of females (M = 3.336; SD = 0.9257). Thus, H_{01} was rejected. It is, therefore, imperative that males have a higher use behavior of e-LMS than females.

Also, there was no statistically significant difference ($p = 0.690; \alpha = 0.05$) between below-mean age and above-mean age in terms of their use behavior of e-LMS. Thus, H_{02} was accepted. A look at the mean scores in Table 3 shows that the mean score of students below the mean age (M = 3.476; SD = 0.9326) is similar to the mean score of students above the mean age (M = 3.443; SD = 0.9395). It can, thus, be deduced that students with their ages below the mean age have use behavior of e-LMS similar to that of students with their ages above the mean age in Ghanaian public universities.

Table 3 further shows that there was no statistically significant difference ($p = 0.312; \alpha = 0.05$) between undergraduate and postgraduate students in terms of their e-LMS use behavior. Thus, H_{03} was accepted. A look at the mean scores in Table 3 shows that the mean score of undergraduate students (M = 3.444; SD = 0.9431) is similar to the mean score of postgraduate students (M = 3.558; SD = 0.8874). Thus, it indicates that undergraduate and postgraduate students have similar use behaviors of e-LMS in Ghanaian public universities.

Finally, Table 3 indicates that there was a statistically significant difference ($p = 0.01; \alpha = 0.05$) between students in the sciences and social sciences in terms of their use behavior of e-LMS, so H_{04} was rejected. Table 3 shows that the mean score of students with an academic major in science (M = 3.643; SD = 0.942) is higher than the mean score of students with an academic major in social science (M = 3.355; SD = 0.915). Thus, it implies that students in the sciences have a higher use behavior of e-LMSs than those in the social sciences in Ghanaian public universities.

Discussion

The study revealed that students were unsure (M = 3.46; SD = 1.11) of their use behaviors of their university's e-LMS. This result corroborates the studies of Dampson (2021), Tagoe and Cole (2020), Asamoah (2020), and Mtebe (2015), which revealed that students underutilize e-LMSs in universities in the sub-Saharan context. These findings are attributable to a specific subset of students who either demonstrate a limited level of engagement with e-LMSs or, in some.

cases, do not engage with them at all.

It also became known that there was a statistically significant difference ($p = 0.004$; $\alpha = 0.05$) in students' use behavior of e-LMSs based on their gender. This result aligns with studies that claim that there is a gender imbalance in the use of e-learning systems and that males use e-LMSs more frequently than females. The study by Li, Wang, and Campbell (2015) found that male students use e-LMS more regularly than females. Moreover, Alshorman and Bawaneh's (2018) study found that males have higher attitudes toward technology than females. Contrary to this study, Alblassi's (2016) study revealed that e-LMS use among males and females was the same. Likewise, Dahlstrom and Bichsel's (2014) study found that males and females have the same abilities for utilizing information technologies. Moreover, the study by Cai, Fan, and Du (2017) found a reduction in the gap between men and women in terms of technology utilization. This finding of the study is in congruent with most studies regarding information technology utilization. The result indicates that female students in Ghanaian public universities need more training on e-LMSs to build optimal utilization behavior. This result might have occurred because males are more tech-savvy than females and would want to use more technology in their activities (Dahlstrom & Bichsel, 2014).

The study also found that there was no statistically significant difference ($p = 0.690$; $\alpha = 0.05$) in students' use behavior of e-LMS based on their age. This result is inconsistent with most of the studies (Cabero & Barroso, 2016; Gudmundsdottir & Hatlevik, 2018; Guillén-Gámez, Lugonesb, & Mayorga-Fernándezh, 2019) in this research area. These studies found that younger students tend to use e-LMSs more than older students. The findings of this current study seem to have occurred because the age differences among respondents was small. All ages in the 21st century have equal access to various kinds of technologies and skill development, which may be influencing their use behaviors of e-LMS, hence this result.

It was realized that there was no statistically significant difference ($p = 0.312$; $\alpha = 0.05$) in students' use behavior of e-LMS based on their educational level. This result indicates that undergraduates and postgraduates have the same use behavior for e-LMS. Several studies (Sahoo, Odame, Reddy, & Khan, 2020; Buthelezi & Wyk, 2020; Firat, 2016) in this research area have considered students use of e-LMSs based on either undergraduates or postgraduates. However, this study compared both groups use of e-LMSs. The result might have occurred because both undergraduate and postgraduate students are subjected to e-LMS use in the same way.

The study further found that there was a statistically significant difference ($p = 0.01$; $\alpha = 0.05$) in students' use behavior of e-LMS based on their academic major. This finding indicates that students with an academic major in science have a higher use behavior of e-LMS than students with an academic major in social science. This corroborates the study of Ngah et al. (2022), which revealed that there was a statistically significant difference between pure science and social science students in terms of their usage of technologies. Pure science students utilize technologies that offer them more firsthand practical activities than social science students. This finding is not surprising in the Ghanaian higher education context because science students tend to be more practice-oriented and prefer to use technologies in their studies than social science students. Science students have specialized ICT tools for modeling, data analysis, and simulations in their course areas.

In summary, there was no difference in students' use behaviors of e-LMSs in terms of age and educational level. However, there was a difference in students use behaviors of e-LMS based on their gender and academic majors. Female and social science students underutilize e-LMSs; therefore, enough training on e-LMS usage should be offered to them. The management of public universities in Ghana should give special attention to females and social science students when strategies and policies on e-LMS are being applied to them. It is imperative that the capacity of all students, irrespective of their background, be developed to enable them to conveniently use LMS.

The potential limitation of this study is that it relied on a self-reported survey. However, respondents were informed of the ethical conditions under which the study was being conducted, to encourage genuine responses to the questionnaire.

Conclusion

The purpose of this study was to examine the demographic differences in students' e-LMS usage behavior. According to the study's findings, neither students' age nor educational level significantly affected how they used an e-LMS. However, there were noticeable differences in how students used the e-LMS based on their academic major and gender. As a result,

we suggest that e-LMS usage regulations and procedures be applied consistently to all students. However, special attention should be given to female students and students majoring in social science areas. It is significant to emphasize that the generalizability of this study is constrained to Ghana's traditional public universities. Further research involving technical and private universities is advised in order to have a more thorough picture of e-LMS usage patterns across all universities in Ghana. This increased research effort would provide a more comprehensive viewpoint on e-LMS use behavior within the Ghanaian higher education sector.

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Appendix

Questionnaire for Students

The researcher is conducting a study on the topic ***"Students' Use Behaviors of E-Learning Management Systems in Ghanaian Public Universities: What do the demographics say?"***

You have been selected to participate in the study. The information gathered from you is for academic purposes only and would be treated with the highest confidentiality. Please read through the items as carefully as possible and offer your correct opinion. Thank you for your cooperation.

Please tick (√) where applicable.

Section 1: Demographic Characteristics

1. Gender: Male [ ] Female [ ]

2. Age: Below 18 [ ] 18-22 [ ] 23-27[ ] 28-32[ ] 33-37[ ] 38-42[ ] 43-47[ ] above 47 [ ]
3. Education: Undergraduate [ ] Postgraduate [ ]

4. Academic major: Sciences [ ] Social Science [ ]

Please show how you agree or disagree with the following statements.

Section 2: *the following questions seek to ascertain respondents' perspectives about their e-learning management systems use behavior in their university.*

Please show how you agree or disagree with the following statements.

1=Strongly Disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly Agree

Students' use behavior of e-learning management		1	2	3	4	5
5	I use the university's e-LMS frequently.					
6	I depend on the university's e-LMS for my studies.					
7	I tend to use the university's e-LMS for as long as is necessary.					
8	I use many features of e-LMS.					

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Transitioning Hands-On STEM Teacher Training in Ghana from an In-Person to Online Modality

Mawuena A. Hanson[1] & Heather Beem[2]

Abstract

COVID-19 provided an avenue for teaching and learning to be done remotely, hence Practical Education Network (PEN), a nonprofit organization in Ghana, took advantage of this to transition from an in-person to online training mode. This study aimed to determine how the efficacy of hands-on STEM teacher training in Ghana compared between fully in-person and fully online modalities as well as the best practices that can be elucidated from a Ghanaian training provider's transition between the two. In-person training content was converted into videos and PowerPoint presentations accessed asynchronously together with synchronous Zoom sessions for discussions. Between 2020-2021, two hundred and twenty (220) teachers who teach Science, Math and ICT were selected from 10 Regions of Ghana to participate across five (5) cohorts. Relying fully on locally available materials, PEN successfully implemented an online training on hands-on content, which is arguably a "pandemic-proof" approach. Results showed that teacher confidence and feasibility to implement hands-on activities increased with statistical significance and large effect size for both in-person and online training offerings. Hence, even with minimal technology, teachers across Africa could be trained online and experience meaningful learning. The key difference between the two modalities was the time involved, as the online offering was spread out over a longer period of time. This work can motivate other African education providers to pursue online offerings, as they are lower-cost, and can still be effective, despite contextual challenges.

Keywords: *STEM, Teacher training, In-person training, Online training, Locally available materials, Hands-on*

Introduction

The vast majority of education providers in Africa have traditionally relied exclusively on in-person offerings (Crawfurd, Evans, Hares, & Sandefur, 2021). The COVID-19 pandemic triggered a need for education and learning opportunities to be made available remotely. Closure of schools in the wake of the pandemic implied that innovative strategies needed to be employed for teaching and learning to continue while students were home. This was necessary to avoid disruptions in the educational sector (Addae, Amponsah, & Gborti, 2021). This presented a significant obstacle to be surmounted, given contextual challenges with online learning such as poor internet connectivity, low digital literacy levels, and the familiarity with in-person engagements for establishing connection.

Existing teacher training landscape in Africa

Teacher professional development is a necessary component of the provision of quality education. To be effective and remain relevant, teachers need to have periodic in-service training. However, an insufficient proportion of teachers in Ghana and Africa at large are afforded the opportunity to engage in this regularly (Sanyal & UNESCO, 2013). Several teacher training service providers operate in Africa, however most of them focus on general pedagogical practice. Only a few utilize digital modalities for training delivery, even after the pandemic. And even fewer focus on the unique needs that STEM teachers have.

Ghana is a rapidly developing economy, and the country is actively implementing a number of education reforms. Nonetheless, the same gaps mentioned in Africa's teacher training landscape hold in Ghana: few of them leverage digital approaches or provide STEM-specific content. The digital education interventions that exist in Ghana are generally directed at students, such as studying past questions for the national exams (eCampus, 2023) or learning to code (Suacode.ai, 2023). Almost no digital interventions in Ghana focused on teachers prior to the pandemic. The Center for National Distance Learning and Open Schooling

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(CENDLOS, 2023)and Ghana Society for Educational Technology (GSET, 2023) are two exceptions. The EdTech Readiness Index (Marin, Cobo, Cloutier & Lambert-Porter, 2021) shows six pillars on which a country's readiness to adopt EdTech could be founded. Many African countries will score relatively low on this. STEM-specific training content is highly needed in Ghana, given that those subjects are known to be most effective when taught in an experiential manner. The lack of hands-on learning is something that is often lamented amongst Ghanaian education stakeholders, utilizing the phrase "chew and pour" to describe the rote approach that pervades practice (Owusu-Acheaw, 2014), especially in STEM subjects. The traditional approach tends to encourage memorization and reproduction of facts, limiting learning outcomes (Nugba & Quansah, 2020). Regarding hands-on learning in Ghana, a small number of training providers include it in their offerings, mostly approaching it from a play-based learning approach, albeit not in STEM (Foundation First, 2023; Sabre Education, 2023; Right to Play, 2023). In addition to the Ghana Association of Science Teachers (GAST), Practical Education Network (PEN) is one of the few STEM teacher training providers in Ghana, and its program will be the subject of this study. PEN's approach of in-person training of teachers to leverage low-cost materials to teach hands-on activities in STEM subjects has had a significant impact on student attitudes and learning outcomes in Ghana (Babb & Stockero, 2020; Practical Education Network, 2020). The African and Ghanaian education landscapes experience a gap in training offerings for teachers both in the digital modalities and in a pedagogical approach targeted at hands-on learning. There is a need to scale up existing interventions that are effectively filling the gap.

Response of education stakeholders to COVID-19 in Africa

The disruption of education due to COVID-19 called for the development of innovation that could help the delivery of education remotely (Mukute, Burt, Francis, & De Souza, 2020). Most governments around the world called on their teachers to ensure continued learning in the pandemic, but few African governments were able to offer training or specific support for them to do so (Vegas, 2020). Nonetheless, several interesting interventions emerged on the continent. They can be categorized into those that facilitated passive learning and those that facilitated active learning.

African governments launched several educational programs, and largely passive learning approaches such as leveraged television and radio to do so (EdTech Hub, 2020). Countries like Nigeria, Tanzania and Sierra Leone broadcasted lessons on TV (Osman, & Keevy, 2021). Radio emerged as a popular tool for remote learning during the pandemic. Sierra Leone's Ministry of Basic and Senior Secondary Education turned to "Education Radio" (Government of Sierra Leone, 2020), "Rising on Air," an initiative from Rising Academies, was adapted for use in more than 10 countries (Flood, 2020), and Yiya AirScience in Uganda supported remote and out-of-school children (Kisakye, 2020). Challenges with radio include its ephemeral nature, the difficulty of monitoring its use, and the minimal interactivity levels it facilitates (Damani & Mitchell, 2020).

A few interventions emerged for active learning on the continent. Zoom and other video conferencing were some of the most popular online platforms for teaching and learning during the pandemic (Erna, Genisa, Muslaini, & Suhartini, 2022). Lower bandwidth options like WhatsApp were also used for running teacher training, as led by Nigeria's CCHub (Tijani, Madu, Falade, & Dele-Ajayi, 2021). In Sierra Leone, phone calls were used for live tutoring (Crawfurd, Evans, Hares, & Sandefur, 2021). More active approaches, such as these, should be considered as preferred options for learning. The role of the teacher is important for roles such as facilitating two-way dialogue, addressing misconceptions and increasing engagement (Munna & Kalam, 2021). To the authors' knowledge, no African service providers developed a digital offering for teacher training, and which facilitated a hands-on approach.

Response of education stakeholders to COVID-19 in Ghana

Ghana's national education response in the COVID-19 pandemic centered around the Ministry of Education's production of a TV broadcast of lessons for students (Dome & Armah-Attoh, 2020) and a radio reading program (US Embassy in Ghana, 2023). For the TV program, each class for primary and JHS had 35 minutes of content, whereas each class for SHS had 60 minutes of content per day (Ghana Education Service, 2020) As mentioned earlier, this platform facilitates passive learning, which has inherent limitations. High-end private schools were able to transition to fully remote offerings so as to enable a more active approach. This, however, only benefited a small minority of the population. Most students in Ghana found themselves largely devoid from structured learning from March to

December 2020. At the grassroots level, a few other interventions also emerged, such as a radio program in the Western Region. These did not, however, attempt to cover hands-on learning, and focused on delivering content knowledge.

Methods employed by hands-on education providers to transition online/remote

Globally, prior to the pandemic, most online courses lacked significant hands-on components (Eisenberg & Fischer, 2014). Enabling hands-on content online is a challenge that most education providers had not tackled until the COVID-19 pandemic provided a strong impetus. Efforts to transition hands-on learning online can generally be grouped into three categories.

1) Materials kits for each student. Several universities adopted this approach, packaging kits and shipping them to students (Halpern, 2021; Hart et al, 2021; Leung & Chu, 2020; McQuate, 2020; Travaglini, Sheppard, Chen, & Nittali, 2021; Wu et al, 2020).
2) Remote labs where students either observe a lab technician/teacher conduct an experiment or remotely control a pre-made experimental setup (Yeung, 2020).
3) Virtual labs using computer-based representations or simulations, usually involving animations (Advanced Tools for e-Learning, 2023; Pivot Interactives, 2023; University of Colorado Boulder, 2019).

These can be programmed for pre-determined modes of interactivity. Some of these virtual labs had been around for decades prior to the pandemic. Papers comparing all of these approaches (Bishop et al, 2021; Fox, 2020; Wijenayake et al, 2021) reveal challenges such as equitable distribution of materials and cost of implementation.

Using or adapting any of these three approaches to the African context presents a few challenges. With the first approach, the cost of shipping materials is high. At the onset of the pandemic, Ashesi University in Ghana adopted this approach to send engineering kits to all students (Ashesi University, 2020) but the cost prohibited its continued use. The cost involved in delivering materials to the "last mile" in rural Africa is significant. The need for using readily available materials has been mentioned (Larson & Farnsworth, 2020). A few educators developed innovative approaches for guiding their students to use materials they had around them, such as using a smartphone to measure focal length (Girot, Goy, Vilquin, & Delabre, 2020). With the second and third approaches, remote and virtual labs evade the tactical experience that facilitates deeper engagement, flexibility to test variations beyond the guided prompts and therefore greater connection to each individual's existing knowledge and constructs. Remote labs are more difficult to carry out given the generally low bandwidth and therefore short duration that video connection can be maintained in a group. Virtual labs inherently present a layer of artificiality to lab work which, in the authors' opinions, continues to evade the goal of engaging in real experiences students are craving. Also, these tools have not necessarily been designed for mobile usage, which is the dominant platform that African teachers would be using. There is a need for developing approaches to deploying hands-on learning remotely in a manner that is contextually appropriate for the African continent.

Practical Education Network (PEN) is a Ghanaian NGO with a mission to enable every African child to learn by doing. PEN's core programming is a hands-on STEM teacher training program, which builds capacity to leverage low-cost, locally available materials (Practical Education Network, 2024). PEN's definition of hands-on learning comes from the constructivist approach and necessarily utilizes physical materials to facilitate learning. PEN leaned into the challenges presented by the COVID-19 pandemic and successfully translated its hands-on teacher training from a fully in-person to a fully online offering. This paper highlights aspects of this translation, key lessons learned in the process, and the effect of the online training.

Two research questions are explored in this paper.

RQ1: "How does the efficacy of hands-on STEM teacher training in Ghana compare between fully in-person and fully online modalities?"

RQ2: "What best practices can be elucidated from a Ghanaian training provider's transition from in-person to online modalities?"

The translation process and resultant learnings are presented in this paper, with suggestions for how this model can be employed by other training providers on the continent to similarly transition to online modalities.

Methodology

COVID-19 challenged PEN to translate its purely in-person training into a fully online mode. Hence its content was converted into videos and PowerPoint presentations for participants to access asynchronously. This was complemented with live training and discussion sessions held on Zoom as well as assignments

offered in Google Classroom, a Learning Management System (LMS). To have an effective and successful online training, inclusion criteria were set. Teachers who had a good internet connectivity, access to a smartphone, laptop or desktop computer, and who were motivated and committed to completing an online training were included in the online training. Teachers' commitment to completing the training included attending all live training sessions, completing and submitting assignments. The assignments were in the form of watching videos and replicating hands-on activities in their classroom and uploading these videos on the LMS.

Figure 1 shows the process involved in implementing PEN's in-person and online training modes. Although both begin similarly, the online modality has a few additional elements that facilitate its delivery over a period of time. In the online training, a WhatsApp group was formed to facilitate communication between the organization and the participants. Then the same content was broken down into short modules complet-

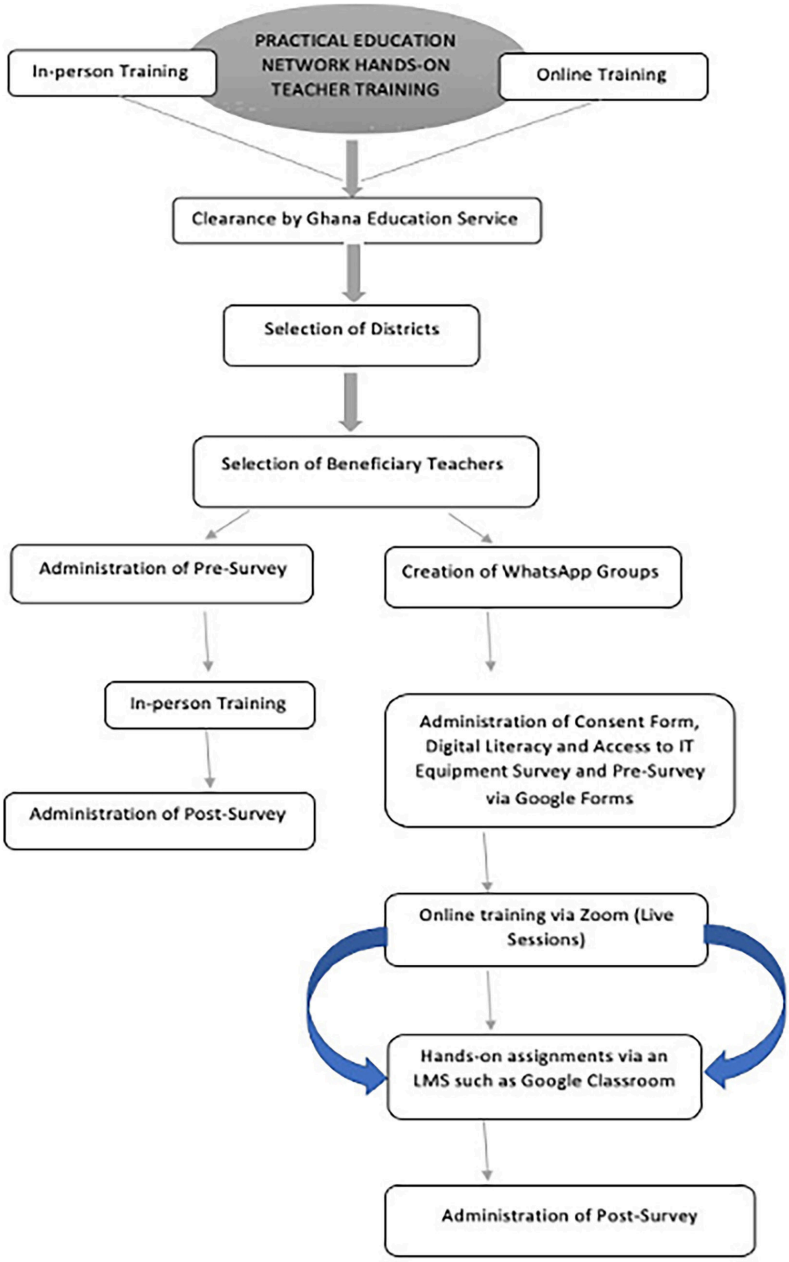

Figure 1. Process flow diagram of key steps used for in-person (left) versus online (right) trainings

ed over time. A cycle of live Zoom sessions and assignments on an LMS was repeated multiple times. The Zoom session served to first orient teachers to the program and then later served as a platform for experience sharing based on what they completed as their assignments. Short instructional videos on how to conduct each hands-on activity were shared on the LMS, the teacher was guided to gather the local materials in their own locality, reproduce the activity on their own, and upload a short video of them conducting the activity.

Over the period of 2014-2019, the in-person training program was rolled out for several cohorts across Ghana. In 2020-2021, this training program was rolled out fully online and for five different cohorts. Details of the online training cohorts are captured in Table 1. These covered various Districts and Regions within Ghana, some being urban, some peri-urban and some rural. The funder type also varied. In all cases, Ghana Education Service (GES) was closely consulted in the implementation. The cohorts will be referred to by their abbreviated names henceforth in this paper.

Baseline Information

A pre- survey, a digital literacy and access to IT equipment survey, and a consent form, developed as Google Forms, were administered prior to the training to collect baseline data. The pre-survey was used to assess teachers' teaching practice and knowledge of teaching using hands-on methods. The digital literacy and access to IT equipment survey collected data on the digital literacy levels of teachers prior to the intervention, whereas the consent form was used to officially seek the consent of teachers to participate in the online training. However, data analyzed to obtain baseline information was from the digital literacy and access to IT equipment survey. Data such as teachers' usage of video conferencing tools, participation in an online course before the training, access to digital devices and challenges faced while using the internet was collected and analyzed using simple descriptives. The survey had closed-ended questions which were analyzed quantitatively. The categories of questions asked sought to find out about teachers' proficiency in the use of video conferencing tools, challenges teachers faced while using the internet, teachers experience with taking courses online, among others as shown in the Appendix. The questions asked included "Have you taken an online professional course or class before, and Likert-scale questions on teacher confidence and feasibility of conducting hands-on activities in their classrooms.

Endline Information

A post-survey in the form of a Google Form was also used to collect data on the impact of the training on teachers. The course completion rate of the training compared to other Massive Open Online Courses (MOOCs) and challenges teachers faced while participating were determined at the end of the online training. The course completion was calculated as the percentage of teachers who completed PEN's online training divided by the percentage of teachers who signed up for the training. This figure was compared to that of other online courses. Both pre and post surveys asked the same close-ended questions on confidence and feasibility. These were analyzed quantitatively using simple descriptives. Sample questions asked included: "I can now carry out STEM-related hands-on activities in my classroom," "I know what to do to increase my students' engagement during a science lesson," "I am confident I can

Table 1. Details of the online training groups engaged during the period of the study

Training Cohort (Abbrev)	Number of Teachers	District; Region	Location Type	Field Partner	Funder
Presbyterian Schools in Ashanti Region (Kumasi Presby)	20	Various; Ashanti	Peri-Urban	Presbyterian Schools Coordinator	Private Individual
Public schools in Ahanta West (Ahanta West)	65	Ahanta West; Western	Rural	District Science Coordinator	Corporate
Public schools in Nzema East (Nzema East)	17	Nzema East; Western	Rural	District Science Coordinator	Corporate
Public schools in Greater Accra (SECF)	98	La Dadekotopon, Ga East and Ayawaso West; Greater Accra	Urban	District Science Coordinators	Family Foundation
Public senior high schools across Ghana (Ashesi EC)	20	Various; Various	Peri-Urban & Rural	None	University

Figure 2. Illustration of (a) a hands-on activity (Convection Currents) video shared with the teacher to replicate, (b) a teacher trying her hands on the activity, and (c) the Zoom depiction of the discussions on the activities done

teach my students using a hands-on approach today," "I am confident that I can address most of my students' concerns during science lesson using a hands-on approach." Pre-post comparison of teachers' confidence levels and feasibility to carry out hands-on activities during their lessons was done to determine change in teacher skills and attitudes over the course of the training. Paired t-tests, to determine p-values for statistical significance ($p < 0.05$) and Hedge's g test, to determine the effect size were done. The effect size was considered to be small if $|g| > 0.2$, medium if $|g| > 0.5$, and large if $|g| > 0.8$. These compared the change in confidence and feasibility levels from both the in-person versus online training modes. Learning gains were also determined for both online and in-person teacher participants. Teachers' learning gains per unit time were calculated as the difference in average scores of confidence and feasibility indicators, before and after the training, divided by the amount of time spent with each training cohort.

Figure 2 illustrates the key components of the training format, namely providing instructional video content that the teachers could watch asynchronously, teacher replicating the activities themselves and uploading a video as evidence, and finally a group Zoom session used to share experiences on the hands-on activities they carried out.

Field Visits and Interviews

After the training program was complete, PEN staff followed up on some teachers who were randomly selected from the Greater Accra Western and Ashanti Regions of Ghana. The selected teachers in the Greater Accra Region were visited in their schools and those in the Western and Ashanti Regions were interviewed on the phone six months after being trained. Pictures of teachers and their learners were taken, and the beneficiary teachers were also interviewed face-to-face during the field visits. Teachers in other regions outside Accra, were interviewed via phone calls. All interviews were transcribed verbatim, and stories were developed out of them.

Results

Participant Demographics

In total, across the five cohorts, 220 teachers who teach Science, Math and Information and Communication Technology (ICT) were selected from 10 out of the 16 regions in Ghana to participate in PEN's online teacher training in the use of hands-on methods to teach STEM subjects. They were between the ages of 18 and 50 years. 57% of the teachers were males and 43% were females.

Baseline Information

Figures 3 to 8 capture key results obtained from the baseline data. These help to create a picture of teachers' access to digital devices as well as their digital literacy levels prior to the training.

Figure 3 shows teachers' exposure to selected video conferencing tools. Teachers surveyed across five training groups were generally not exposed to using video conferencing tools. However, teachers were more exposed to Zoom compared to other video conferencing tools.

Comparing teachers who had never used Zoom to those who had before the training, data collected showed that many teachers described themselves as being very good at using Zoom. 40% of the teachers were very good at using Zoom compared to 10% who had never used it. These exposure levels that teachers reported did not differ significantly whether they were based in rural or urban areas.

Figure 4 details the percentage of teachers who had taken any online course before the training. Baseline data collected before the online training. Baseline data

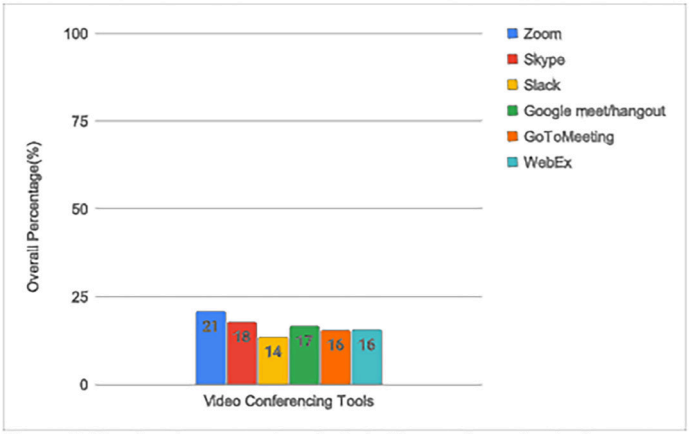

Figure 3. Teachers' exposure to selected video conferencing tools

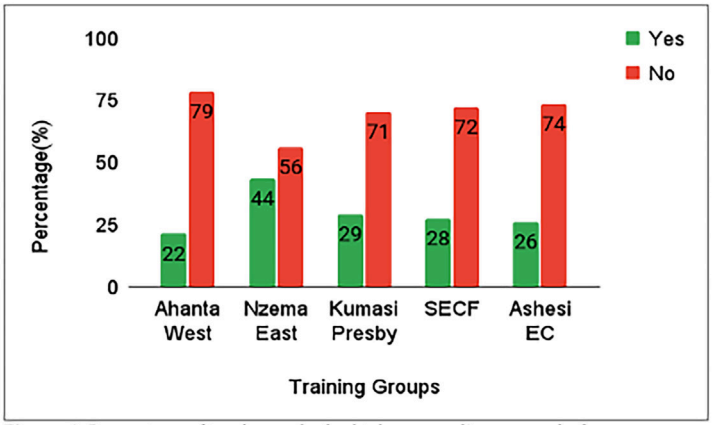

Figure 4. Percentage of teachers who had taken an online course before PEN's online training

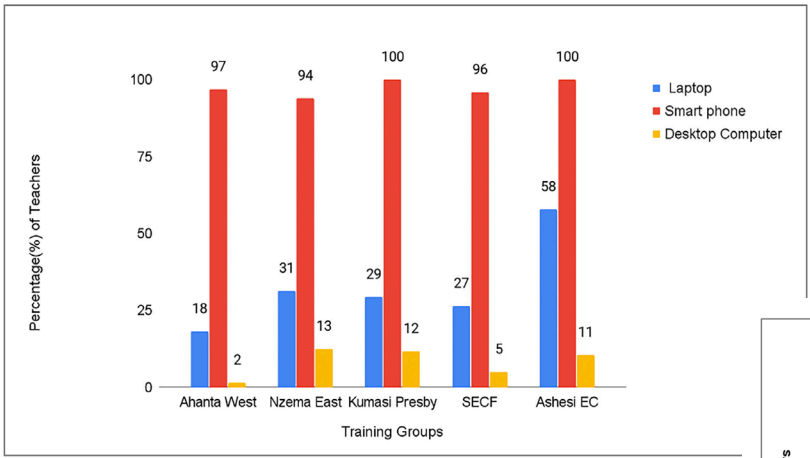

Figure 5. Percentage of teachers surveyed who had access to a personal digital device

collected before the online training showed that teachers were not used to or exposed to doing online courses or training. About 73% of the teachers had never done an online training prior to PEN training. Generally, teachers in all the training cohorts had a low level of exposure to taking an online course prior to the training. However, teachers from Nzema East which is a largely rural District had a relatively higher value (56%) for percentage of exposure to online training. This could be attributed to lower reliability, given that the Nzema East cohort had the smallest sample size.

Percentage of teachers who had access to a digital device prior to the training is shown in Figure 5. This data reveals that smartphones are by far the device which are most accessible to this teacher population, and therefore they will be relying mainly on them to engage with the online training. Only 6% of teachers owned desktop computers and 27% of them owned laptops.

Figure 6 shows the percentage of teachers who reported generally facing challenges while using the internet before the training. In aggregate across the five training groups, about 55% of the teachers surveyed said they faced challenges using the internet. Generally, the five cohorts reported similar responses, except for Nzema East, which again is likely attributable to the low sample size in that cohort.

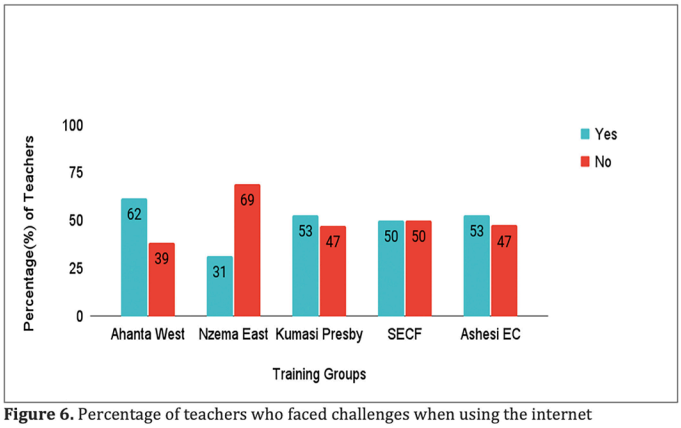

Figure 6. Percentage of teachers who faced challenges when using the internet

Figures 7 and 8 show the type of challenges teachers faced while using the internet prior to the training. The types of challenges faced include cost of purchasing internet data, poor internet connectivity, faulty device, and inability of device to download certain apps. Cost of data was the major challenge faced, with 44% of the teachers attesting to that, followed by poor internet connectivity (34%), inability of device to download certain apps (14%) and faulty device (8%).

Endline Information

In Figure 9, the percentage of teachers who successfully completed the training program is presented. Teachers in the SECF training cohort had the highest percentage (85%) of teachers completing the training. Ahanta West training cohort had the least percentage (14%) of teachers completing the training. Across all cohorts the online training had an overall course completion rate of 48%.

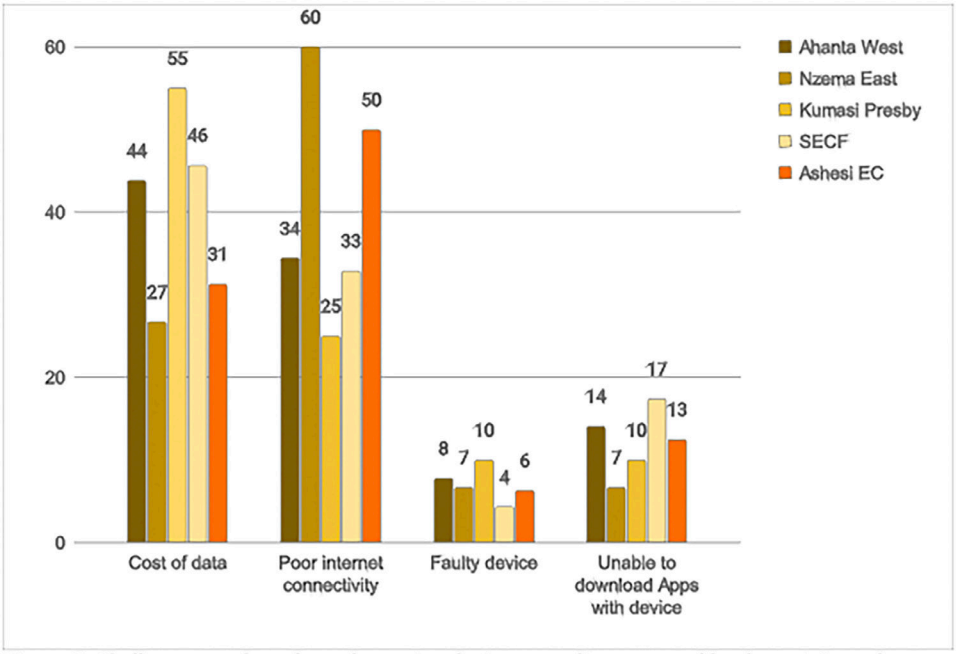

Figure 7. Challenges teachers face when using the internet, disaggregated by the training cohort

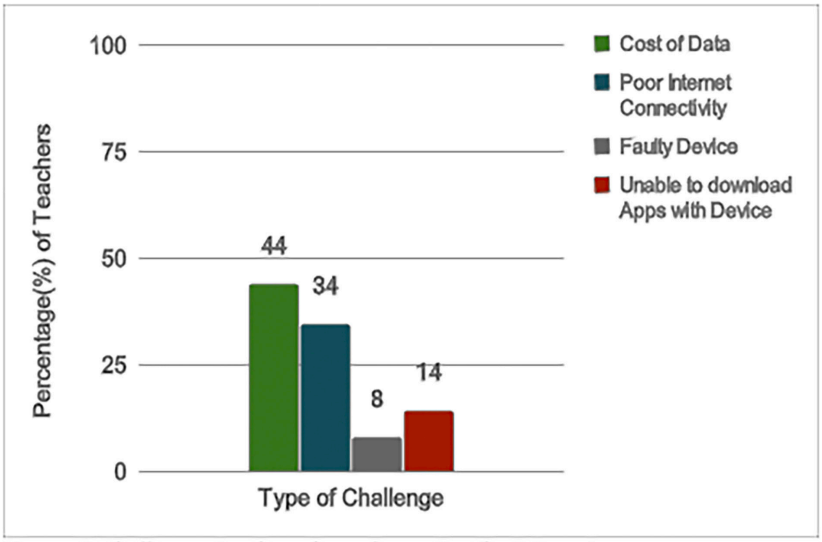

Figure 8. Challenges teachers face when using the internet

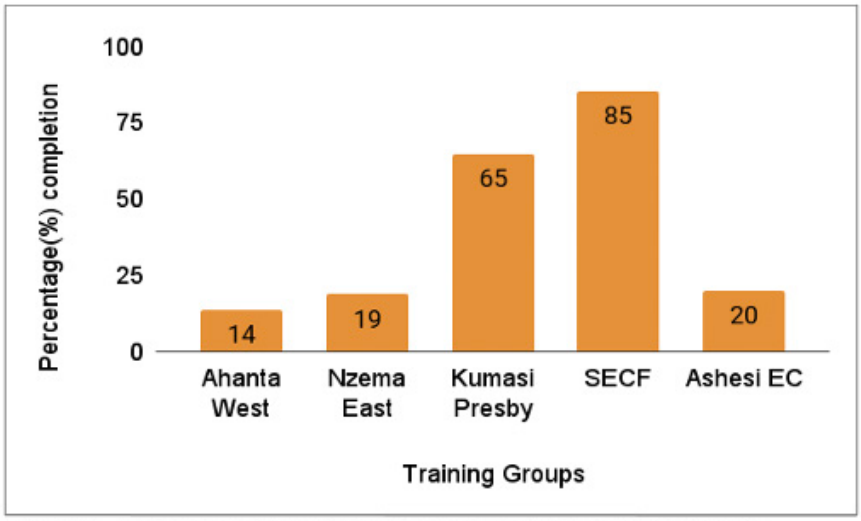

Figure 9. Percentage of teachers who successfully completed PEN's online training program

Table 2 shows the p-values of t-tests conducted on teachers' confidence and feasibility levels (scale of 1 to 5) before and after PEN's in-person and online hands-on training. The increase in teacher perceptions was statistically significant ($p < 0.05$) for both teachers participating online and in-person, and with large effect size ($|g|>0.8$). Teachers who participated in either online and in-person training all increased significantly in confidence and feasibility levels in the use of hands-on methods to teach STEM subjects after the training.

The learning gains achieved were higher per unit time in-person than they were online as presented in Table 3. On average, in-person training had 7.2 times higher learning gains per week than the online version, based on the feasibility metric.

Table 2. Change in perceptions of teachers who participated in PEN's online and in-person trainings

Training mode	Indicator	Period	n	Mean	S.D.	Sig. (2-tailed)	Hedge's g
Online	Confidence levels	pre post	108	3.06 4.64	0.95 0.52	2.71E-32*	2.80E+00 (large effect size)
In-person	Confidence levels	pre post	84	4.07 4.56	0.72 0.53	1.07E-07*	7.70E-01 (large effect size)
Online	Feasibility levels	pre post	83	2.59 4.46	0.92 0.70	5.45E-26*	2.27E+00 (large effect size)
In-person	Feasibility levels	pre post	83	3.02 3.95	0.96 0.86	6.64E-10*	1.02E+00 (large effect size)

Table 3. Learning gains per week of teachers who participated in PEN's online and in-person trainings with regards to feasibility to use hands-on methods to teach

	In-person			Online		
Training Cohort	Olag	Shai-Osudoku	Breman Asikuma	Nzema East	Kumasi Presby	SECF
Learning Gains/Week	3.498	6.995	6.995	0.361	1.122	0.945
Average	5.829			0.809		

Table 4. Learning gains per week of teachers who participated in PEN's online and in-person trainings with regards to confidence levels to use hands-on methods to teach

	In-person						Online				
Training Cohort	Oakwood School	Edify	Tema Ridge	St. Paul's Lutheran (2018)	St. Paul's Lutheran (2019)	TTI Fab Lab	Nzema East	Kumasi Presby	Ahanta West	SECF	Ashesi
Learning Gains/ Week	2.691	6.329	4.664	12.242	-2.798	5.316	0.329	0.987	0.709	0.810	0.102
Average	4.741						0.587				

Table 4 shows that on average, in-person training had 8.1 times higher learning gains per week than the online version, based on the confidence metric. Delivering the same training content online required a longer interaction time. Hence, although both modalities resulted in significant gains and with large effect size, the online modality required a longer time. It should be noted that the participants differed between the in-person and online cohorts, hence there is a limitation on how directly comparative this analysis can be. Nonetheless this highlights the main point that both offerings are effective, however, the online offering likely requires a longer time to achieve the same learning outcomes.

Field Visits and Interviews

Staff from PEN visited a few of the training participants in their respective schools six months after finishing the online training. The following three stories from the field and quotes capture some ways in which the online training was seen to have made an impact on teachers and students. These teachers shared staggering testimonies about the positive effect of the training. They testified about the significant knowledge and skills they have gained to help improve the teaching and learning of STEM subjects.

Madam Ama (pseudoname) teaches Primary 5 in one of the public basic schools in Accra. After receiving PEN's training, she now uses hands-on methods to teach science, and this is empowering her students. This was very evident in the confidence with which her learners answered science questions asked them during our visit. As seen in Figure 10, the students happily showed some innovations they created out of their experiences with hands-on teaching and learning. They went beyond the curriculum and decided to apply the hands-on approach to creating designs of ideas they generated. Madam Ama informed us that all the students in her class, even those who previously were not doing well in science, gained more interest, became innovative and performed better in their science tests.

Figure 10. Innovations (an LED lamp and electrical circuit) created by students out of their experiences with hands-on teaching and learning

Figure 11. Locally available materials gathered by a teacher and her learners to be used to teach science practically

Madam Efe (pseudoname) says that before attending this training, when she needed to teach her learners about temperature, she would walk to a nearby hospital to borrow a thermometer. But after being exposed to the possibility of using everyday materials in our environment, she now uses her own plastic bottles, alcohol, and straws to demonstrate the concept. She has seen that her students understand concepts better than before and do not easily forget them. Moreover, her students always inquire about what the next topic to be treated is, so that they can help look for the associated local materials and bring them for their next science lesson. Madam Efe even noted that truancy levels reduced because her students have become more engaged in her lessons. Figure 11 shows an example set of local materials that a teacher and their students gathered to facilitate this type of learning.

Madam Helen (pseudoname) is a Primary 5 teacher in the Greater Accra Region of Ghana. She is a class teacher who teaches subjects including science in a public school. Madam Helen mentioned that prior to the intervention, most of her students were not interested in science, hence were not doing well in it. However, when we visited the school, we clearly observed learners who were actively engaged in their science class. Madam Helen testified of a particular learner of hers who was originally quite disinterested in science and math, but now had become proactive and eager to engage in lessons, whenever practical activities were involved. She testified of yet another learner in her class who surprised her with a significant positive change. Even that learner's mother noticed the changes in her attitude towards learning, since before she saw her as being duller than her siblings. However, that learner now eagerly volunteers to act as secretary for her group and contributes during lessons. Previously, she did not like doing assignments that were given - her work was mostly incomplete - but she now does well to complete them.

The quotes below exemplify some of the feedback received from teachers when they were interviewed.

> *"Thank you. What I have to say is that this training is not only teaching us practical science. We have also learned educational technology using the phone. With this new curriculum, we can see that most of the topics need IT in teaching the children."*- **Female (Maths and Science Teacher-Greater Accra Region)**

> *"We came in empty but now we can say that we are full because there is a change in behavior. Learning has also taken place. Sometimes when it is time for science lessons, it becomes so dull especially with the new curriculum because we do not have any approach to get the practical way of teaching this lesson. But this time it is not that."* - **Female (Science Teacher-Greater Accra Region)**

"I personally enjoyed it because I am not the science type. But this has given me courage to teach my kids. It has boosted my confidence to teach a science topic and I never regretted joining the course."- **Female (Science Teacher-Western Region)**

"With the aid of PEN, I have learned how to improvise with available materials for my science practicals."- **Male (Science Teacher-Western Region)**

"Previously, I taught science using the 'lecture method' where I just talked and talked. We had limited teaching aids, and my teaching was mainly me standing in front of the class and just talking. My headteacher recommended me for this training and I must say this training has expanded my horizon. I will say, I had a holistic experience. First, we started off learning how to use Zoom and Google classroom. This was a plus for me as I am now literate in the use of these tools." - **Female (Science Teacher-Ashanti Region)**

The teachers who benefited from PEN's training shared very positive feedback about the impact of the training, revealing it to be a unique offering within the ecosystem and highly effective in spite of the online nature. They testified of significant improvements in their teaching, increases in their students' interest, and improvements in their students' learning outcomes in STEM subjects, even highlighting "turnaround" cases for specific learners.

Discussion and Conclusion

An online version of a hands-on STEM teacher training offering was successfully created and implemented across five training cohorts in Ghana. This offering fills a unique gap in the African education landscape and opens up possibilities for what other service providers can similarly do. Leveraging its focus on the use of locally available materials, PEN has arguably created a "pandemic-proof" model of its training. By relying fully on the use of items that can be procured or gathered in one's own environment, hands-on education can continue to be offered. Moreover, this offering was successfully deployed in a landscape where the use of digital tools has been relatively nascent. This fact should also challenge education providers to lean into this in order to scale impactful interventions on the continent.

In answering Research Question 1, the evidence suggests that the fully online modality of this hands-on STEM teacher training in Ghana had equally strong outcomes on participating teachers as those who participated in the fully in-person version. For the two key metrics measured regarding outcomes at the teacher-level, confidence to teach using a hands-on approach and feasibility of teaching with a hands-on approach, both in-person and online participants experienced statistically significant gains and with large effect sizes as a result of this training. This indicates that regardless of the modality, the training offering is impactful. The key distinction between the two offerings is the duration of time required. In translating the training content to an online modality, the material was broken down into short components so as to enable the participants to go through the material without demanding too much data at a time and without experiencing digital fatigue. This meant that while the same training (Introduction to Hands-on Science) was covered during a one day in-person session, it required being spread out over several weeks when offered in an online format.

In answering Research Question 2, two best practices are put forward. One is to leverage the use of locally available materials so as to enable hands-on, experiential education. Even in a remote learning setting, one need not ship materials to each participant nor set up a virtual lab in order to ensure that practical learning takes place. Second is to translate existing training content into short videos that can be accessed asynchronously and provide specific instructions. This ensures that participants are engaged in the digital setting and that they also are guided on specifically what they can practice.

This online training can be considered as a strong alternative along different dimensions. First, it is comparatively cost-effective especially with the use of locally available materials which are readily available in each person's respective environment. The use of pre-recorded videos makes watching and/or downloading them more feasible than streaming live videos, both from a cost and flexibility in time standpoint. The completion rate for this online training based on data collected was 48%. This is relatively higher than the completion rate of most MOOCs. A study conducted in Indonesia saw 100% completion rate of a teacher training in-person or hybrid, but only a 31% completion rate when offered online (Burns, 2013). Again, the average

completion rate of courses offered at University of Pennsylvania through Coursera ranged from 2-14% (Perna et al, 2013).

Persistence levels through the training varied by cohort. A separate study investigated the factors at play in the course completion rate for these cohorts (Hanson & Beem, 2022). It revealed that the majority of teachers who made it to the Onboarding stage, persisted through to course completion. The largest drop-off was between signing up (Enrolling) and attending the first zoom session (Onboarding). Hence, the level of sensitization to the concept of online training may be one of the most significant factors to address to improve persistence. For most teachers, if they commenced the training, their individual motivation and drive saw them through to the end. Although it is easy to fall on the dominant narrative that poor internet connectivity is the key factor in inhibiting digital modes of education from sticking in this context, other factors such as the motivation level of the participant and the commitment level of the field partner should be considered. In spite of the expected challenges associated with delivering an online training in this context, many teachers persisted to complete the training, and those who did benefited tremendously. Based on field visits to some of their schools and phone interviews with others, multiple stories and anecdotes were shared of how this training impacted their teaching and their learners' learning. This study can serve as an example to other African education service providers to lean into the opportunities that translating their content into digital modes can provide.

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APPENDIX
PEN Online Teacher Training- Digital Access & Literacy Survey

1. Full Name (as it appears on your ID card)
……

2. Telephone/WhatsApp Number
……

3. What position(s) do you hold in your school? e.g. head teacher
……

4. What STEM subject(s) do you teach? e.g. integrated science
   - O Integrated Science
   - O Mathematics
   - O Other ……..

5. What is the name of you school?
……..

6. Which class(es) do you teach currently?
   - O J.H.S 3
   - O J.H.S 2
   - O J.H.S 1
   - O Class 6
   - O Class 5
   - O Class 4
   - O Class 3
   - O Class 2
   - O Class 1

7. Type of school/institution
   - O Private
   - O Public/Government

8. In which region is your school located? e.g. Ashanti Region
……

9. In which district is your school located? e.g. Ahanta West District
……

10. Which of the following devices do you own and can use consistently throughout the months of the online training? (Select all that apply)
    - O Laptop
    - O Desktop computer
    - O Smart phone

11. What is/are your preferred social media channel(s)? (Select all that apply)
    - O WhatsApp
    - O Instagram
    - O Twitter
    - O Facebook
    - O LinkedIn

12. Do you have challenges when using the internet?
O Yes
O No

13. If yes, what are the challenges you face when using the internet? (Select all that apply)
O I cannot afford the cost of buying data continuously
O The internet connectivity is poor at my location
O I have a problem connecting to the internet with my device
O The specification of my device makes it challenging to download apps
O Other……..

14. What best describes your proficiency/usage level in using any of these video conferencing tools? (Range = Very Good - Never Used it)

	I am very good	**I am not too good**	**I am not good at all**	**I have never used it at all**
Zoom	0	0	0	0
Skype	0	0	0	0
Slack	0	0	0	0
Google meet/hangout	0	0	0	0
GoToMeeting	0	0	0	0
WebEx	0	0	0	0

15. Have you ever used the Google Classroom?
O Not at all
O Very little
O To some extent
O A lot

16. What days of the week will be most favourable to participate in live sessions?
O Monday
O Tuesday
O Wednesday
O Thursday
O Friday
O Saturday
O Sunday

17. What time of the day will be most favourable to participate in live training sessions?
O 9-11am
O 12pm - 2pm
O 3pm - 5pm

18. Have you taken an online professional course or class before?
O Yes
O No

19. How has COVID-19 affected your professional development?
……

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