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EDUCATIONAL PLANNING
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FROM THE EDITORS

This issue of Educational Planning covers significant planning topics such as Artificial Intelligence and human development, planning in higher education, educational facility planning, and the impact of COVID-19 on educational research and development.

In the first article, Ndala and Macjessie-Mbewe examine the educational plans developed in Malawi since 1995, focusing on their effectiveness in fostering knowledge and skills for social and economic development.

In the second article, Uys and Douse describe how Artificial Intelligence may contribute to current educational patterns and philosophies in addition to enabling and optimizing the totally transformed educational arrangements made inevitable and feasible by AI itself.

In the third article, Jiang, Robinson, Clegorne and Chan explore the unique challenges faced by a U.S. university in its Educational Specialist (Ed.S.) and Tier II Leadership Certification programs. Effective strategies implemented to address these challenges are highlighted.

In the fourth article, Tolosa and Hussien report on their study on the relationship between organizational structure and staff performance in an Ethiopian university. Results show a significant positive correlation between staff job performance and dimensions of organizational structure like decision-making, job codification and authority hierarchy.

The fifth article by Xiao is aimed at investigating how a reputable university in China promotes its institutional image. Results of the study indicate that the strategies employed by the university in promoting its image are going through multiple innovative channels including building its strong academic status.

Then, Lobban, Gala, Baker-Kimmons and Alam describe the process of addressing educational disparities in Jamaica by transforming secondary education service planning with Geographic Information System (GIS).

The next article by Amcoff and her colleagues explore the importance of university settingsand design for student success in Sweden. Results of their study indicate that the presence of greenery in the immediate surroundings of higher education institutes is positively correlated with graduation rates.

In the article by Lawson and his colleagues, gendered reflections on the impact of COVID-19 on the research culture were examined in two west African universities. They found that the effects of the pandemic have been differently experienced by male and female researchers, particularly in terms of time allocation to research, research funding and career ambitions.

In the next article, Aranha reports on her study of teacher perspectives on contemporary challenges to differentiated instruction at the post-COVID-19 period. Recommendations from the study include policy implications for the provision of more educational funding for smaller class sizes, additional support personnel, and ongoing professional learning.

In the last article of this issue, Terfasa and Kidane explore and contextualize leadership development practices of secondary school principals in Oromia National Regional State, Ethiopia. The findings of their study indicate a significant gap between the established policy and the practices implemented.

Educational Planning is indeed serving as an international forum for educators all over the world to discuss critical issues of educational planning. In this connection through the journal, educational scholars and practitioners can learn from one another and start their international collaboration.

Editor: Tak Cheung Chan
Associate Editors: Walt Polka and Holly Catalfamo
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April, 2025.

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KNOWLEDGE AND SKILLS FOR HUMAN DEVELOPMENT IN MALAWI: AN EDUCATIONAL PLANNING HISTORICAL OVERVIEW: 1995-2022

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ABSTRACT

This analysis examines the educational plans developed in Malawi since 1995, focusing on their effectiveness in fostering knowledge and skills for social and economic development. Despite the resources allocated for the development and implementation of these plans, Malawi continues to perform poorly on the global Human Development Index (HDI). The review assesses the coherence and consistency of the plans and curricula in aligning with global standards and addressing the country's specific needs. It shows that Malawi has historically prioritized access and equity in its educational initiatives. However, recent plans have shifted towards emphasizing knowledge and skills that align with HDI metrics. The findings indicate that essential knowledge and skills for national development are identified up to the classroom level. Still, the challenge remains in translating these into tangible social and economic outcomes as reflected in the HDI. To improve this situation, the paper recommends that educational plans explicitly define the knowledge and skills necessary to tackle the country's challenges. It advocates for a learning approach that connects education to the broader world beyond the classroom, emphasizing student-driven learning supported by teachers, parents, and external experts.

INTRODUCTION

Acquisition of knowledge and skills is essential to educational planning for a nation's social and economic progress. Formal education provides knowledge and skill development through structured or predetermined curriculum designed to address social and economic concerns of nations. Vocational and entrepreneurial skills, students' performance for practical work, students' spirit of inquiry, independent thinking, problem-solving, promotion of innovations, and development of appropriate technologies are means by which knowledge and skills for development are provided (UNESCO, 2015; World Bank, 2023). Nations, through Sustainable Development Goal 4, among other sub-goals, commit to ensure that all learners acquire knowledge and skills needed for sustainable development. These include sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity (UN, 2015). Consequently, nations' educational planning is expected to support these components and appropriately connect them to factors that support social and economic development.

Despite evidence that education promotes national economic growth, a number of countries perform poorly in the world ranking of Human Development Index (HDI) (Blau, 1967; Hallack, 1997; Hanushek, 2012; Hanushek & Woessmann, 2020; Psachoropoulos, 1986; Schultz, 1961; Woessmann, 2016; Woodall, 1974). According to the HDI, low-income countries like Malawi have persistently lagged behind in spite of significant planning and investment in education over the years (UNDP, 2020). The ability of education institutions in least-developed countries (LDCs) to free people from poverty is not guaranteed. Widespread of absolute poverty, growing income inequality, rising unemployment, environmental degradation, rising population, and resources constraints persist (World Bank, 1985; World Bank, 2023). Technical developments in industry and agricultural capabilities remain a challenge. The Global EFA Monitoring Report for 2015, for example, shows that there has not been much advancement in the transferable skills necessary for social and economic

progress (UNESCO, 2015). Scholars are therefore interested in understanding how knowledge and skills are created and utilized (Kvan, 2021; Petrides &Nodine, 2003) for economic development.

Since 1990, Malawi's performance on the HDI has been subpar. Malawi was ranked 157 out of 174 countries in 1996, and 174 out of 187 in 2014 (UNDP, 2014). In 2020 Malawi was number 174 out of 189. Malawi's HDI increased dismally by 1.27 percent between 1990 and 2019 (UNDP, 2019). This development indicator shows that the country's economic and social growth is stagnating. The purpose of this review therefore is to assess how Malawi has integrated the development of knowledge and skills into its educational planning for HDI progress. The significance of this review is that in order to comply with the HDI standards, Malawi will need to incorporate knowledge and skills that support national growth when reviewing its curriculum. Consequently, the review can help modify how policies are developed. Educational plans that Malawi has developed since 1995 are assessed focusing on advancement of knowledge and skills. To contextualize the debate, the paper begins by defining knowledge and skills development.

KNOWLEDGE AND SKILLS DEVELOPMENT CONTEXT

Literature shows a lot has been written about the development of knowledge and skills in the context of educational planning (Bhatt, 2000; Moharaj, 2017; Nonaka, 1991; Polanyi, 1973; UNESCO, 2002; Winch, 2003). Scholars agree that managing and characterizing knowledge and abilities is challenging as a result of changes in information and abilities. They have nevertheless divided knowledge, especially one required by an organization, into two categories: "explicit" and "tacit" knowledge. The content component of explicit knowledge is made up of data and information that has been encoded, stored, and disseminated. On the other hand, implicit knowledge is made up of practical skills, best practices, specialized knowledge, heuristics, and intuitions (Mahmood et al. 2011, cited by Moharaj, 2017, p. 1; Polanyi 1973). According to UNESCO (2015, p. 111), skills are competencies that can be acquired both during and after childhood, particularly through schooling. Skill is more specific than general knowledge because skills are intended to yield economic, social, or political consequences according to UNESCO's definition of knowledge and skills (p. 111). Consequently, skill development has received a lot of attention in educational planning in anticipation of advancing social and economic status of nations.

This description of knowledge and skills is consistent with the global education goals, which include the Sustainable Development Goals, the Education for All Goals, and the Millennium Development Goals (UNDP, 2020; UNESCO, 2012). UNESCO divides skills into three groups for the sake of the EFA goals: technical or vocational, transferrable, and foundational. They note that foundational skills, such as reading and numeracy abilities, are those required in order to be employed. Transferable skills are those that can be applied and modified to fit various job settings such as: ability to express ideas, solve difficulties creatively, evaluate problems, and take on entrepreneurial endeavors. Such skills are mostly needed to deal with challenges nations face thereby improving social and economic development as per the HDI. Since the EFA movement began in Dakar in 2000, these abilities have guided educational planning for countries. Transferable skills are therefore essential for the economic success of nations. The World Bank is an advocate for the advancement of technical, socioemotional, and cognitive skills (World Bank, 2023).

Recent research has focused on understanding how knowledge and skills contribute to the HDI through classroom practices in different countries (Biao et al., 2014; Rulyansah et al., 2022; Wambile et al., 2021; Yogiantoo et al., 2019). Studies on literacy levels, funding for educational activities, and the implementation of authentic learning activities in social sciences indicate how these factors impact HDI in countries such as Kenya, Indonesia, India, and Turkey. However,

the existing research does not investigate how the process of increasing HDI is organized within schools. The concept of authentic learning in social sciences is currently being promoted as a way to connect HDI with curriculum practices (Aynas & Aslan, 2021; Callison & Lamb, 2004; Mims, 2003). Callison and Lamb (2004) note that authentic learning involves exploring the world, asking questions, identifying sources of information, discovering connections, developing diverse perspectives, engaging in debates, and making decisions that have real-world impact. This area warrants further research to enhance curriculum delivery and improve HDI outcomes. The next section introduces human development measurement parameters and assesses how well they match the plans and curriculum created.

KNOWLEDGE AND SKILLS DEVELOPMENT FOR MEASURING THE ECONOMIC DEVELOPMENT OF A COUNTRY

Tools for measuring country development have evolved. Hicks and Streeton (1979), in their article *"Indicators of Development: The Search for a Basic Needs Yardstick,"* note that the Gross National Product (GNP) per head and the Gross Domestic Product (GDP) had been in use in the measurement of development efforts by countries. The World Bank, in its World Development Reports, associates the GDP with agriculture, industry, manufacturing, and services as major components. These tend to be practical and not theory alone. Todaro and Smith (2011) define GDP as the total final output of goods and services produced by the country's economy within the country's territory by residents and non-residents, regardless of its allocation between domestic and foreign claims. The gist is that the knowledge and skills developed by an education system, formal or non-formal, must influence quality and quantity of goods and services a country produces. For agriculture, manufacturing, and industries to thrive, an aspect of practical work in measuring human development and calls for a robust educational planning are required.

Around 1980, economists acknowledged that growth of output or income by itself is not an adequate indicator of development. The reduction of poverty and the satisfaction of basic human needs are goals that should show up as a measure of country development. Thus, the measures of GNP and GDP were reviewed to include social and human indicators. Since then, several other indicators have been used, such as the HDI, the Legatum Prosperity Index, and the Social Progress Index. Specifically, the indicators measure the extent to which countries contribute to the social, economic, and environmental progress of their citizens. As of 2014, factors such as basic human needs, level of income, cost of goods and services, working conditions, quality and availability of employment, access to quality healthcare, life expectancy, poverty level, the incidence of disease, quality and availability of education, inequalities, cultural, political, and religious freedom, economic and political stability, infrastructure quality, and environmental quality are used in measuring human development (Todaro & Smith, 2011). Recently, the Human Development Report (2020) brought another dimension to the definition of HDI due to global environmental challenges. This means the indicator, HDI, is moving towards another adjustment. From the premise that human development is about expanding freedoms and more choices for people to chart their own developing path according to their values, it has been observed that the approach has too much to contribute to planetary changes. It is proposed that the HDI will have to include 'agency' as the ability to participate in decision-making and to make one's desired choices and values, that is, the choices that are most desired with special attention to our interaction with nature and our stewardship with the planet (UNDP, 2020, p. 20). Education planners therefore ought to pay attention to the changes in the measuring tools and appreciate what knowledge and skills are needed for the development of their countries. The late integration of these measuring tools and the subsequent knowledge and skills needed would contribute to the dismal performance of a country at the global level. Th e changes in the HDI should translate into curriculum practices, thereby influencing changes in behavior among students and citizens.

ALIGNING EDUCATIONAL PLANNING APPROACHES TO KNOWLEDGE AND SKILLS DEVELOPMENT

Years of educational planning have seen three agendas influencing the development of education, which are associated with three approaches to educational planning: social demand, manpower planning, and cost and benefit approaches. The agenda has been the promotion of (a) economic policies; (b) equality and human rights; and (c) knowledge and skills development (Bray & Varghese, 2011; Caillods, 1989; Hallack, 1997; Lewin, 2008). To begin with, economic policies have propelled education development since the 1960s, and this is associated with the cost-benefit approach to educational planning. Economists considered education for consumption and investment, advanced the argument of prudent use of scarce resources, and focused on education as an investment that ensures the social and economic growth of a country (Hanushek & Woessmann, 2007; Psachoroupoulos, 2004; Woodall, 1974;). This reasoning continues to be applied when it comes to financing education; it has to be treated as an investment that would yield economic gains for the country. Economic policies have and continue to influence funding for different subsectors of education (Carnoy, 1999). This has seen basic education (primary) being a priority in most LDCs, including Malawi.

The second key area of focus in the development of education is equality and human rights. This is associated with a social demand approach to educational planning, which has been mostly championed by human rights proponents. The United Nations has been pivotal in releasing declarations (soft laws) and conventions (hard laws), some of which have been very specific to education. Human rights activists, over the years, have therefore pushed for more access to education on the premise that education is a right for every human being. What the declarations and conventions indicate is that human rights activists have done all that it takes to pronounce measures that can allow every child to access and participate in education regardless of age, race, colour, descent, national, ethnic, social origin, sex, language, religion, political or other opinion, property, disability, birth, or other discriminatory statutes (UN, 1948; UN, 1962; UN, 1979; UN, 2010). By 2015, it appears all groups that seemed to have been denied access to education for some reason were included, and now the talk is about inclusive education under SDG 4. The emphasis with this type of approach to education has been on reading and numeracy at the primary level. This approach has demonstrated little noticeable developments as per the HDI in low-income countries like Malawi.

The third key area of focus in educational planning views education as a tool that enhances *knowledge and skills* development in a country and is associated with the manpower planning approach. Knowledge and skill development are very critical for the development of a country. Several studies have therefore been conducted by economists to ascertain the effects of knowledge and skills on economic growth (Hanushek & Woessmann, 2007; Mincer, 1974; Psacharopaulos & Patrinos, 2004). Their studies affirm the existence of evidence suggesting that the quality of education measured by the knowledge that students gain as depicted in tests of cognitive skills is substantially more important for economic growth than mere quantity of education. Such knowledge and skills ought to be developed through the human resources available in a country (Bray & Varghese, 2011). Thus, countries like Israel, South Korea, China, and India that have invested in knowledge and skills development through human resources have improved their GDP, thereby improving their HDI. The following section zeros in the global education goals paying attention to knowledge and skill development.

GLOBAL EDUCATION DEVELOPMENT GOALS FOCUS ON KNOWLEDGE AND SKILLS

Until 1990, the global agenda for education has tilted towards increasing access and equity. What knowledge and skills the learners would acquire and how that knowledge has been shared for economic development has received little attention. Literature asserts that, until 1990, discussion around the development of education realized the missing aspect, which is the process of learning (Calloids, 1989; Hallak, 1997; UNESCO, 2015; Varghese, 2011). Commentators questioned whether the type of education provided was of a quality that could emancipate people from poverty. Issues around the management of resources and whether teachers were qualified, efficient, effective, and accountable started emerging. Factors affecting students' learning achievements were being discussed. These led to the Jomtien Education Conference in 1990 and the World Education Forum in Dakar in 2000 which continued to pursue the global agenda and launched the Education for All (EFA) movement. Of interest to this analysis are the following areas of concern raised by the movement, which started highlighting knowledge and skills for human development and set targets for 2000:

- Expansion of Early Childhood Care.
- Universal access to and completion of primary education by 2000.
- Improvement in learning achievement.
- Significant reduction in the adult literacy rate.
- Expansion of basic education and training in other essential skills required by youth and adults.
- Increased acquisition by individuals and families of the knowledge, skills, and values required for better living and sound sustainable development (UNESCO, 1990).

The EFA monitoring report of 2015 noted a number of challenges in implementing these goals. Of interest is that measuring knowledge and skills is acknowledged to be difficult. OECD was considering a way of a direct measuring of hard and soft knowledge (UNESCO, 2015). Currently Sustainable Development Goals are directing development of education with goal number 4.

Table 1: 2015 Sustainable Development goals

SDGs	
1. No poverty 2. Zero Hunger 3. Good Health and well being 4. Quality Education 5. Gender Equality 6. Clean Water and Sanitation 7. Affordable and clean Energy 8. Decent work and Economic Growth 9. Industry, Innovation and Infrastructure	10. Reduced Inequality 11. Sustainable Cities and Communities 12. Responsible Consumption and Reduction 13. Climate Action 14. Life below water 15. Life on Land 16. Peace and Justice, strong institutions 17. Partnership to achieve the goals (UNESCO, 2015)

Table 1 shows that SDGs offer guidance in practically every area that the social and economic development measuring instruments address. Within the framework of education, the ultimate goal of education is to address issues of hunger and poverty while promoting the health and well-being of the citizenry. Climate change, gender equality, peace, and other issues are best addressed when citizens are educated. When the goals are closely examined, it becomes clear that education is the key to achieving them all. Therefore, prioritizing education is essential if the SDGs are to be met. The emphasis on knowledge and skills in Malawi's educational plans is examined in the following section.

KNOWLEDGE AND SKILLS DEVELOPMENT IN EDUCATIONAL PLANNING IN MALAWI

Planning Education Context for Malawi

Malawi, a southern African and land locked country had an estimated population of 17 Million in 2018 with an intercensal growth rate of 2.9 per annum since independence (NSO, 2019). Its economy depends heavily on Agriculture and currently advancing industrial development (NPC, 2020). Malawi enjoys a multiparty democracy type of government after three decades of a single party rule. Malawi is one of the least developed countries with a GDP per capital of 672 USD in 2023, averaged 410 USD from 1960 to 2022 (World Bank, 2023). The World Bank observes that Malawi remains one of the poorest countries in the world despite making significant economic and structural reforms to sustain economic growth. Recently, Malawi vision 2063 aims to transform Malawi into a wealthy, self-reliant, industrialized upper-middle-income country, through a focus on agriculture commercialization, industrialization, and urbanization (NPC, 2020). The Malawi education system has since independence been guided by plans which have always been linked to national development policies and manpower studies and surveys. This has also been the case in all the sectors. Its first education policy was developed in 2013. These plans are developed to improve Malawi performance in HDI. Educational plans however are considered pivotal in economic development of the country as they affect the other sectors. MOE (2020) notes that full implementation of education plans is a tool for reducing poverty levels and gaps in Malawi.

Since independence, the plans emphasized on improving access, providing teachers regardless of their lack of qualifications, making appropriate use of available resources, advocating for UPE, and encouraging female involvement. Subsequent plans focused on (i) basic educational development, in particular post – primary education, on the needs of labor market, (ii) aligning curricula relevance to socio-economic and environmental needs, (iii) maximizing efficiency utilization of existing resources and facilities, (iv) equitably distributing education facilities and resources, (v) equalizing educational opportunities, and (vi) promoting education systems efficiency (MOE, 1963, 1975, 1985). Financing of the educational plans is largely by the government with support of donor partners and usually not meeting the pressure due to population growth.

Malawi has consistently updated its curriculum every decade, evolving significantly since the precolonial era. The focus of the curriculum has been on educational development, agricultural knowledge, literacy and numeracy skills, practical skills, self-employment, and entrepreneurship (Chirwa & Naidoo, 2014). These changes aim to address societal issues and enhance human development. In this context, the curriculum acts as a means of conveying the country's aspirations to its citizens through the classroom. However, despite these adjustments, Malawi continues to struggle to make progress in its Human Development Index (HDI). The following section looks at plans developed since 1995.

The Malawi Legal Framework, Educational Plans and Curriculum

In order to analyze how knowledge and skill development have been prioritized, this section presents a selection of legal instruments used in Malawian education. The Constitution, the Education Act, educational plans, and curriculum created after 1995 will all be highlighted. Several other policy documents developed over the years would have been part of this analysis but current focus is on educational plans.

First, the Malawian Constitution of 1994, which superseded the 1966 Constitution, governs the delivery of education. Education-related topics are covered in Chapter 4 on human rights and in Chapter 3 under essential principles. The provision of fair access to education is supported by the constitution but the improvement of knowledge and skill development was not explicitly stated in it, which placed more emphasis on the eradication of illiteracy. Table 2 shows what is provided for in the Malawi Constitution on education.

Table 2: Parts of 1994 Malawi Constitution

1994 Malawi Constitution	
Chapter 3 (f) Education To provide adequate resources to the education sector and devise programmes in order to: i. eliminate illiteracy in Malawi; ii. make primary education compulsory and free to all citizens of Malawi; iii. offer greater access to higher learning and continuing education; and iv. promote national goals such as unity and the elimination of political, religious, racial and ethnic intolerance.	**Chapter 4 (25). Human Rights** 1. All persons are entitled to education. 2. Primary education shall consist of at least five years of education. 3. Private schools and other private institutions of higher learning shall be permissible, provided that: a. such schools or institutions are registered with a state department in accordance with the law; b. the standards maintained by such schools or institutions are not inferior to official standards in State schools. (Government of Malawi, 1994, p. 11 and 14)

The 2014 Malawi Education Act

Because of new developments in education, the Malawian Education Act of 1962 was rendered obsolete in many respects. For instance, neither the establishment of FPE nor the option for private education were covered by the Education Act of 1962. Although the panel reviewing the Act noted that it lacked educational goals, several SADC countries customarily include goals in their laws (Law panel of Malawi, 2010). Thus, objectives to improve knowledge and skill development are included in the new Education Act of 2014 which encourages independent thinking and problem-solving, practical work, the spirit of inquiry, vocational and entrepreneurial skills, innovation, and the development of suitable technologies and skills. An excerpt from the 2014 Act can be found in Table 3.

Table 3: Excerpt from the 2014 Revised Education Act

Goals of education in Malawi	
(1) The purpose of education in Malawi shall be to equip students with knowledge, skills and values to be self-reliant, and to contribute to national development. (2) Without prejudice to the generality of subsection (1), the national goals of the education system in Malawi shall be to: (a) promote national unity, patriotism, and a spirit of leadership and loyalty to the nation; (b) develop in the student, respect for the Constitution of Malawi and the principles of good governance; (c) inculcate in the student, acceptable moral and ethical behavior; (d) develop in the student, an appreciation of one's culture and respect for another people's culture; (e) develop in the student, an awareness of appropriate environmental resource utilization and management practices;	(f) develop in the student, an appreciation of the impact of rapid population growth on the environment and delivery of social services; (g) impart vocational and entrepreneurship skills to the student in order to raise personal income and improve living standards; (h) develop in the student respect of practical work in order to stimulate industrial development; (i) promote equality of educational opportunity for all Malawians by identifying and removing barriers to achievement; (j) develop the student knowledge, understanding, and skills needed by Malawians to compete successfully in the modern and ever-changing world; (k) develop in the student a spirit of inquiry, independent thinking, and problem-solving; and (l) promote innovation and development of appropriate technologies. (Malawi Government, 2014, p. 10)

EDUCATIONAL PLANS IN MALAWI

This section provides educational plans developed since 1995 to 2020 to appreciate how knowledge and skills development has been emphasized.

Policy and Investment Framework (PIF), 1995-2005

From 1995 to 2005, the Education Policy Investment Framework (PIF) guided the provision of education in Malawi. PIF was developed in the context of guiding the development of the education sector as Malawi entered the new millennium. Consequently, factors that necessitated the development of PIF were: (1) the need for a long term development strategy for the education sector that would establish a clear set of policy priorities and define relevant sectoral reform programs; (2) because of the increased number of donor supported projects, there was need for guiding these interventions to ensure a more systematic approach to investments in education; and (3) the increasing number of new projects and the expansion of the education system in general, required the putting in place of appropriate management and monitoring mechanisms (MOE, 2001). Specifically, the PIF aimed at: (i) increasing access to educational opportunities for all Malawians at all levels of the system; (ii) ensuring that Malawi's education system does not intensify existing inequalities across social groups and regions; (iii) maintaining and improving the

quality and relevance of education; (iv) developing an institutional and financial framework that will sustain Malawian schools and students into the future; and (v) intensifying financing pathways and strengthening of financial managerial capacity within the education sector at all levels (MOE, 2008). During the PIF implementation, there were some emerging issues which necessitated its review in 2001. This led to re - strategizing and introduction of new policy directions to address the emergent issues (MOE, 2008), and consequently, the PIF document continued to be used until 2008 when the National Education Sector Plan, 2008-2017 was developed.

National Education Sector Plan, 2008-2017

As observed above, it was noted that PIF and the previous education plans were not comprehensive enough. Consequently, the Malawi Government developed the National Education Sector Plan (2008-2017) as the first comprehensive plan that covered all the education subsectors: Basic Education (ECD, Primary and Out of School Youth Education); Secondary Education; Teacher Education; Higher Education; and Technical and Vocational Training (MOE, 2020).

The Ministry of Education notes that the National Education Sector Plan (NESP) operationalizes the MGDS broad educational development priorities, which recognizes education as a catalyst for socio-economic development, industrial growth and an instrument for empowering the poor, the weak and the voiceless. It also recognizes the positive role of education in enhancing group solidarity, national consciousness and tolerance of diversity. The broad national goals in the MGDS are: (i) to equip students with basic knowledge and skills to enable them to function as competent and productive citizens in a free society; (ii) Students with disabilities are able to live an independent and comfortable life; (iii) to provide the academic basis for gainful employment in the informal, private and public sectors; and (iv) to provide high quality professionals in all fields (MOE, 2008, p. 12). Text box 1 is an extract of the NESP.

Between 2017 and 2020, a two-year NESP transitional plan was developed that bridged between NESP 2008-2017 and NESIP 2020-2030 which is discussed in the next section. The focus of this transitional plan was to execute the strategies that were not completed in NESP 2008-2017.

Text Box 1: Extract from National Education Sector Plan, 2008-2017

1. Increase net enrollment and completion rates, targeting those disadvantaged by gender, poverty, special needs and geographical location, encouraging all children to complete the eight years of primary education (Primary, Access and Equity).
2. Improve teaching inputs to facilitate more effective learning and to increase learning achievement, including supply of books and other teaching-learning materials (through programs now under way), training of teachers, Interactive Radio Instructions (IRI) and Complementary Basic Education, (Primary, Quality and Relevance).
3. Starting through the Primary Curriculum and Assessment Reform program now under way, enhance the relevance of the primary curriculum and improve delivery by diversifying the modes and methods. Furthermore, develop appropriate tools for special needs such as sign language and braille, (quality and relevance).
4. Introduce appropriate incentives to teachers, require teachers to work a full working week and supervise their performance.
5. Strengthen inspection and supervision of secondary education, (Secondary, Quality and Relevance)

(Ministry of Education, 2008)

National Education Sector Investment Plan (2020-2030)

The NESIP (2020–2030) builds on the previous NESP (2008–2017). The Government of Malawi observed that NESP faced some implementation challenges which resulted in missing of some of the targets, hence it committed itself to develop NESIP 2020-2030 and closely monitor its implementation at all levels in order to facilitate evidence based decision making on quick win activities and modify planned strategies to achieve intended results (MOE, 2020). As an implementation plan, NESIP 2020-2030 sets out to achieve national and international commitments from 2020 to 2030. The plans advance the following themes: access and equity, quality and relevance, governance, and management. Table 4 outlines the strategies and expected outcomes provided in NESIP.

Sample of the Malawi Primary Syllabuses/ Curriculum

A curriculum serves as a vehicle for articulating and addressing values, needs, approaches, interests, and goals of a society through the process of teaching and learning. The curriculum in schools imparts on citizens the anticipated information and abilities, which are derived from the nation's educational policies and plans. Over the years, Malawi has reviewed its curriculum to reflect a shift in focus. It is clear, from 2005 curricula gave greater weight than the previous curricula to issues related to the development of knowledge and skills. A sample of the curriculum for 2005 is given in Table 5.

Table 4: Strategies and Expected Outcomes for NESIP 2020-2030

Sub-Sector	Strategy	Expected Outcome
Primary	Improve equitable access to quality learning for all children in Primary Education.	• Improved equitable, inclusive access and participation in primary education; • Improved quality and relevance of teaching and learning in primary school education; • Efficient governance, management and accountability of primary education service delivery.
Secondary	Increase equitable access to quality secondary education for all.	• Increased equitable access to secondary education with particular attention to girls, vulnerable groups and those from rural areas; • Improved quality and relevance of secondary education; and • Improved governance and management of secondary education.
Higher Education	Ensure access and equity, quality and relevance and effective and efficient governance and management of the Higher Education subsector.	• Increased equitable access for students in Higher Education; • Improved skills, quality and relevance of Higher Education for industry or market; • Efficient and effective governance and management system established.
TEVET	Ensure increased equitable access to quality and governance of TEVET.	• Increased equitable access to TEVET programs that are relevant to developmental demand; • Improved functional quality and relevance of the TVET education sector; and • Improved governance of TEVET sub-sector.

Table 5: Sample of 2005 Curriculum

Malawi Primary School syllabuses Standard 8 *Ministry of Education, 2005: Malawi Primary School syllabuses Standard 8, Malawi Institute for Education*	**Science and Technology** **Basic scientific knowledge, skills, and attitudes:** To understand and apply scientific knowledge skills, and attitudes to solve everyday problems and provide a basis for thinking. **Scientific investigation for application:** The learner will be able to investigate relationships identify and solve practical problems in science and technology **Knowledge for Development:** The learner will be able to interpret and apply scientific and technological knowledge with ethical responsibility for the environment as well as make improvements in the quality of life and develop respect for vocational work **Nutrition and Health:** The learner will be able to demonstrate an understanding of the interrelationship between nutrition and health in homes, communities and the world. **Marketing:** The learner will be able to apply scientific and technological knowledge of production use and marketing processes in economic activities in order to increase local productivity and contribute to the market economy of the country. **Managing change:** The learner will be able to understand, innovate and manage scientific and technological changes in daily life with particular reference to the homes, schools and communities in Malawi. (Ministry of Education, 2005, p 209)

DISCUSSION

The purpose of this review is to assess how educational plans developed in Malawi since 1995 enhance knowledge and skills development that promote social and economic development of the country. The analysis is carried out in a quest to understand the reason Malawi performs poorly according to the Human Development Index. The question underlining the analysis is: Is Malawian Educational planning advancing knowledge and skills required for improvement in human development index?

Knowledge, Skills and Improved Human Development Index

To begin with, education is expected to promote social and economic development through provision of knowledge and skills to allow people, among other things, earn more money and live a healthy conscious life. That way, people enjoy life more and have a civic mind thereby contributing to the societies' goals. Greater knowledge and skills therefore enable societies find ways to tackle increasingly complex problems and needs. This means having an educated population is expected to lead to the improvement of the following: basic human needs, level of income, working conditions, access to quality healthcare, life expectancy, the incidence of diseases, inequalities, among others. Improvement of these factors would lead to an improved human development index of a country. Educational plans should therefore foster knowledge and skills development that link to the challenges people face.

Global Agenda Influence

What is coming out of this review is that global agenda in the development of education has influenced development of education in Malawi. Approaches to educational planning and the issues under discussion globally mirror what has happened in Malawi since 1995. It is noticeable in the analysis that the three dimensions propelling educational development mentioned above thus, economic policies, equality and human rights and knowledge and skills development have been at the center of the education development in Malawi. The approaches seem to have been applied simultaneously but with economic policies and human rights given more attention than knowledge and skills development in the former years. This is traced through approaches to educational planning that were advanced, which show movement from manpower planning to social demand approach particularly in the first educational plans soon after independence. One can observe that starting with an unknown approach in the first plan, the second and third plans moved towards manpower planning approach thereby promoting knowledge and skills development (Ndala, 2008).

On the other hand, from 1995, the Policy Investment Framework (PIF) emphasized on meeting the demands of the people but also specifically mentioning skills that are needed for development. Thus, the plan shifted to social demand approach. These are in line with what Jomtien Education Conference in 1990 advocated for (UNESCO, 1990). Worth noting is the emphasis on improving learning achievements, providing training in essential skills, and increasing the acquisition of family knowledge. Probably at this time, the focus on knowledge and skill development started to advance strongly. Improvements in learning achievement have indeed been the focus but this has not translated into the knowledge needed for the development of the country, Malawi.

After PIF, the development of education was guided by the National Educational Sector Plan (NESP) for 2008 to 2017. It covered every aspect of education and promotes the PIF's key areas, which are now divided into three categories: governance and management; quality and relevance; and access and equity. These three categories are the focus of plans across all sectors. It is interesting to note that the plan placed a strong emphasis on improving the quality of education by, among other things, re-evaluating the curriculum, providing enough teaching and learning resources, and strengthening oversight and monitoring. The plan also strongly supported expanding access across all sectors. The plan did not specifically mention enhancement of the knowledge and skills to be imparted as outlined in the previous plan, or monitoring on how those skills are imparted. This was quite contrary to what the Malawi Education Act which explicitly lays out the metrics for gauging human growth. It is becoming clear that Malawi has accepted the necessity of improving the development of knowledge and skills in its two most important legal documents, the Education Act and the Constitution. The goal of the present Education Act is to raise the nation's level of knowledge and skills in order to lift people out of poverty.

Link with HDI

It is noted that Malawi has paid attention to access and equity, governance and management and quality and relevance but how these are linked to the improvement of HDI needs further exploration. Factors included in the HDI measurement are outcomes of educational impact, i.e., level of income, cost of goods and services, working conditions, quality and availability of employment, access to quality healthcare, life expectancy, poverty level, the incidence of disease, among others. These are manifested after completing education at various levels. The educational outcomes are expected to be emphasized at school level through the curriculum. For example, part of the 2005 primary education outlines what education outcomes are expected out of the

students, for example, *under "**Nutrition and Health**: The learners will be able to demonstrate an understanding of the interrelationship between nutrition and health in homes, communities and the world" also under **Knowledge for Development**: The learner will be able to interpret and apply scientific and technological knowledge with ethical responsibility for the environment as well as make improvements in the quality of life and develop respect for vocational work (Table 5 page 9).* In this case, the curriculum outlines clearly what is expected of the students in line with the HDI. This will have to be enhanced through the type of teaching and learning advanced in a classroom.

Learner Centred Approach and Learning Outcomes

Learner centred approach combined with authentic learning can assist in attaining these outcomes. Malawi education generally uses teacher centred approach with a lot of theory and little engagement of the students. With an education system which is examination oriented, students concentrate on how to pass examination and not on how to apply knowledge to deal with the societal problems. As noted by Alonso (2014) and Todaro and Smith (2011), the measurement of GDP and GNP requires an output of goods and services produced by a country and these require skills that are practical in specified areas for measuring the HDI, i.e., agriculture, manufacturing and industries. Under "scientific investigation for application" in the primary syllabus in Malawi (table 5, page 9), the learner is expected to be able to investigate relationships, identify and solve practical problems in science and technology. With teacher centred approach of teaching, this rarely happens in Malawi. For the expected outcomes of the curriculum to be fulfilled, it requires a type of learning that is closely connected to the world beyond the walls of the classroom, and that learning is student driven with teachers, parents, and outside experts all assisting/coaching in the learning process (Mims, 2003). If this can be adequately carried out, factors like poverty level, availability of employment, among others, can be addressed and improved.

Knowledge, Skills and the Curriculum

Knowledge and skills needed as per the HDI is the tacit or transfer knowledge which is made up of practical skills. Such knowledge will have to be woven within the curriculum or syllabus of what is to be offered in the classrooms. Reading and numeracy skills are for foundations but on their own would not move a country to a higher HDI if the skills are not moved into transferable skills. Transferable and vocational skills are needed if a country is to solve its problems. The curriculum or syllabus should not only be theory but link the theory to the problems faced by the countries. For example, on how to deal with food production, the students should be encouraged to have agriculture fields where they can put into practice whatever they are learning. In this 21st Century, the education system should allow students develop technologies needed for Agriculture production, e.g. solar panels for energy generation. Engineering programmes, for example, should have portfolios of challenges faced by the country and the innovation and critical thinking should be applied on those areas. That way, a country can deal with its problems.

However, a study by MacJessie-Mbewe (2004) found some three reasons why practical skills and knowledge are not implemented in the classroom level in schools. The first reason was that practical subjects were not being examined during national examinations and as such, teachers concentrated teaching academic subjects that were examined for learners to pass exams. The second reason was that teachers lacked training in practical skills and as such, they had no skills to teach them. Finally, it was because of lack of learning and teaching materials and equipment to teach practical subjects as practical learning and teaching materials are very expensive to procure. Another reason practical knowledge is not enhanced is because when developing the plans, views from the community on how important the knowledge learners acquire to the community is not included (MOE, 2020).

IMPLICATIONS FOR EDUCATIONAL PLANNING

The findings of this review could significantly impact educational planners in three key ways. First, when developing educational plans, planners need to address the challenges facing the country. These challenges hinder social and economic development and should be highlighted and integrated into the curriculum development process. As planners strive to align educational initiatives with global agendas, the primary focus should be addressing national issues. Additionally, curriculum developers must ensure consistency between planned activities and what is delivered in the classroom concerning the expected outcomes based on Human Development Index (HDI) parameters. There should be a deliberate effort to connect the curriculum with HDI parameters. Teachers should guide students on their expected achievements, fostering critical and innovative thinking around basic human needs, income levels, working conditions, access to quality healthcare, life expectancy, disease incidence, and inequalities, among other factors. These concepts should not be left unaddressed; instead, students should be encouraged to practice behaviors that contribute to meeting these parameters. Furthermore, the government should make intentional efforts to incorporate authentic learning in social sciences. This approach involves exploring the world, asking questions, identifying information sources, discovering connections, developing diverse perspectives, engaging in debates, and making real-world decisions that have genuine impacts. By doing so, students will acquire the knowledge and skills necessary to contribute to the enhancement of HDI.

CONCLUSION

This analysis examines the educational plans developed in Malawi from 1995 to 2022, focusing on the emphasis on knowledge and skills development. The motivation for this analysis stems from concerns about Malawi's consistently poor performance in the Human Development Index (HDI) rankings. Instead of exploring how these plans were developed, the analysis concentrates on their content and how it is designed to foster knowledge and skills for the country's social and economic advancement. The analysis investigates the relationship between Malawi's educational plans and the global education agenda. It critically reviews the objectives and activities outlined in these plans over the years. The findings indicate a lack of consistency in emphasizing knowledge and skills development for social and economic progress. While the plans align broadly with the global education agenda—primarily focusing on access—they pay insufficient attention to the development of knowledge and skills. Although knowledge and skills are indeed delivered through the curriculum, this education does not consistently translate into the outcomes necessary to improve the Human Development Index. Consequently, educational planners are advised to incorporate knowledge and skills that address the challenges the country faces. These elements should be woven into the curriculum to ensure that teachers can effectively translate this knowledge and these skills into the expected outcomes that align with the parameters of the Human Development Index.

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ARTIFICIAL INTELLIGENCE IN THE SERVICE OF LEARNER-LED EDUCATION AND THE TEACHER'S TRANSFORMED ROLE

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ABSTRACT

Education is undergoing a fundamental transformation, necessitated and made possible by contemporary technology, notably Artificial Intelligence. Central to this transformation is the realisation that the post primary learners will lead in terms of what each will study, how, where, when and to what purpose. This will entail a refocussed and enhanced role for teachers, requiring and enabling them to perform more professionally rewarding activities than is presently the case. This paper suggests how Artificial Intelligence may enable each element in this forthcoming educational configuration to flourish. It outlines the form, nature and performance of AI in relation to (a) the ability of learners to lead their learning; (b) curriculum and the availability of courses and learning materials; (c) the teacher's transformed role, emphasising meta roles, guidance, personal feedback and encouragement; (d) linkages with the evolving world of work; and (e) social, ethical, equity and other implications. Essentially, the challenge is not one of describing how AI may contribute to current educational patterns and philosophies but, rather, that of enabling and optimising the totally transformed educational arrangements made inevitable and feasible by AI itself. Educational planners, let it be emphasised, are critical to the efficacious meeting of that all-encompassing challenge.

BACKGROUND

Much of the discussion of AI in education is founded upon the false assumption that schools, colleges, universities and systems would remain much the same as now, sculpted for an industrial society, designed for a disconnected world, based upon herding the learners into designated places, teaching at them, applying externally imposed curricula, and determining their life chances partly upon their ability to regurgitate irrelevancies. Most lives have been lived in such circumstances and it is understandably difficult to think outside that particular closed box.

At present, only the most perceptive planners, professors and presenters acknowledge that education is undergoing a fundamental transformation, necessitated and enabled by contemporary technology. There seems to be a virtually unquestioned belief that AI would be incorporated into a static world of buildings called schools and colleges, content called curricula, knowledge fonts called teachers, and sorting mechanisms called exams. This is much as if we were driving Formula One vehicles along 19th century cart tracks.

A typical recognition is that "artificial intelligence is the future that is constantly growing and can be benefited from in the field of education and must be properly exploited to build a new world that depends heavily on digital societies" (Maad, 2022). A widespread shortcoming is to ignore the inevitable and deep developments in the nature, structure and objectives of education consequent upon AI being the future. However, there is already some recognition that "in a scenario where jobs are significantly impacted, the high school years could shift focus away from employability"

(Fadel, 2024), allowing education to "pivot all the more towards cultivating students' identity, agency, and especially their motivation and purpose for a jobless world". Dr Charles Fadel's deep and wide-ranging review asks: "If AI does take over all jobs, leaving us free from the need to train for employment, what should the focus of education be?" He calls for a broad and deep education that fosters motivation, identity, agency, and purpose" (Fadel, 2024). While admiring the range and creativity of his review, we find it remarkable that his call stops there, without recognising explicitly and stating unambiguously that his 'MIPA' necessarily involves a transformation in who determines what should be learned – who should be leading that learning.

A relatively early article (Woolf, 2013) focuses on "contributions that AI can make to address long-term educational goals, namely: (a) mentors for every learner; (b) learning 21st century skills; (c) interaction data for learning; (d) universal access to global classrooms; and (e) lifelong and lifewide learning". That paper talks of "the total integration of Internet, cloud distributed technologies, AI and augmented reality in educational systems" (Woolf, 2013), offering a vision and brief research agenda for each of those five challenges. Here again, we are surprised and saddened that these very sensible (and oft-cited) recommendations have not been taken forward, at very least in plans even if not in actualities, over the subsequent decade. Indeed, in some respects, planners and decision-makers have folded up that route map that Woolf and colleagues sketched out all those years ago. However, generative artificial intelligence (GenAI), in which AI systems generate new information, emerged forcefully into public awareness in late 2022 when ChatGPT of OpenAI launched (Uys & Douse, October 2024).

Our view (Douse & Uys, 2020) is that education in the coming times will be learner-led, with the primary[1] years devoted to enabling all young people to direct their own learning from early secondary onwards, with schools, colleges and universities as processes rather than buildings, and with "fewer but better-paid teachers in exciting new supportive roles" (Douse, 2022). This paper takes forward the role of AI, and particularly GenAI, in education in this evolving context.

LEARNERS LEADING

Given that contemporary technology, along with the tangible/virtual duality of present-day learner consciousness, is necessitating and enabling a fundamental educational transformation, a central feature of this development will be 'letting the learners lead', including their identification of the content of each one's individual curriculum. Essentially, the students from secondary onwards deserve and can apply agency, with teachers supporting rather than controlling, checking and chastising. For example, it has been shown (Douse & Uys, 2023) that higher secondary students, when invited to decide what they would "like to learn in the coming academic year", are able to take the opportunity to shape their curricula in an impressive manner.

AI allows the learners to lead by replacing roles that were in the hands of teachers by applying the capacities of intelligent machines. Already, GenAI may assess individual students' performance and predict their learning outcomes for personalised learning (to suit individual learning interests, pace, abilities, and styles) and diverse learning needs, including those of students with disabilities. Some teachers are already applying real-time alerts and feedback to prompt students to participate in online activities. Soon it will be the learners themselves who may choose to receive such AI reminders (or not). Intelligent tutoring systems, such as those presently used by the National University of Singapore (UNESCO, 2023 Nov) can utilise predictive analytics to identify students

1 While 'preparatory' is more accurate here than is 'primary', the former has specific connotations such as 'prep schools', both in the UK (fee-paying and mostly boarding establishments for 9-14 year-olds, typically from wealthy families), and in the USA (public, private independent or parochial schools designed mainly to prepare students for higher education).

who are falling behind and intervene proactively. Here again, it will be up to each individual learner to decide whether and how to take advantage of such analytics, and the more sophisticated and sensitive versions arriving soon.

Pertinent too are AI-driven educational games which may adapt in real-time to a student's performance. Along with writing coaching, Educational AI Chatbots answer students' queries and provide information, and Conversational AI involves a "tutor" or teaching assistant who knows the context of the student's learning and gives nudges in terms of changing their learning strategy. This already embraces virtual tutors, offering 24/7 assistance, scaffolding and promoting independent learning – see, for example, the MathGPT versus Khan Academy approach (Uys, 2024). That these and other such developments are presently in use, albeit on a limited scale, indicates the undoubted value of AI even in the current situation, making clear its massive potential, in the service of learners with agency rather than teachers with authority, in the transformed educational system now beginning to emerge.

The ability and freedom to lead their own (post-primary) learning is entirely in tune with these evolving times. Schools as we know them now are products of the Industrial Revolution, reflecting 19th Century factory conditions, not to mention 20th century bureaucratic arrangements. The 21st century – the Third Millennium's opening phase will, we believe, become a time of responsible individualism and of personal agency made necessary and possible by AI. Inevitably, education will and should reflect this well-informed autonomy. Letting and enabling the learners (from early adolescence onwards) to manage their learning reflects and reinforces these profound socio-economic developments.

CURRICULUM

Each learner will have ready access to a personalised and virtually infinite range of courses and modules, being enabled with guidance available if and as required to choose between:

- Already existing off-the-shelf courses, adapted if and as necessary to each one's particular requirements, interests and previous knowledge; and
- Entirely original courses, created and tailored (mainly by AI) in response to each learner's specific needs and the evolving world.

In addition, for every module, each learner will specify what form of teacher support will be required, the nature and location of the learning (at home; in college; laboratory, hospital or on-site; online, face-to-face or mixed; self- or formal external assessment).

From the secondary and through subsequent phases, and throughout lifelong learning, the opportunity to choose from existing courses, or to call for a new program to be constructed, are extensive: a 15-year-old, and a 50-year-old, may each have wide discretion as to what to learn, away from vocational pressures. At the tertiary stage, despite being restricted by professional requirements and employer preferences, this would seem to apply even more obviously for university-level students, just as higher education faculty are even more qualified to support than are high school teachers.

The coming of AI and the general sense of sunrise industries being where the good jobs will be has caused many young people to pursue pre-career learning in Science, Technology, Engineering, Agriculture (maybe), and Mathematics[2]. It is worth noting not only that 'sunrise' is itself an illusion but also that machines are rather good at STEM activities. Humans interested in those subjects will also learn how to work well in partnership with AI to achieve optimal outcomes. Where humans can,

2 As has been pointed out: "although called STEM, only St_M is taught in K-12: there is very little Technology, and no Engineering" (Fadel, 2024).

at least at present, outperform machines is in creativity and artistic endeavour. In this post-digital age, the emphases should, we suggest, be on

- Working effectively with AI in those STEM (or STEAM) areas and beyond; and
- Creativity in every walk of life – from astrophysics to street art, from humour to the humanities, as fun, as beauty, as originality, and as processes that shape people's minds, dreams and inner lives.

AI can already analyse existing curricula and suggest updates: emerging topics, interdisciplinary learning opportunities, and providing tailored suggestions at any educational level (Karataş, Eriçok & Tanrikulu, 2024). As the fundamental transition occurs, a 15-year-old learner may, for instance, make a request such as:

I need a course covering the history of coal mining in this Welsh valley: how it began, the lives of the miners and their families, the economics and sociology of it all, who benefitted, were the safety regulations followed, were there accidents, what was the government's role, how did mining come to a close, and how did that valley and its residents fare thereafter? I can devote two hours a week to this, over two years, plus some full day visits, and would like to be able to consult a tutor whenever I feel it necessary.

A 30-year-old journalist with limited science background may say:

I wish to become a medical practitioner involved in health education in a developing country and realise that, first, I must raise my understanding of chemistry and biology. I can do part-time over two years, while still working. Then I am ready to study full-time for the recognised medical qualification, including hospital time and, hopefully, attachments to a government or voluntary health education unit and some overseas experience. I wish to use my journalistic skills in my new career and although I will need laboratory and ward experience, I am good at learning by myself.

A 73-year-old on the point of retirement may ask for:

Help with my understanding of Spanish language, history and culture. My mother tongue is English; I have some French but no Spanish at all. But I have just bought a retirement apartment in Cadiz, and I want not only to become fluent in the language (including practice conversation) but also familiar with key aspects of Spain. I can learn by myself online. I want to be able to eventually speak Spanish and visit relevant places and watch films and opera in Spanish.

Each such request would be responded to at once by the AI setting with a detailed course, for discussion, improvement, and eventual acceptance by the learner. It would specify each element, the mix of online and face-to-face, AI and/or teacher guidance, locations such as workplaces and laboratories, feedback arrangements, and accreditation requirements where appropriate (for example, with the medical doctor request, above).

TEACHING

A recent review of 135 relevant studies that were published between January 2017 and June 2023 (Bhattarai *et al*, 2023) recognises that "the use of AI in education has caused big changes in how students learn and how teachers teach, revolutionizing both online pedagogy and marketing strategies with the help of AI-powered tools like personalized learning platforms, intelligent tutoring systems, and automated evaluation tools". That review aimed at answering the "most important

question of whether or not AI could replace teachers or if it will be a helpful addition to the education system. It could be used most effectively to improve education while keeping the unique traits that teachers bring to the table" (Bhattarai et al, 2023). Although acknowledging "how AI may transform education by improving learning experiences, increasing engagement, and improving student outcomes", it reports that the 'augmentation of traditional teaching approaches by AI' is favored by 88% of the analyzed papers.

As we see it, the teacher's transformed functions may include radically new and meta considerations including:

- contributing to ethical considerations in the use of AI as ethics are normally not a matter of concern for machines
- deciding upon the appropriateness of AI software and comparing AI tolls for conceptual and cultural appropriateness
- setting the rules for AI software to reflect the contextual needs of the organisation and research requirements
- vetting and selecting sources for AI machines – as with the EdGPT foundation model that trains AI with high-quality, domain-specific education data (UNESCO, 2023 Sept)
- ensuring that a diversity of viewpoints and cultural expressions are represented in the sources, and that the sources are contextually appropriate (UNESCO, 2023 Sept)
- contributing to overall program design i.e. a program's overall philosophy, goals, assessment and modules.

Teachers may also be essential to conduct human endeavours such as:

- addressing online safety and the potential infringement of privacy in using AI in education.
- supporting students with some disabilities that AI cannot assist with, for instance the selection of appropriate screen-reader software, or software that will guide a student using prompts
- kicking off and closing courses at the end of the semester, and responding to original questions by students during their studies that AI is not able to address appropriately
- providing guidance, feedback and encouragement thereby, and offering an enhanced and more professionally rewarding role, proceeding significantly beyond augmentation.

Already, AI is supporting teachers through automated essay scoring/grading, computerising that tedious task. It may analyse students' behaviour, develop a "teacher's guide", help create student groups or cohorts, provide meaningful feedback automatically to large clusters of learners, help classify students' discussion content to determine if they were course relevant[3], and offer GenAI tools to support teachers and students using vetted sources in a controlled environment. Each of these is significantly useful under current arrangements. It is easy to envisage how they may be revised, extended, and 'control' modified to 'support', in order to enable the emerging 'learner leading with teacher supporting' relationship.

No longer the sage on the stage, the teacher will be responsive to each learner's individual requirements. Teachers and AI will, together, perform functions such as marking and assessment; review and update of curricula; course content provision; conversational interaction with students; online facilitation; and both academic and personal guidance. Disciplining, chastising and punishing will be eliminated in favour of responding, guiding and encouraging. In these transformed circumstances, each individual teacher will be supporting learners:

3 Somewhat Orwellian, we feel. Two steps away from monitoring the content of their dreams!

- Online across the world – the universal school (Douse & Uys, 2020) or face-to-face, as decided by each learner;
- In groups or as individuals, as preferred by each learner; and
- At times and for durations, as agreed with each learner.

Much feedback will be solely for the benefit of the learner. However, some will necessarily still involve appraisal, marking and failing, as addressed in the following section on the 'World of Work'.

The high likelihood is that by, say, 2040, there will be far fewer teachers worldwide. For, with the learner leading (in the manner entirely appropriate to 21st century information and ideas exchange) there need not be nearly so many of them. Currently, it is as if a navigator cum motor mechanic cum traffic police officer needs to travel always with every vehicle. When the secondary (or lifelong) learner takes over responsibility (prepared for throughout primary) for their own exploration of knowledge and life, there will need to be just enough teachers to respond to enquiries and calls for help: much as a well-equipped garage and a road emergency service would – in our vehicular analogy – suffice.

And those 'consultants on call' will need to be both competent and inspirational, with each of them "facilitating learning much more effectively, and all deserving and hopefully receiving substantially greater remuneration and intangible rewards than in the current outdated situation" (Douse, 2022). While no teacher can ever be paid what she or he is worth, the requirement for so many, especially in societies with high birth rates and even higher academic aspirations, means that teaching, worldwide, as presently structured, can never be a financially attractive occupation for most of its practitioners. Thankfully, vast numbers will no longer be needed.

THE WORLD OF WORK

Inevitably, some of that which will be studied will still be directly related to employment and the efficient performance of job-related tasks. For example, at the tertiary level and in technical and vocational education, many of the courses are based directly on the formal requirements of particular professions and occupations. In the short run, universities, colleges and TVET centres will still need to tailor many of their programmes to occupational constraints as well to learners' priorities. Once the learner-led education situation has been achieved, curriculum and learning arrangements as discussed above, responsive to each individual learner's requests, will – if and when, and only if and when, the learner so specifies – relate directly to trade or professional requirements.

However, with AI, all jobs are evolving, some are disappearing, while fresh ones are emerging. One major study (World Economic Forum, 2023) identifies "big data analytics, climate change and environmental management technologies, and encryption and cybersecurity" as the most likely major drivers of job growth in the coming years, adding that "agricultural technologies, digital platforms and apps, e-commerce and digital trade, and AI are all likely to result in significant labour market disruption" (World Economic Forum, 2023). As education gears itself to enabling these developments to occur with optimum benefits, so also will governments, professional bodies and employers gear their own specifications to the changing nature of every category of job.

Just as being an architect in 2030 will differ radically from being one now – or even more so from the time of Sir Christopher Wren – so also will their professional requirements. They will still need to show competence in, for example, construction engineering, soil and material sciences, design, logistical, legal, and customer relations aspects of the work, but each of these will be practiced in a changed context. Fundamentally, the architects of tomorrow will need to work

creatively and happily alongside and in partnership with AI. And this applies also to, for example, dentistry, engineering, law, social care, accounting, plumbing, teaching, lab technician, nursing, animal welfare – any job with professional, technical or trade regulations. And, as the occupation alters, so also will the entry requirements – and education's role – evolve profoundly.

In other words, assessment, credentials and linkages with the evolving world of work will alter as the world of work itself emerges into the post-digital situation. Let it be recognised that, with learners specifying their own curricula, employment requirements will lose their dominance. Moreover, not only are jobs evolving in parallel with the benign advance of AI, so also will the nature and content of the pre- and in-service education and training need to keep pace with the changing nature of what the work actually involves. The architecture example is a good one: those designing buildings and community structures in, say, 2040, will be working hand in metal arm with highly intelligent machines. This is not to suggest that new entrants should be able to ignore current requirements; rather that the professional associations specifying those requirements will need to take on board both the changing nature of the job and the constant availability of AI to practitioners.

ISSUES AND IMPLICATIONS

Some critics of our recognition of the existential future of 'the school' sometimes cite its crucial socialisation function. One response might be that primary education, directed at preparing learners for leading, will continue to offer a socialising setting lasting for six years or more (in addition to addressing the influence of AI on the learning and general well-being of young learners). For each individual learner, that period will conclude when both learner and teacher agree that the former is ready and competent to lead their learning. Moreover, not only will some of the friendships formed in those primary or preparatory years endure, but also, the achievement of agency will allow further sporting, cultural, hobby and other social linkages to occur and thrive. However, educational technology in general, and the same for Gen AI, has always had the potential for creating active connections among learners (Uys, 2019).

For many learners, much of present-day education is unpleasant and uninspiring. Bullying may well have migrated to social media, corporal punishment may well have been superseded by psychological controls, the exam culture may appear to have taken over from playground humiliations, but the plight of many learners remains physically and emotionally grim. Not all children, across the world, enjoy their conventional schooling. When envisaging post-digital age scholastic institutions, extending to the universal school (Douse & Uys, 2020), this prior aspect of the educational reality must not be ignored.

A major reason why teachers would not use AI in education, as established in the ASEF survey (Holmes, 2024) are the ethical implications of AI in education. These may embrace "ethical dilemmas related to decision-making driven by artificial intelligence, data privacy concerns, and potential biases inherent in AI algorithms" (Bhattarai, 2023). And, as one India-based commentator (Roy, 2024) makes clear, "policies must address the ethical and privacy concerns associated with AI in education… clear guidelines on data collection, storage, and usage must be established to protect student privacy and build trust in AI systems… principles of transparency, accountability, and inclusivity should guide the development and deployment of AI in education". With that, we assuredly concur.

We are sharing these indications of evolving education at a time when Gen AI is in the peak of high expectations and mostly seen positively. Such views may not prevail. Moreover, some teachers still cite the lack of reliability and accuracy of AI-enabled tools. They are concerned that AI-enabled tools might undermine human interaction in teaching and learning, express a preference

for traditional teaching methods which are more engaging and supportive of personal connections between teachers and students, and among students, and recognise their own lack of necessary technology and training, along with their students' lack of ability to use AI-enabled tools critically. They mention also a perceived lack of quality of student work when AI-enabled tools are used and identify also, as they see it, AI's possibly negative impact on students' creative thinking.

While each of these concerns may, in time and with positive experience be met, it is necessary to acknowledge that somnitial and small-scale explorations have been somewhat negative. One $6 million AI-powered chatbox designed to act as a personalised learning assistant for children was scrapped when the tech company paid by the Los Angeles school district got into financial difficulties (Hinsliffe, 2024). "The obvious lesson is to beware of being sold a pup by a hype-driven, profit industry still in its infancy" (Hinsliffe, 2024). Other trials are much more hopeful (for instance, British Broadcasting Cooperation, 2024; ELSA, 2024) and, in any case, both self-educating machines and open-minded humans will learn from these mistakes.

But this raises the crucial issue of equity, with the digital divide, between and within countries, characterising the current situation. As a recent study makes clear (Roy, 2024) "while AI could potentially be a powerful tool for democratising education, it also risks exacerbating existing inequalities". In relation to India (a nation marked by stark socio-economic disparities), that study suggests that AI:

- where student-teacher ratios are often overwhelming, can act as an invaluable teaching assistant, ensuring that no student is left behind due to a lack of personalised attention;
- in rural and remote areas, where qualified teachers and infrastructure are often lacking, can democratise access to high-quality educational resources; and
- can also transcend linguistic barriers, offering educational content in multiple languages and catering to India's diverse linguistic landscape.

However, as that author makes clear "integrating AI into education necessitates significantly overhauling the current educational ecosystem… policymakers, educators, and stakeholders must collaborate to create an inclusive and equitable digital education landscape… adopt a multi-faceted approach…. (and) act decisively, ensuring that the promise of AI in education becomes a reality for all and not for just a privileged few" (Roy, 2024). Here again, we wholeheartedly concur.

PLANNING

Accordingly, educational planners will play key roles in this forthcoming fundamental transition (Douse & Uys, 2018). In the immediate short-term, governments and policymakers may choose to:

- Form a multi-stakeholder, national-level advisory body on AI in education;
- Establish national frameworks, regulations, and ethical standards for generative AI and education;
- Incorporate AI components in teacher education;
- Create a centralized resource repository of generative AI in education;
- Introduce AI literacy in early childhood, elementary and secondary curricula;
- Foster partnerships with AI industry for the localization of AI solutions;
- Promote regional cooperation and knowledge exchange; and
- Support and incentivize generative AI innovation or practices that cater to local needs
- and are inclusive and accessible to all educators and learners in the community.

Simultaneously, institutions such as secondary schools, colleges and universities may:

- Develop clear institution-level policies and guidelines on student AI use;
- Upskill students for responsible and ethical generative AI use for learning;
- Update curricula and assessments to focus on skills that AI cannot presently replicate;
- Build teacher competencies for effective generative AI integration;
- Prioritize inclusiveness and bridge digital divides; and
- Implement monitoring mechanisms and support evidence-based research.

These apply especially to a gradual evolution of the existing system with AI giving a helping hand to teachers rather than taking over the reins. But, as we have described, what is coming is less incremental than elemental, and much more fundamental. Accordingly, in addition to the above suggestions, we advocate that educational planners should:

- Keep fully abreast and contribute to the ongoing debate through popular media, reputable journals (such as Educational Planning), conferences and workshops;
- Make clear at every opportunity that, rather than a steady advancement, a fundamental educational transition is afoot [always assuming that this prognosis has been accepted]; and
- Design (with colleagues, covering as wide an area as possible) initiatives that test the viability of 'learners leading and teachers supporting', exploring the various ways of moving into that scenario.

CONCLUSION

Essentially, the challenge is not one of describing how AI and particularly GenAI, may contribute to current tertiary educational patterns and philosophies but, rather, to enable and optimise the totally transformed educational arrangements made both inevitable and feasible by AI itself. We trust that this debate, along with the ever-more-responsively-evolving education sector, signal a dramatic reassessment of what post-digital-age education will and should become and how it may best reflect and respond to the conditions and possibilities of these fragile and exciting times.

Education in the coming years will be learner-led with secondary schools, colleges and universities as processes and with teachers and lecturers fulfilling exciting new meta and supportive roles. Given this transformation, it is interesting to explore how Artificial Intelligence may enable and strengthen the evolving change process. Clearly, the nature and capacity of the AI will develop, just as all education, from pre-school through to post-doctorate, embracing TVET and lifelong, and will go forward in ways presently unforeseeable. What is clear, however, is that the notion of simply gearing dynamic AI participation to a static education set-up is far from intelligent – artificial or otherwise.

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ACHIEVING SIGNIFICANT CHANGE IN AN EDUCATIONAL LEADERSHIP PROGRAM: A CASE STUDY

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ABSTRACT

This article explores the unique structure and challenges faced by Southeast State University's Educational Specialist (Ed.S.) and Tier II Leadership Certification programs. It highlights the effective strategies implemented to address these challenges and their positive effects on program quality and student success. The findings indicate significant improvements in student performance and increased program enrollment, providing valuable insights for sustainable educational planning and leadership development. These insights emphasize the critical role of strategic planning and effective methods in enhancing the quality of educational leadership programs.

INTRODUCTION

Educational leaders play a crucial role in schools' progress in fostering environments that promote student achievement, teacher development, and overall institutional success. Preparing effective leaders through educational leadership programs is a major contributing factor. In recent years, accelerated programs have emerged, enabling professionals to earn advanced degrees in shorter periods while maintaining their professional obligations. An accelerated program is an academic framework that enables learners to complete their studies faster than traditional programs while maintaining program, instructional, and learning quality. Young et al. (2017) note that these programs serve the needs of busy professionals by offering flexible and demanding coursework. Evidence-based research has demonstrated that performance-based education models promote active learning and allow leadership students to address school-related issues that complement and refine their professional activities (Darling-Hammond et al., 2010; Darling-Hammond, 2021). These programs are designed to bridge the gap between educational theory and practice, preparing students to transform theoretical constructs into actionable strategies to improve school performance (Clifford & Mason, 2013; Darling-Hammond et al., 2021).

The fully online Educational Specialist (Ed.S.) and Tier II Certification-Only (Tier II) programs at Southeast State University provide advanced training specifically designed for leadership roles, such as school principal or district administrator, aligned with the state of Georgia's Tier II certification. The Ed.S. program is designed for those seeking a professional degree above a master's degree, while the Tier II Certification-Only program is for those seeking to add certification to a previously earned Ed.S. or Ed.D. The programs facilitate accelerated, performance-based learning with applied practice through which candidates can complete the Ed.S. in three semesters and can complete the Tier II Certification-Only program in two semesters. Candidates benefit from a performance-based residency model where they work directly in their professional settings, applying their learning in real-world environments while being supported and guided by an assigned leadership candidate support team. Although the programs mentioned have strengths, they have faced challenges that included faculty turnover, the intensity of the eight-week class schedule, insufficient programmatic supports, and less-than-desirable performance on the Performance Assessment for

School Leaders (PASL), an assessment required for earning certification. The strategic refinement to address these issues was designed to address the above issues to improve the quality of programs and graduate preparedness for leadership roles in educational settings.

This article explores targeted strategies implemented by SESU to address these challenges and to assess their impact on program quality and student success. By examining the actions taken to improve faculty stability, refine the course format, enhance program support, and better prepare students for the PASL assessment, this article provides insights into effective practices for educational leadership programs. The results from this case study may offer insights to other educational institutions in developing and refining their leadership programs to foster sustained student success and program quality.

LITERATURE REVIEW

Accelerated Principal Preparation Programs

Accelerated leadership programs have gained wide attention since they shorten the period in which one can achieve advanced degrees while simultaneously continuing with their job responsibilities. These programs combine flexibility and thorough academic rigor, which empower students to reach their educational goals effectively (Young et al., 2017). Research points out the strong effectiveness of the performance-based learning models in such settings, as they foster an interactive education environment and allow learners to face real-life problems (Darling-Hammond et al., 2010; Darling-Hammond, 2021). These models help close the gap between theoretical frameworks and practical application, allowing students to translate theoretical knowledge into implementable strategies to improve school performance (Clifford & Mason, 2013; Darling-Hammond et al., 2021).

However, the accelerated format also poses challenges, particularly regarding students' preparedness for performance-based assessments such as the Performance Assessment for School Leaders (PASL). The intensive nature of these programs can be demanding, requiring students to assimilate and apply new knowledge quickly. Research shows that while such initiatives can rapidly create effective leaders, they must maintain substantial cohesion and provide consistent support to overcome the challenges associated with a fast-track learning approach (Sanders & Simpson, 2018). Furthermore, recent research by Smith et al. (2022) highlights the critical need to design resilient support structures for better student performance in accelerated leadership programs. These support structures might include comprehensive orientation sessions, ongoing mentoring, and targeted resources to help students succeed in high-stakes assessments. By addressing these challenges, accelerated programs can ensure their graduates are well-prepared for educational leadership roles.

Program Support and Consistency

Educational leadership programs face a significant challenge in achieving program coherence, including alignment between coursework, faculty expectations, and desired outcomes (Turnbull et al., 2015). Disruptions in coherence often stem from changes in faculty and diverse advising structures. The study by Leithwood et al. (2020) underscores the critical nature of stable faculty support, noting that educational programs characterized by high levels of faculty engagement are more likely to yield improved student achievement. Moreover, related research has demonstrated that stable faculty structures yield more effective mentoring and generate a more supportive learning environment (Cherian & Daniel, 2008; Ingersoll & Strong, 2021).

Educational leadership programs must implement robust support systems, including revamping orientation processes and enhancing advising strategies to address these issues. These enhancements might involve comprehensive introductions to program expectations, regular meetings between students and advisors, personalized academic planning, and mentorship programs. This approach aligns with the insights of scholars like Seashore Louis et al. (2016), who advocate for targeted interventions at the onset of educational programs to boost student outcomes. They emphasize the importance of early and continuous support to help students navigate the complexities of their programs, thereby reducing attrition rates and improving overall satisfaction and performance.

Recent findings by Johnson et al. (2023) further corroborate the efficacy of these interventions in strengthening program coherence and driving student success. Their research highlights that programs with well-structured support systems see higher levels of student engagement, better academic performance, and more positive student feedback. These interventions not only help in aligning the program components but also in creating a more cohesive and supportive learning environment that fosters academic and professional growth.

Data-Driven Program Enhancements

Educational leadership programs are increasingly adopting data-driven decision-making practices to enhance quality and relevance. This approach systematically collects and analyzes data to inform program improvements and address student needs. According to Mandinach and Gummer (2016), continuous data analysis identifies weaknesses in programs, which can provide opportunities to for institutions to effect timely changes. By leveraging data, educational institutions can identify areas that require immediate attention and implement evidence-based strategies to enhance program outcomes.

Establishing feedback mechanisms involving students and K-12 collaborators is crucial for guiding program modifications. These mechanisms ensure that the voices of all stakeholders are heard and considered in the decision-making process. Scholarly findings stress the importance of formative feedback in enhancing program coherence and promoting student involvement (Loughran, 2013; Mandinach et al., 2022). By incorporating feedback from students and collaborators, programs can make informed adjustments that align with the needs. and expectations of their participants, thereby fostering a more supportive and effective learning environment.

Moreover, data analysis is a crucial tool to help identify weaknesses in student support services, specifically in preparing students for the Performance Assessment for School Leaders (PASL). Smith et al. (2019) stated that leadership programs using data to improve assessment preparation and support structures gain substantial improvements in student performance, particularly in high-stakes assessments such as PASL. Integrating data into decision-making processes exemplifies best practices in leadership preparation, as highlighted by recent findings from Brown et al. (2023). This integration not only enhances the quality of the programs but also ensures that students are better prepared to meet the demands of their professional roles.

Effective Strategies for Improving Program Quality

Research indicates that high-performing educational leadership programs are characterized by their ongoing evaluation and refinement, drawing on both internal assessments and external feedback (Darling-Hammond et al., 2010). Initiatives such as enhancing communication practices, improved support for the PASL, and restructured advising systems reflect the findings of Marzano et al. (2011). These studies emphasize that leadership programs must continuously evolve to align

with academic standards and practical demands. Further reinforcing this perspective, recent work by Reeves (2022) highlights the significance of regular program assessment and adaptation.

Additionally, scholarly literature highlights the critical significance of collaboration and communication among faculty members in realizing successful program outcomes. Elmore (2014) underscores the importance of continuous professional development and cooperative efforts among faculty to ensure that leadership programs remain innovative and responsive to student requirements and labor market demands. Faculty collaboration fosters a culture of shared responsibility and collective expertise, which is essential for maintaining high standards of teaching and learning.

The most recent findings by Fullan (2023a) further validate the essential role of faculty collaboration in maintaining the quality and coherence of academic programs. Regular professional development opportunities enable faculty to stay current with the latest research and best practices in educational leadership. By working together, faculty can create a cohesive and supportive learning environment that benefits students and the broader educational community.

By integrating these recent research findings, the above literature review offers a thorough and contemporary examination of the obstacles and strategies within educational leadership programs. It highlights the various initiatives and approaches implemented to address these challenges, providing valuable insights into effective practices for enhancing program coherence, support systems, and student outcomes.

CONCEPTUAL FRAMEWORK

Transformational Leadership

Transformational leadership theory, originally proposed by Burns (1978) and further refined by Bass (1985), centers on the ability of leaders to inspire and motivate their followers toward elevated performance levels. This theory holds significant importance within Southeast State University's Educational Specialist (Ed.S.) and Tier II Leadership Certification programs, designed to cultivate leaders capable of establishing a compelling vision, energizing their teams, and creating an environment that values intellectual engagement and personal development.

In these educational programs, the emphasis on transformational leadership is vital for equipping future educational leaders to motivate teachers and students in their pursuit of excellence. These programs align with transformational leadership principles by prioritizing practical application and leadership growth, enabling students to acquire the necessary skills to engage and inspire their teams effectively. They promote an innovative environment encouraging ongoing improvement and enabling aspiring leaders to implement meaningful positive change within their educational contexts (Leithwood & Jantzi, 2000).

Performance-Based Education Framework

The performance-based education framework focuses on blending theoretical knowledge with practical experience, reflecting the tenets of experiential learning, which underscores the importance of learning through direct engagement and reflection (Kolb, 1984). This framework is particularly central to Southeast State University's Ed.S. and Tier II programs, which apply performance-based learning models to facilitate active learning and tackle real-world challenges (Darling-Hammond et al., 2010).

These programs incorporate a hands-on residency, allowing students to apply theoretical insights in practical environments and bridge the gap between theory and practice. This enriches student learning and equips them with the tools to address the complexities of educational leadership,

enabling them to implement effective strategies and drive improvement in schools. Under these conditions and settings, students can effectively demonstrate their knowledge and skills in contexts that utilize higher-order thinking and real-world applicability (Wiggins & McTighe, 2005).

PROGRAM FEATURES AND CHALLENGES

Structure and Objectives

The Education Specialist (Ed.S.) and Tier II programs at Southeast State University, delivered fully online through the Desire2Learn platform, provide advanced training for upper-level leadership roles, such as principals or district administrators, aligning with Georgia's Tier II certification. At the same time, the Master of Education (M.Ed.) in Educational Leadership equips candidates with essential skills for entry-level leadership positions, fulfilling Georgia's Tier I certification criteria. The Ed.S. in Educational Leadership is specifically designed for individuals seeking a professional credential who do not currently hold a specialist or doctoral degree and aspire to obtain Tier II certification in Georgia. The Tier II Certification-Only program, on the other hand, is intended for those who have already earned an Ed.S. or Ed.D. but need to achieve leadership certification. Both pathways meet the requirements for Tier II certification. Yet, the Ed.S. program provides an additional academic credential, whereas the Tier II Certification-Only program focuses solely on achieving certification without conferring another degree. The EdS program consists of 27 credit hours completed over three semesters, while the Tier II program includes 18 credit hours over two semesters. The program includes core courses, required only for degree-seeking students, such as Foundations of Leadership, Applied Quantitative and Qualitative Research, and Applied Leadership Evaluation. Residency courses, required for both degree-seeking and certification-only students, include Culturally Responsive Leadership, Vision and Governance, Managing the Physical and Fiscal Environment, Curriculum, Assessment and Instruction, Professional Learning, and Managing Human Resources.

For the Ed.S. and Tier II Certification-Only programs, acceleration is facilitated through several methods. Residency-based coursework, requires the candidates in their respective educational settings to address issues delineated in each of the six course syllabi , promoting practical application alongside daily responsibilities. At the same time, candidates work with a leader candidate support team (LCST) to apply their learning in real-world settings.The LCST consists of the leadership candidate, their mentor (usually the candidate's supervisor), a leadership performance coach, and the faculty member teaching the course, helping them integrate theoretical knowledge with practical leadership skills to ensure they are well-prepared for advanced leadership roles. The condensed course structure, with each academic semester consisting of two 8-week terms, allows coursework to fit neatly into these shorter intervals. Students typically enroll in two courses per 8-week session, culminating in four courses each semester. This design enables candidates to complete the Ed.S. program in as few as three semesters and the Tier II Certification-Only program in as little as two semesters, significantly accelerating their path to advanced leadership positions.

Identifying Challenges

Despite the strengths of the Ed.S. and Tier II programs, several challenges were identified that needed to be addressed to ensure program quality and student success.

Faculty attrition

Faculty turnover had been a significant challenge for the Ed.S. and Tier II programs. In the summer of 2022, several faculty members, including the program coordinator, left the program due to promotion opportunities at other institutions and retirement. This turnover disrupted program continuity and presented potential challenges to the quality of instruction. We were concerned that high faculty turnover could lead to inconsistencies in teaching and mentoring, which could negatively impact student learning and program coherence. The department realized the need to have department members dedicated to teaching the residency coursework to ensure continuity.

Intensive course format

The innovative eight-week course format, where students enrolled in four classes each semester, was considered unique and intensive. While this format allowed for accelerated learning, it was found to be overwhelming for students, which required modifications in planning and support to ensure success. The condensed nature of the courses meant that students had to quickly absorb and apply a large amount of information, which proved challenging, particularly given the existing degree of support and resources.

The content and assignments of the courses needed adjustment to make delivery in the eight-week format effective and support students' success. Ongoing evaluation determined that some 16-week content had been integrated into the eight-week format without sufficient consideration for needed adjustments. The types of assignments used in the full-semester format often required adjustments to work effectively in the eight-week residency format.

Program support

Through her interactions with program participants and feedback from program faculty, the new program coordinator found that communication of information to students and among faculty needed improvement. Students required comprehensive, timely, and accurate information about program requirements, deadlines, and available resources to navigate their studies successfully. However, it became apparent that students did not have a comprehensive understanding of these program requirements, support systems, and resources, which hindered their ability to effectively utilize the supports in place, including the leadership candidate support team (LCST). Additionally, the need for a more structured support system, comprised importantly of orientation and advising, was identified to help students integrate into the program and stay on track.

PASL performance and readiness

Analysis of Performance Assessment for School Leaders (PASL) data revealed that SESU program candidates were underperforming on the PASL compared to state and past SESU results. A deeper analysis showed that 31% of the students who submitted the PASL tasks were within only one or two points of earning a passing score. This underperformance indicated a need for better preparation and support for students. The PASL is a critical assessment for aspiring school leaders, and inadequate preparation can hinder students' progress and success in the program. Students need to understand the depth of content and the thorough writing required for their PASL submissions.

Addressing these challenges was essential to enhance the quality of the Ed.S. and Tier II programs and ensure that students are well-prepared for leadership roles in educational settings. The following sections will discuss the measures taken to address these challenges and the results of these interventions.

Measures to Mitigate Challenges

Faculty attrition

A range of strategic initiatives was enacted to address the issue of faculty turnover. Two full-time faculty positions were assigned—one as teaching faculty and the other as the newly appointed program coordinator—to bridge the void created by departing personnel, ensuring that the program's high instructional quality standards and continuity were going to be maintained.

Additionally, having the same full-time faculty teach the residency courses ensured consistency in instructional delivery and support. This stability allowed for the strategic use of part-time faculty to provide flexibility and address instructional needs as they arose. This approach not only stabilized the faculty team but also brought new perspectives and experiences to enrich student learning opportunities (Cherian & Daniel, 2008; Jiang et al., 2024).

Efforts were made to improve communication and teamwork among full-time and adjunct faculty. Consistency among all faculty regarding the program's goals and expectations was realized through regular meetings, shared planning sessions, and effective communication practices. The intentional collaboration served to realize a uniform teaching environment, which is instrumental in upholding program quality and integrity (Knight, 2004).

Intensive course structure

The rigorous eight-week course structure posed significant challenges for both students and instructors. Considering these challenges, the course requirements and assignments were thoroughly reviewed and revised. This revision ensured the academic tasks were relevant, achievable, and aligned with the program's educational objectives. Reviewing the course required faculty members to work together to help streamline assignments and eliminate those redundant activities that placed an inordinate demand on students (Jiang et al., 2024).

Accessibility to course content and materials is crucial for courses in an online format. To ensure students could easily navigate course components in a virtual setting, faculty members began ongoing evaluations of course shells (faculty designed frameworks for online course management and delivery) to improve content and structure. Accessibility included verifying that course shells were easily navigated and compliant with Americans with Disabilities Act (ADA) requirements. Key assessments were reviewed to ensure they promoted the mastery of the program's objectives.

The residency experience, an important part of the Ed.S. and Tier II programs, was developed further. The roles and responsibilities of the LCST were clearly defined and stressed. Mentors and coaches are crucial in helping students apply what they have learned in their current work setting. The importance of active participation and frequent communication with the students was stressed to the mentors. This team approach provided students with the necessary support and guidance during their residency since it allowed them to put into practice the theoretical ideas in realistic settings (Knight, 2004).

Faculty members teaching the residency coursework began ongoing evaluation of course content to keep it relevant to student needs. This evaluation also ensured the content was presented cohesively in the shortened semester. The courses taught in the eight-week format were previously taught in a traditional 16-week format. Evaluating these courses to ensure effective, efficient delivery with proper coherence and rigor remains an ongoing process. Where multiple lengthier papers had been consistently incorporated into the 16-week format, it was determined that fewer of these were needed. However, they needed to be substantial and prioritize the most relevant course elements. Examples of shorter but relevant activities that maintained the require relevance

included a "scavenger hunt"-type assignment in which students had to access state websites to determine the funding their district received under Georgia's Quality Basic Education (QBE) Act. Such assignments provided current information and helped them understand how their district earns funding. Feedback from students indicated that the activity clarified terms they had heard before but did not understand completely.

Program support

A strong support system was implemented for the students to counteract the identified issues of program support and cohesiveness. This system included an expanded student orientation process that clearly outlined the program's structure, its expectations, and available support services. The orientation process attempted to enable students to understand how the program's various components were interconnected and how they could use available support to be successful (Seashore Louis et al., 2016). Key program faculty and an outstanding program graduate were also invited to be part of the orientation team to provide comprehensive orientation. The faculty offered substantive information regarding the key features of the residency requirements, such as the Individual Induction Plan (IIP), LCST roles, and available support. The program graduates shared their experiences completing the program and provided advice/tips on succeeding in this demanding and rewarding program.

The program coordinator and key program faculty also collaborated on revising and updating the program handbook to make it informative and user-friendly. The updated handbook provided detailed information about program requirements, policies, procedures, and resources, thus helping students navigate the program more effectively. Another major focus was placed on mentors' and performance coaches' involvement to ensure that students were properly supported and guided throughout their course.

Specifically, the program coordinator outlined clear expectations, roles, and responsibilities of the performance coaches during their required annual coaching orientation, as well as exemplary coaching practices and demonstrated ways to achieve close communication and collaboration among the members of the LCST. The program coordinator also established the practice of interconnecting the faculty and coaches so they could provide targeted support to program candidates when they encountered special challenges in a particular course or other unexpected situations (Jiang et al., 2024).

PASL preparation

Two dedicated workshops were implemented to improve student performance on the Performance Assessment for School Leaders (PASL). The first workshop provided an overview of the PASL assessment, helping students understand its structure, requirements, and expectations. The second workshop offered a deeper dive into the specific tasks and criteria of the PASL, providing students with detailed guidance on how to approach and complete each component (Smith et al., 2019). One goal of the deeper dive was to ensure students knew how to access the extensive resources and material provided for PASL preparation.

PASL support was also integrated into the coursework, ensuring that students received consistent and aligned preparation throughout their coursework. Assignments were designed to mirror PASL tasks, and grading criteria were aligned with PASL standards. At least one assignment per class was designed to have students write with the depth, coherence, and insights required by the PASL tasks. These tasks required description, reflection, and analysis of assigned prompts. An example of how this was incorporated into the human resources course was when the students

developed a strategic human resources plan, which required them to reflect on their district's current needs, analyze a plan to address these and describe how it was utilized. This approach helped students develop the skills and knowledge needed to succeed on the PASL assessment. Additionally, student PASL results were regularly analyzed to identify areas for improvement and refine support strategies accordingly (Jiang et al., 2024).

RESULTS AND IMPACT

The measures taken to address the identified challenges resulted in a significant positive impact along many dimensions of both the Ed.S. and Tier II programs at SESU. These results show the effectiveness of the specific interventions and provide a solid foundation for further program improvement and evolution.

Improvement in PASL Performance

One of the most notable outcomes was the substantial improvement in student performance on the Performance Assessment for School Leaders (PASL). The overall pass rate increased dramatically from 59.00% in the 2021-2022 academic year to 88.89% in 2023-2024. This significant increase in pass rates indicates that the interventions, such as enhanced PASL workshops and the alignment of coursework with PASL requirements, were highly effective in preparing students for the assessment (Jiang et al., 2024).

In addition to the increased pass rates, the average PASL scores also improved. This improvement suggests that students passed the assessment and achieved higher performance levels. The enhanced PASL preparation workshops gave students a deeper understanding of the assessment criteria and tasks, likely contributing to improved performance. These results align with the findings of Darling-Hammond et al. (2010), who emphasize the importance of performance-based education in developing effective school leaders who not only pass the assessment but also achieve higher performance levels.

Increase in Student Enrollment

The combined enrollment for the Ed.S. and Tier II programs experienced significant growth, with a 19% in total enrollment during the 2022-2023 academic year, followed by a 32% increase in the 2023-2024 academic year. Certification-only enrollment also experienced substantial growth, reflecting the increase program's growing reputation and the effectiveness of the strategies implemented to attract and retain students (Jiang et al., 2024).

This increase in enrollment can be attributed to several factors. The program's accelerated format and robust support systems made it an attractive option for working professionals seeking to advance their careers in educational leadership. The comprehensive support system, including enhanced student orientation, revised handbooks, and increased mentor involvement, helped to create a supportive and engaging learning environment. These elements contributed to the program's appeal and ability to attract diverse The students (Young et al., 2017).

Positive Feedback from K-12 Partners

Feedback from K-12 partners indicated high levels of satisfaction with program graduates. Networking and meetings with local K-12 systems helped to build strong relationships and ensure that the programs met the needs of the educational community (Jiang et al., 2024). Positive feedback from these partners underscores the program's success in preparing competent educational leaders.

positive feedback from K-12 partners is consistent with the findings of Clifford and

Mason (2013), who highlight the importance of building leadership capacity for sustained school improvement. The program's focus on practical application and performance-based learning helped to ensure that graduates were well-prepared to take on leadership roles in educational settings. This alignment with the needs of the educational community likely contributed to the positive feedback and strong relationships with K-12 partners.

Enhanced Program Reputation

The improvements in PASL performance, increased enrollment, and positive feedback from K-12 partners have collectively enhanced the reputation of the Ed.S. and Tier II programs at SESU. The program's ability to effectively address challenges and implement targeted interventions has demonstrated its commitment to continuous improvement and student success. This enhanced reputation will likely attract even more students and educational partners in the future, further strengthening the program's impact and reach. The improvements in PASL performance, increased enrollment, and positive feedback from K-12 partners have collectively enhanced the reputation of the EdS and Tier II programs at SESU. The program's ability to effectively address challenges and implement targeted interventions has demonstrated its commitment to continuous improvement and student success. This enhanced reputation will likely attract even more students and educational partners in the future, further strengthening the program's impact and reach.

Overall, the measures undertaken to address the challenges faced by the Ed.S. and Tier II programs at SESU have significantly improved program quality and student success. The targeted interventions have enhanced student performance and enrollment and strengthened the program's reputation and relationships with educational partners. These results demonstrate the strategies' effectiveness and provide a solid foundation for continued program development and improvement.

DISCUSSION

Importance of Ongoing Program Evaluation

Ongoing program evaluation is essential for identifying areas for improvement and ensuring the program's continued success. Regular data analysis and student and faculty feedback help inform program refinements. The significant improvements in PASL performance and student enrollment at SESU demonstrate the effectiveness of continuous evaluation and targeted interventions. By systematically reviewing program outcomes and making data-driven decisions, educational institutions can enhance program quality and student success (Jiang et al., 2024; Mandinach et al., 2022).

The ongoing evaluation process involves collecting and analyzing data on various aspects of the program, such as student performance, faculty effectiveness, and program outcomes. This data-driven approach allows program administrators to identify trends, pinpoint areas of concern, and implement changes based on empirical evidence rather than anecdotal observations. For example, the analysis of PASL performance data at SESU revealed specific areas where students were struggling, which led to the development of targeted workshops and support strategies that directly addressed these weaknesses (Smith et al., 2022).

Aligning Academic and Practical Support

Aligning academic and practical support is crucial for student success. Integrating theory and practice through performance-based education frameworks ensures students can apply their learning in real-world settings. This alignment helps bridge the gap between academic knowledge and practical skills, preparing students for leadership roles in educational settings. The enhancements to the residency experience and the alignment of PASL support with coursework at SESU are examples of how practical support can be effectively integrated into academic programs (Darling-Hammond et al., 2021; Wiggins & McTighe, 2005).

The residency component of the Ed.S. and Tier II programs at SESU provides students with hands-on leadership experience in educational settings. This practical experience is essential for developing the skills and competencies needed for effective school leadership. By working closely with experienced mentors and applying their theoretical knowledge in practical situations, students gain a deeper understanding of the complexities of educational leadership. They are better prepared to handle the challenges they will face in their careers (Darling-Hammond et al., 2021). The practical aspects of both programs' coursework will continue keep pace with new leadership challenges to help students learn to adjust their field practices in a timely manner.

Faculty Collaboration for Program Consistency

Faculty collaboration is key to maintaining program quality and consistency. Regular communication and collaboration among faculty help to align instructional strategies and share best practices. At SESU, efforts to and quality of instruction. Collaborative efforts ensure that all faculty members are on the same page regarding enhance communication and collaboration among full-time and part-time faculty have contributed to the continuity program goals and expectations, which is essential for delivering a cohesive educational experience (Elmore, 2014; Knight, 2004).

Effective faculty collaboration involves regular meetings, joint planning sessions, and sharing resources and teaching strategies. This collaborative approach fosters a sense of community among faculty members and ensures everyone works towards the same goals. At SESU, establishing regular faculty meetings and collaborative planning sessions has helped create a unified instructional approach, which has been instrumental in maintaining program consistency and quality (Elmore, 2014).

Strong Support from the Department Chair

Strong support from the department chair is essential for implementing program improvements and ensuring faculty and students have the resources they need to succeed. The department chair is a linchpin in advocating for the program, securing necessary resources, and fostering a supportive environment for faculty and students (Gmelch & Buller, 2016; Ritchie, 2021). Chairs occupy a unique middle-management position, bridging administrative priorities with faculty and student needs, allowing them to effectively influence academic planning, resource allocation, and programmatic changes (Wolverton et al., 2020).

At SESU, the support from the department chair has been instrumental in addressing challenges and promoting program success (Jiang et al., 2024; Fullan, 2023a). This aligns with recent findings emphasizing that chairs who are strategic planners and active advocates create conditions conducive to faculty growth and student achievement (Lindahl, 2022). Department chairs facilitate initiatives that strengthen academic programs and foster innovation by taking on a leadership role encompassing managerial and visionary functions (Bray, 2020). For instance, securing funding for faculty development programs and ensuring access to instructional resources enhances instructional

quality significantly and, subsequently, a student's outcome (Fullan, 2023b).

The department chair's role also involves facilitating communication between faculty and administration, thereby promoting transparency and aligning program goals with institutional priorities (Gmelch & Miskin, 2019). Chairs are pivotal in fostering a collaborative culture that supports faculty engagement in curriculum design, assessment, and professional development—key factors in program improvement and sustainability (Bray, 2020; Ritchie, 2021). At SESU, the department chair's commitment to supporting faculty through targeted professional development opportunities and promoting a culture of continuous improvement has been critical to the program's success (Fullan, 2023b).

Recent research underscores the importance of chairs as change agents who build trust among stakeholders while navigating institutional challenges (Lindahl, 2022). By championing program needs, securing additional resources, and advocating for faculty and students, department chairs enable academic departments to thrive. Their leadership enhances program quality and contributes to higher levels of student success and retention (Wolverton et al., 2020). At SESU, the proactive leadership of the department chair has played a key role in increasing program enrollment and improving student performance, serving as a model for effective academic leadership in higher education (Jiang et al., 2024).

Impact on Student Outcomes and Program Reputation

The targeted interventions and continuous improvement efforts at SESU have significantly impacted student outcomes and the reputation of the Ed.S. and Tier II programs. The improvements in PASL performance and student enrollment clearly indicate the program's success. Additionally, the positive feedback from K-12 partners highlights the program's effectiveness in preparing competent educational leaders (Jiang et al., 2024).

The enhanced reputation of the Ed.S. and Tier II programs has also contributed to increased interest and enrollment. As the program's success becomes more widely recognized, it attracts more high-quality applicants, further strengthening the program and its impact on the educational community. This positive cycle of improvement and recognition helps ensure the program's long-term sustainability and success (Clifford & Mason, 2013).

IMPLICATIONS FOR EDUCATIONAL PLANNING

The results of this case study have several implications for educational planning and leadership development:

Continuous Improvement: Regular program evaluation and data-driven decision-making are essential for maintaining and enhancing program quality. The success of the Ed.S. and Tier II programs at SESU serves to illustrate the importance of using data to inform program improvements and ensure that interventions are effective and targeted (Mandinach et al., 2022)

Integration of Theory and Practice: Aligning academic coursework with practical experiences prepares students for real-world challenges and enhances their leadership skills. The performance-based learning model used in SESU's programs provides a valuable framework for other institutions looking to bridge the gap between theory and practice in educational leadership (Darling-Hammond et al., 2021; Wiggins & McTighe, 2005).

Faculty Collaboration: Encouraging collaboration among faculty members ensures consistency in program delivery and supports sharing best practices. The collaborative efforts at SESU have been instrumental in maintaining program quality and coherence, highlighting the importance of faculty teamwork in educational leadership programs (Elmore, 2014).

Supportive Leadership: Strong support from department chairs and institutional leaders is crucial for implementing program improvements and securing necessary resources. The role of the department chair at SESU in advocating for the program and fostering a supportive environment has been key to the program's success, underscoring the need for effective leadership at all levels of educational institutions (Fullan, 2023).

CONCLUSION AND FUTURE DIRECTIONS

The Ed.S. and Tier II programs at SESU have significantly improved student performance and program quality through targeted interventions. The strategies implemented to address challenges, such as faculty turnover, intensive course formats, and the need for robust student support, have effectively enhanced program quality and ensured sustainable student success. The improvements in PASL performance, student enrollment, and positive feedback from K-12 partners highlight the success of these interventions.

Future directions for the programs include continuing to refine the programs based on data and feedback, exploring new strategies for faculty engagement and support, and further enhancing the integration of theory and practice. The programs can continue to prepare effective educational leaders by focusing on continuous improvement and collaboration. Additionally, expanding partnerships with K-12 systems and other educational institutions can provide students with more opportunities for practical experience and professional development.

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THE LINK BETWEEN ORGANIZATIONAL STRUCTURE CHANGE AND STAFF JOB PERFORMANCE: EVIDENCE FROM ADDIS ABABA UNIVERSITY, ETHIOPIA

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ABSTRACT

Despite a few local studies on the higher education governance model, there has been scant research into the underlying link between organizational structure change and employee job performance in Ethiopian research universities. This study assessed the relationship between organizational structure change and staff job performance at Addis Ababa University (AAU). This study employed cross-sectional and quantitative survey approaches. The research used 242 randomly selected academic and non-academic staff to complete the questionnaire. The analysis employed descriptive statistics such as regression, correlation, and the independent t-test, as well as inferential statistics like exploratory factor analyses and structural equation modeling. The results show a significant positive correlation between staff job performance and dimensions of organizational structure like decision-making, job codification, and authority hierarchy. The findings also revealed that all organizational structural change factors influence the dimensions of staff job performance except the rule observance dimension. The university's organizational structure has a moderate change that improves workers' job performance. Therefore, the study suggests that management should enhance staff decision participation, autonomy, and rule flexibility while fostering a flatter organizational structure.

INTRODUCTION

Background of the Study

Organizational structural change is a vital factor that has been a solution for flexible staff job performance. However, environmental factors, globalization, climate change, and evolving consumer demands have forced public and private organizations to reevaluate how they continually carry out their operations (Wangui et al., 2021). This is why goal achievement becomes the fundamental purpose of any organizational structure change (ibid.). Thus, organizations—regardless of size—should follow a dynamic structure to function well; given the current environment, the previous structure might not guarantee the success of organizational objectives. This requires the creation of a working structure, developed and executed to promote efficiency and excellence. Scholars have examined organizational structure (OS) because they feel that it can be "managed" or changed more directly and because it impacts social interaction, which is more difficult to modify (Wossenu et al., 2019). Thus, the organizational structure of academic and non-academic organizations determines the division of power and how they collaborate.

A wide range of scholars have shown interest in the study of OS by offering interrelated definitions. However, the basics are summarized as follows: Funminiyi (2018) and John and Shafi (2020) observed OS as the structure that provides clear task allocations and promotes appropriate working relationships among staff members. It is also regarded as an organization's anatomy, providing a skeletal structure that specifies the duties and relationships among its members. Despite their complexity, most profitable organizations have demonstrated a carefully constructed OS that results in unbelievable success (Castillo et al., 2023).

Staff performance assessment in the public sector has become a hot topic for academic research that has gained attention in many different countries (LiMon & SezgiN-Nartgün, 2020). Since increased productivity is a major concern in today's businesses and public organizations, staff job performance (SJP) has been the subject of extensive research in the literature on organizational behavior and human resource development. Employee performance significantly impacts an organization's ability to meet goals and sustain operations. Thus, Çalişkan and Köroğlu (2022) define job performance as the extent to which an employee follows the institution's norms and demonstrates anticipated behaviors. According to education experts, "staff performance" refers to a person's accomplishments at work following the necessary effort on the job, an engaged profile, and supportive coworkers. Moreover, it reflects the efficacy, efficiency, and quality of the output produced by an organization (Pradhan & Jena, 2017).

In reality, organizational structure change has a considerable effect on how successfully employees perform. Organizations such as public universities have structures that can affect how staff members collaborate, how information moves throughout the industry, and how much autonomy they have in their jobs. OS also influences how motivated and fulfilled people are at their work by fostering mutual trust among management, staff, and the external environment. A hierarchical OS, for example, may result in a rigid workplace with little opportunity for creativity. In contrast, a flat OS may foster a more innovative and collaborative atmosphere. Therefore, OS has an effect on how workers perceive their roles, which may affect their commitment to the organization's objectives and level of engagement (Castillo et al., 2023).

Higher education growth in Ethiopia has been rapid since the introduction of the 1994 Education and Training Policy. The country currently owns approximately 50 public universities from the then-existing two (Bekele, 2022). This enormous expansion has created challenges and opportunities. Ethiopia's public higher education institutions (HEIs) have implemented several reform initiatives in response to internal and external pressures. These reforms include the BPR, BSC, the Kaizen concept, the recent deliverology unit, the philosophy of structural differentiation, and structural setup changes. However, the ministry (top-down) generates the majority of the demand for reform, not the institution. However, the improvements are sluggish and bureaucratic. For example, one of the primary goals of the BPR is to flatten the university's lofty organizational structure. However, properly analyzing the newly established organizational structure after following the BPR remains towering. This means there are several levels between top leaders and front-line personnel, such as teachers and administrative offices (Wossenu et al., 2019).

Despite the significant contribution of OS change, except a few local studies on higher education governance models (Befekadu & Bultossa, 2019; Mengistu, 2018; Rediet, 2015; Wossenu et al., 2019), scanty research and theory that explain the core issues related to the relationship between OS and SJP in Ethiopian research universities.

PROBLEM STATEMENT

The OS significantly influences SJP by defining the roles and interactions needed to achieve goals. It affects communication, information flow, and employee autonomy, which in turn impacts motivation and job performance (Castillo et al., 2023). Successful organizations often demonstrate the benefits of a well-organized structure that fosters trust among management, staff, and external stakeholders. Additionally, the structure shapes employees' perceptions of their responsibilities, influencing their engagement and alignment with organizational objectives (Abdulrahaman, 2019).

However, Ethiopian universities exhibit weak leadership and governance, with insufficient involvement from staff, students, and external actors in decision-making processes. There are also

unclear roles of officials at various levels (poor structural setup), leading to duplication of efforts and hindering employees' ability to perform effectively (Salmi et al., 2017; Wossenu et al., 2019). Thus, Ethiopia ranks low in the global innovation index, surpassing only Nigeria among comparable sub-Saharan African countries in terms of higher education performance (Salmi et al., 2017), which better explains people's performance. Nevertheless, a thorough examination significantly contributes to the literature, offering valuable insights for management personnel and strategies to enhance SJP in public higher education institutions. It also serves as a guiding framework for task completion and success (Abdulrahaman, 2019; Castillo et al., 2023). However, if not managed properly, a poor OS creates an environment that hinders performance improvement and effective service delivery. This issue is exacerbated by management's lack of commitment to strategic direction, insufficient staff competency to ensure compliance with processes and regulations, and reduced trust among staff, ultimately leading to low performance (Castillo et al., 2023; Wangui et al., 2021).

Despite a handful of local studies on higher education governance models (Befikadu & Bultossa, 2019; Mengistu, 2018; Rediet, 2015; Wossenu et al., 2019), there has been no research addressing the fundamental issues related to the relationship between OS and SJP in Ethiopian research universities considering the structural difference from one university to another (Kováts, 2018). Similarly, local empirical research has focused either on OS or the unidimensional form of SJP, failing to predict the causal effect direction and intensity of the correlations between OS and SJP. Indeed, there is scanty agreement among studies in the area. For instance, some scholars come with a positive relationship between OS and SJP (Abdulrahaman, 2019; Funminiyi, 2018; George et al., 2019) while others oppose the trends (Alipoor et al., 2017; Salmi et al., 2017). In light of this, the current study's purpose was to examine key university stakeholders' perspectives regarding disparities in the relationships between OS and the two-dimensional nature of SJP at AAU.

RESEARCH QUESTIONS AND HYPOTHESIS

1. What is the nature of the relationships (strength and direction) among changes in OS dimensions and SJP?
   H0: The change in four OS dimensions (decision-making, hierarchy, codification, and rule observation) is not positively related to the SJP.
2. To what extent do changes in the dimensions of OS contribute to the SJP separately and jointly?
   H0: The contributions of change in OS dimensions to the SJP do not surpass their independent contributions.
3. Is there a statistically significant variation in the mean score of OS and SJP dimensions regarding staff category (academic and non-academic)?
   H0: Academic and non-academic staff do not differ in their response rating regarding the practices of OS and SJP.

LITERATURE REVIEW

Concept of Organizational Structure

Organizational structure is the formal structure of authority relationships and duties that govern and coordinate employee activities and behavior to achieve organizational goals (John & Shafi, 2020). It defines the formal ordering of positions and responsibilities in organizations (Castillo et al., 2023), the allocation of authority and duty, and how management enforces rules and regulations. Organizational structure refers to relatively stable parts of the organizational

environment with two characteristics: centralization and formalization (Jimenez, 2017).

Centralization pertains to the power distribution inside the organization, and it includes two subfactors: participation in decision-making (DM) and the hierarchy of authority (HA) (Johari & Yahya, 2019). DM is centralized when "the ability to make decisions is operated at the uppermost of the operating system." While the hierarchy of authority refers to the level of independence that employees are allowed to have within their roles, this style of decision-making reflects the extent to which workers can impact the decision-making process (Hage & Aiken, 1967). This variable is measured via the hierarchy of responsibility and centralization of decision-making. According to Hage and Aiken (ibid.), the former investigates the degree to which followers rely on their supervisors in decision-making, whereas the latter determines the degree of centralization of resource allocation and policy creation.

Formalization signifies the extent to which rules and procedures are officially documented and communicated among employees of the organization, which comprises two sub-constructs: job codification (JC) and rule observations (RO) (Johari & Yahya, 2019; Kelly, 2017). John and Shafi (2020) define formalization as the level to which procedures and rules influence employees' work. Job codification, as described by the formalization construct, is the level at which an organization accurately sets down rules and processes related to occupations to accomplish obedience to laws and regulations. RO also refers to an organization's strict adherence to its rules and procedures (John & Shafi, 2020). The degree to which an organization is formalized varies depending on its size. Some organizations become more formalized, whereas others become less formalized out of concern that formalization provides rules and procedures that not only impede innovation, independent work, and learning activities but also discourage workers (Shabbir, 2017). Employees have minimal flexibility in their job functions under high formalization, whereas low formalization provides employees with flexibility (Jimenez, 2017).

Organizational Structure Change

Changes to organizational structure refer to alterations in an organization's framework, which arise from internal or external factors (Rodrik, 2013). Structural change includes changes in the chain of command, the organization's hierarchy, management systems, and administrative procedures. It describes the distribution of authority and responsibilities within organizations, how positions are ordered, and how management enforces policies and procedures (Castillo et al., 2023). Mergers and acquisitions, market shifts, job duplication, and legislative changes are examples of situations that need structural change. Several people have looked at the forms of organizational change from different perspectives. For example, Ackerman (1997), as cited by Karaxha et al. (2018) and *Nadler and Tushman (1989)*, stated that structural changes might be developmental (incremental), transitional, or transformational.

Transitional change is more difficult and necessitates changes in roles and responsibilities, power structures, and systems. These organizational changes can be episodic, deliberate, or the second or most drastic type of organizational change. Several studies on organizational change have demonstrated the transitional change paradigm (Karaxha et al., 2018; *Nadler & Tushman, 1989*). Kotter (1996) also distinguished three types of change: incremental change, technological change, and business process reengineering (BPR). BPR is a category of management tool that focuses on the design and analysis of processes and procedures within an organization, whereby outdated methods are entirely abandoned in favor of successful change implementation (Elapatha & Jehan, 2020). Transitional changes are implemented to replace old procedures with new ones.

Developmental change happens incrementally, focusing on improving skills or procedures within an organization (Karaxha et al., 2018). Karaxha et al. further illustrated developmental change as "changes that enhance or correct the existing aspects of an organization, often focusing on improving skills or processes" (p. 31). In contrast to business process reengineering, incremental change makes tiny modifications (Kotter, 1996).

Transformational change involves fundamentally redesigning an organization's strategy and operations in response to environmental changes, resulting in significant shifts in its structure, culture, and operations. Organizations that continuously learn and adapt focus on improving overall effectiveness. Transformational changes fundamentally alter the business approach of an organization and its operations, usually resulting in a transformation in its workplace culture (Karaxha et al., 2018).

Staff Job Performance

A growing number of organizations are starting to view their workforce as their most important asset. According to Altındağ and Kösedağı (2015), performance is a notion that describes how an individual uses his or her potential or actual knowledge, skills, and talents to be able to meet his or her own or the organization's expectations and objectives. Therefore, the process by which employees carry out their organizational responsibilities, display their behavior, and finish their work is called SJP (Pradhan & Jena, 2017). The followers' behavior at work and how successfully they carry out assigned tasks is also called SJP.

The main types of SJP—task performance and contextual performance—were considered in this study as exactly what earlier academics did for organizational efficiency (Borman & Motowidlo, 1997a, 1997b). Several scholars view task performance as explicitly defined job activities, such as basic job duties that are provided as part of a job description (Pradhan & Jena, 2017; Yousaf et al., 2015). According to Maxham et al. (2008), it is equivalent to "job-specific task proficiency," "in-role performance," and "technical proficiency," such as work quality and quantity. Contextual performance has become increasingly important as a critical component of job success. The terms prosocial and organizational extra-role behaviors refer to this type of behavior, according to Borman and Motowidlo (1997a). It has also been referred to as "citizenship behavior" or "extra-role behavior," which describes voluntary personal conduct not directly acknowledged by the official job description and reward system (Díaz-Vilela et al., 2015). It includes supporting colleagues, abiding by organizational policies, standing by them, and exerting extra effort to finish tasks effectively (Jiang, et al., 2022).

Interplay between Organizational Structure Change and Staff Job Performance

A corporate structure is an arrangement that outlines specific actions that must be taken to accomplish the organization’s goals. According to Castillo et al. (2023), there is a significant relationship between the periodic attainment of goals and organizational structure. Numerous academics have identified the type of link that exists between SJP and OSC (Castillo et al., 2023; Johari & Yahya, 2019; Murphy & Kroeker, 1989). Others have also established the existence of an impact of OSC on SJP. Accordingly, Johari and Yahya (2019), as well as Murphy and Kroeker (1989), noted that when tasks are divided more smoothly and if there is a clear structure, productivity increases and people perform better. Similarly, Murphy and Kroeker's (ibid.) definition of the components of SJP may be used to further explore this link between the three elements of organizational structure. Finally, SJP influences the decision-making hierarchy and vice versa.

RESEARCH METHODOLOGY

Research Design

The current study employed a quantitative research approach with a cross-sectional research design based on a survey method. According to prominent research experts (Bell, 2014; Creswell, 2013; Creswell & Creswell, 2018), this technique is most suited for analyzing a study's research hypothesis.

Population, Sample and Sampling Techniques

AAU is among Ethiopia's top public establishments and was recently designated as a "center of excellence for research" by the Ministry of Science and Higher Education (Woldegiyorgis, 2018). The university owns 10 colleges and two institutes. The study was conducted at four of the university's colleges and one institute: The College of Business and Economics, the College of Social Science, the College of Humanities, the College of Natural and Computational Science, and the Institute of Technology. Within these academic units, a total of 25 departments, five schools, and five centers were sampled through simple random sampling.

These university entities were selected for two reasons, despite the generally uniform academic setting. First, the variety of colleges and units makes data collection smoother to interact with well-versed staff in the Ethiopian higher education system. Second, these colleges have a substantial number of academic and support staff to gather the essential data to understand the phenomenon (Creswell, 2013). The study's target population was the academic and non-academic staff at Addis Ababa University (from four campuses) because they were the only people who understood the phenomenon.

Accordingly, there were 715 active academic personnel and 595 support staff in the studied departments, schools, and centers, excluding those on study leave and with temporary employment. According to Kline (2018), 200 is the smallest sample size typically used in meaningful SEM (structural equation modeling) research. She opined that the sample size rule is the ratio of respondents (N) to all parameters to be calculated (q) (N:q; 100:1). The optimal sample-to-parameter ratio is 20:1. For example, if it is necessary to estimate the total number of q = 10 parameters, then the minimum sample size is 20q, or N = 200. When the N:q ratio is less than 10:1 (for example, N = 50 for q = 10, assuming a 5:1 ratio), this also affects the reliability of the results. The current study used a value larger than q = 10 in the hope that the ratio would produce enough sample size to produce accurate results.

Data Collection Tools

The instruments used to gather data have been validated in several industries, professions, and work settings. The questionnaire has three sections: Section One constitutes respondents' demographics; Section Two contains the OS construct; and Section Three contains perceptions concerning SJP. The instrument developed by Hage and Aiken (1967) was adapted to assess the OS variable with four dimensions: DM, HA, JC, and RO. A total of 16 questions were utilized to measure the OS construct, as recently employed by Johari and Yahya (2019). The items were distributed via a 5-point Likert scale (not at all = 1, to a very great extent = 5).

The third portion of the survey measures SJP, in which researchers adapted the questionnaire first developed and validated by Koopmans et al. (2014) and later utilized by Çalişkan and Köroğlu (2022). The questionnaire contains 20 items and has two main dimensions: staff task performance (STP) and staff contextual performance (SCP). For each item, a five-point Likert scale ranging from “strongly disagree” to “strongly agree” was used.

Methods of Data Analysis

Descriptive and inferential statistics, which include correlational and regression studies, exploratory factor analysis, and structural equation modeling (SEM), were conducted to analyze the data. First-order regression, exploratory factor analyses, independent t-tests, and correlational studies were conducted using the SPSS program. Confirmatory and path analyses were conducted using the integrated SPSS and Amos version 23 program. In the first-order regression and path analysis computation, OSC was designated as the independent variable and SJP as the dependent variable.

RESULTS

The sample consists of 69.4% males and 30.6% females. The majority of respondents (79%) were over 35 years of age, whereas 21% were under 35. Similarly, 22.3% of the respondents had worked in the organization for less than 10 years, whereas the majority (77.7%) had worked for more than 10 years. While 66.1% have a master's or above, the remaining hold a bachelor's degree. Finally, the most responses (56.6%) were from support staff, with only 43.4% being academic staff. Therefore, one can conclude that participants can provide the necessary data for the study.

Descriptive Statistics and Instrument Reliability Analysis

Table 1 shows the results of some descriptive statistics such as the mean, standard deviation, and instrument reliability analyses. It also presents the respondents' perceptions concerning OSC and SJP, along with Cronbach's alpha of the items. Among the OS dimensions, DM received the highest score (M = 3.62, SD = .811), followed by HA (M = 3.43, SD = .802), JC (M = 3.32, SD = .751), and RO (M = 2.80, SD = .669), respectively.

Table 1. Descriptive statistics and instrument reliability

Organization Structure Dimensions	Subscale	K*	Mean	SD	Reliability of the Scale **(α)**
	Decision-Making	3	3.62	.811	.898
	Hierarchy of Authority	3	3.43	.802	.901
	Job-codifications	4	3.32	.751	.872
	Rule Observation	3	2.80	.669	.858
Staff Performance	Staff Task Performance	5	3.93	.537	.825
Dimensions	Contextual Performance	6	3.85	.605	.860

Source. Researchers Survey (2024) **K*** = Number of Items; SD = Standard Deviation

Thus, the organization's HA and staff involvement in decision-making is moderate, surpassing other metrics. However, the staff's impressions of their work performance were in the range of a "great extent" (M = 3.85, SD = 605) for SCP and (M = 3.93, SD = 537) for STP. Similarly, Cronbach's alpha values for the factors vary from 0.825 to 0.901. According to Hair et al. (2006), who limit the reliability lower bound from 0.60 to 0.70, variables show a high item reliability level.

Measurement Models

Organizational structure construct

Organizational structure was the exogenous variable in the current study. Four distinct characteristics of the OS—DM, HA, JC, and RO—were investigated to measure how they relate to and predict SJP. These findings indicate that items had factor loadings greater than the minimal threshold of 0.50, and the average variance extracted (AVE) values exceeded 0.60. These findings support the existence of convergent reliability and composite validity. Furthermore, the correlation coefficients across variables are lower than the square root of the AVE. The squared values of the concept associations are much lower than their respective AVE values. This finding supports the construct's discriminant validity, proving its appropriateness. These facts were discovered via confirmatory factor analysis (CFA), which is a powerful tool for verifying reliability and validity.

Exploratory factor analysis (EFA) concerning the variable of organizational structure was conducted. As a result, the KMO value was 802, and Bartlett's test was significant at p = .000, indicating that the correlation matrix includes some latent components. The EFA identified four components that accounted for 72.5% of the variation. Three items were removed for loading below 0.50, which could negatively affect the model's fitness. The revised model has four components, all of which are dimensions of OS: factor 1: DM, factor 2: HA, factor 3: JC, and factor 4: RO (see Figure 1).

Confirmatory Factor Analysis (CFA) for the Organizational Structure Construct

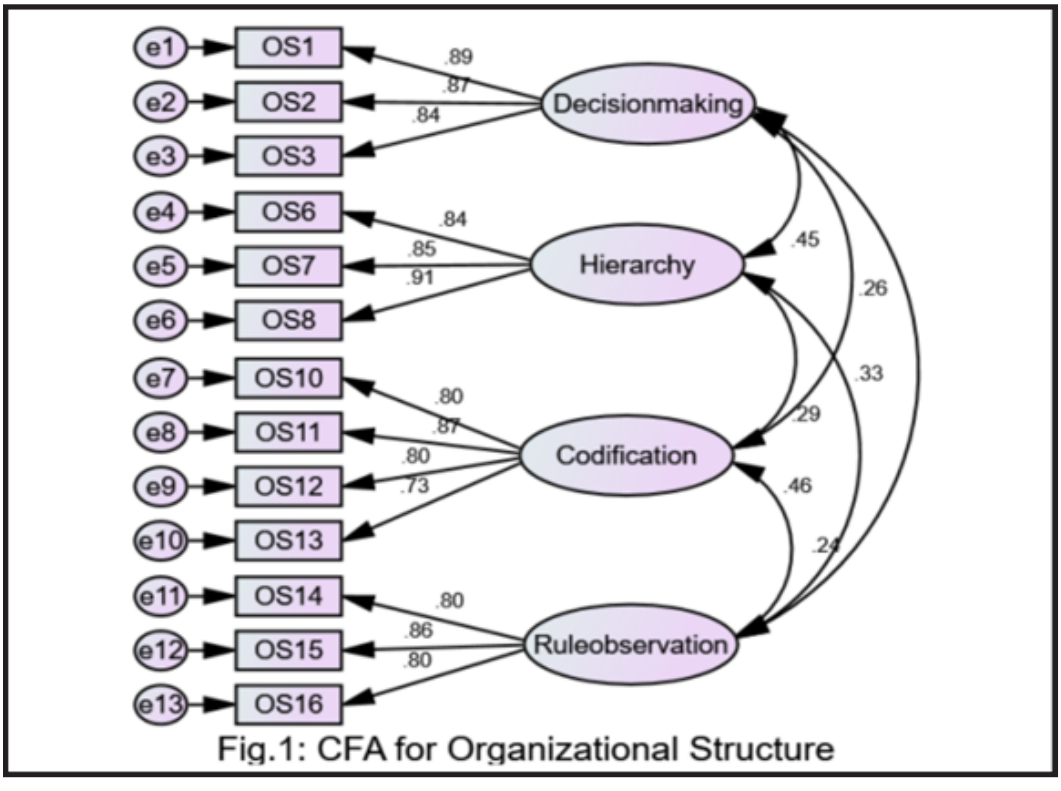

Fig.1: CFA for Organizational Structure

The test summary in Table 2 provides a thorough look at the measuring features of the organizational structure variable in Figure 1. The results were obtained through CFA, a robust method for analyzing data reliability and validity. It also displays the model's goodness-of-fit for OS factors.

Table 2. Test outcomes of the goodness-of-fit model CFA for organizational structure (OS)

Chi-Square	CMIN/DF	CFI	TLI	SRMS	RMSEA	Model Fitness
148.160	2.511	.964	.953	.048	.076	Fit

Assessments of the model fitness of OS indicate that the RMSEA measurement for the CFA model is 0.076, which is within the close fit range of < 0.08 determined by Cudeck et al. (1993). The OS of the four-factor CFA model fit the data well [χ^2 (59) = 1351.646, p < 0.001; PCLOSE = .005]. The structural model consisted of a combination of 13 quite high-quality items that remained in the model. The standardized mean square residual (SRMR) for the model is 0.048, which is below the minimum cutoff point established by Cudeck et al. (1993). Indeed, the model comparative fit index (CFI) is 0.964, and the Tucker-Lisks index (TLI) is 0.953. Thus, the absolute and comparative fit indices indicate the model has a strong fit.

Staff job performance construct

Items used to evaluate the constructs are appropriate, according to the study's findings on construct reliability and validity. Cronbach's alpha values for the items exceeded 0.825, indicating a high level of internal consistency. Furthermore, the factor loadings of the items are greater than or equal to the minimum needed level, with the median variance extracted values exceeding 0.50. These data support the existence of convergent validity and composite reliability. Furthermore, the correlation coefficients for each variable are considerably smaller than the square root of each construct's AVE. Similarly, the squared correlation values between the constructs are significantly lower than their respective AVE values. Therefore, we infer that the variable has discriminant validity.

Evaluation of Model Accuracy for the Staff Job Performance Construct

For the EFA, the dimension of the second tool for measuring SJP, KMO, was 0.865, and Bartlett's test was significant (p =.000), indicating that several latent factors underlie the correlation matrix. EFA produced two factors that explained a total variance of 60.168%. Staff task performance (STP) was the first factor, and staff contextual performance (SCP) was the second. Nine observable variables that affected the model's fitness of the data were eliminated, and the two factors in the CFA model (see Figure 2) fit the data well at [χ2 (55) = 1125.858, p <0.001].

Confirmatory Factor Analysis (CFA) for Staff Job Performance Construct

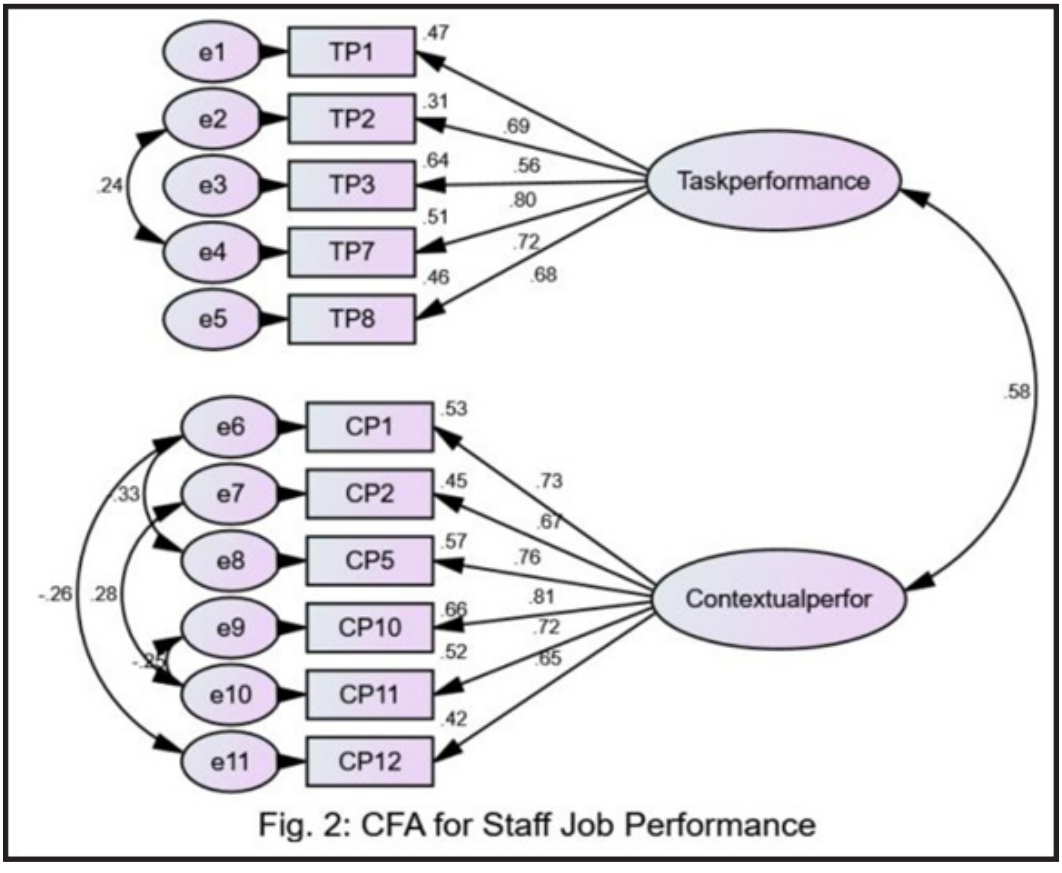

Fig. 2: CFA for Staff Job Performance

The test summary, in Table 3, provides a thorough look at the measuring features of the SJP variable in Figure 2. After the CFA evaluation, descriptive fit indices that matched the sample covariance matrix of the anticipated covariance matrix were used to evaluate the model's fitness. The RMSEA value for the model in question is 0.054, which falls within the appropriate range of < 0.08, indicating the best fit. Cudeck et al. (1993) offer a cutoff threshold of < 0.08, which makes this model acceptable.

Table 3. Test outcomes of the goodness-of-fit model CFA for staff job performance (SJP)

Chi-Square	CMIN/DF	CFI	TLI	SRMS	RMSEA	Model Fitness
65.112	1.719	0.975	0.964	0.0499	0.054	Fit

Source. Researcher's survey, 2024

Furthermore, the comparative fit indices, CFI = 0.975 and TLI = 0.964 indicate a good fit to the model, with a PCLOSE = 0.257. The path model's two dimensions were represented by a composite of the 11 reasonably high-quality items that remained in the model.

Structural Model and Hypothesis Testing

The nature of the relationships between organizational structure dimensions and staff job performance

The first basic research question is to assess the links between OS aspects and the SJP. As a result, Table 4 illustrates the correlation coefficients across these variables' dimensions.

Table 4. Relations between organizational structure and staff job performance (n=242)

Dimensions of Organizational Structure	Staff Job Performance	**Sig.**
Decision-making	.197**	.002
Hierarchical authority	.178**	.006
Job codifications	.232***	.000
Rule observation	-.036	.578

***p < 0.001; **p < 0.01

Table 4 demonstrates that the alpha value (p < .001, p < 0.01) was used to assess all of the relationships between the four dimensions of OS dimensions: DM, JC, and HA, which showed a statistically significant but weak correlation with SJP, except for the RO dimension. For example, correlation between DM and SJP (r = .197**, p < 0.01); HA and SJP (r = .178**, p < 0.01); JC (r = .232***, p < 0.001); RO and STP (r = -.036, p < 0.05). Except for RO, all three OS dimensions have positive correlations with SJP. Conversely, except for the RO dimension, HA, JC, and DM have a positive and significant relationship with SJP.

Contributions of Organizational Structure Dimensions to variables of Staff Job Performance

The second research question inquired about the proportion of the variance explained in the SJP by dimensions of OS. As a result, Table 5 shows how OS dimensions contribute to SJP. Thus, the JC contributes more to the SJP (R^2 = 5.4%), followed by DM (R^2 = 3.9%), HA to STP (R^2 = 3.2%), and RO to STP (R^2 = .13%), respectively. In conclusion, every aspect of OS—aside from RO in the study area—significantly contributes to SJP.

Table 5. Contributions of organizational structure dimensions to dimensions of Staff Job performance (n=242)

Dimensions of Organizational Structure	Regression Coefficient (β)	Squared Multiple Correlations (R^2)
Decision-making	.197**	.039
Hierarchy of authority	.178**	.032
Job codifications	.232***	.054
Rule observation	-.036	.0013

SJP* = Staff Job Performance

Path Analysis and Hypothesis Testing

In path analysis, the cumulative influence of the exogenous factors (dimensions of OS) on the dimensions of the endogenous factor (SJP), which is also known as R2, is used to determine how well the model matches the theoretical model. In the model, the R2 number represents the coefficient of determination, sometimes called the association index. This value functions as a scale for determining the degree of the combined influence of all the exogenous factors on the endogenous variables simultaneously. Figure 3 shows the causal link between the explanatory factors and the predictive variable.

Using a 2000-resample bootstrap at 95% confidence intervals, path analysis in Amos version 23 has been used to test the suggested hypothesis. According to these data, the combined dimensions of the exogenous variable—DM, HA, JC, and RO—seem to have a substantial effect on the endogenous variable—SJP. Except for RO, the other factors of OS employed to quantify SJP contribute considerably to the variability in the study's dependent variable. The model fits the data well, with a 21% coefficient indicating the degree to which the OS dimensions jointly influence the SJP variable. Thus, changes in OS dimensions can explain a significant portion of the variance in SJP according to the model's coefficient of determination (R2). According to the association index, factors outside the model account for 79% of the variability in SJP.

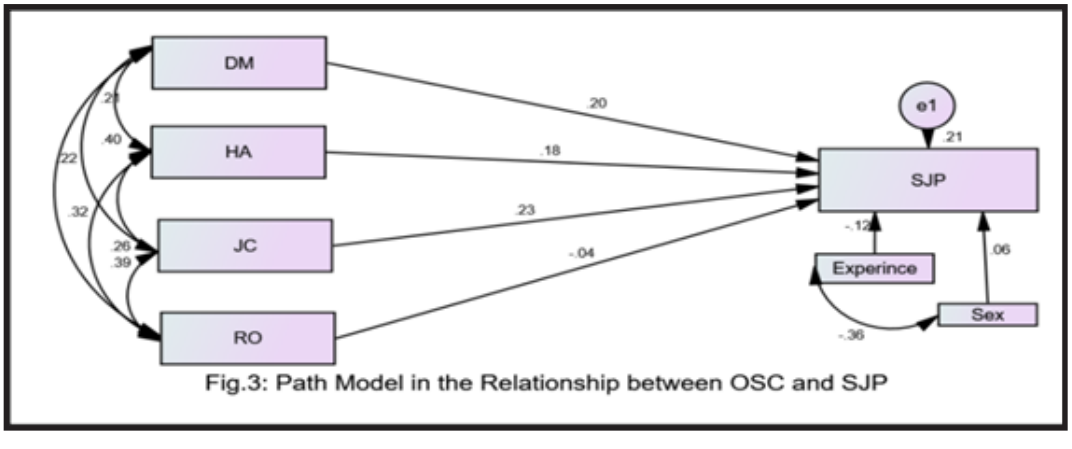

Fig.3: Path Model in the Relationship between OSC and SJP

As a result, the investigation revealed an excellent path model fit, as shown in Table 6.

Table 6. Outcomes of the Goodness-of-fit test for Path Model

Chi-Square	CMIN/DF	CFI	TLI	SRMS	RMSEA	PCLOSE	Model Fitness
11.662	1.458	0.982	0.952	0.0496	0.044	0.521	Fit

Source. Researcher's survey, 2024

Following path model evaluation, various descriptive fit indices assessed the model's fitness. This model is deemed acceptable because its RMSEA value of 0.044 is within the permissible range of Cudeck et al.'s (1993) recommendations for a cutoff threshold of < 0.08 for RMSEA. Furthermore, the comparative fit indices, including CFI at 0.964 and TLI at 0.949, also indicate a good fit for the model. Additionally, the PCLOSE value was 0.521, which means an excellent model's goodness of fit.

Is there a statistically significant difference between OSC and SJP based on staff category?

The third research question looked at how OS and SJP dimensions are different depending on the staff category (administrative versus academic). Table 7 illustrates the result.

Table 7: Mean comparison of organizational structure and SJP dimensions by staff category

Variables	Dimensions	Staff category	Mean	SD	T	ES
Organizational	Decision-making	Academic	3.37	.922	-3.97	0.52244
Structure		Admin.	3.81	.754		
	Hierarchy of authority	Academic	3.33	.708	-1.58	0.225989
		Admin.	3.49	.864		
	Job codifications	Academic	3.27	.693	-.727	0.10101
		Admin.	3.34	.761		
	Rule observation	Academic	2.52	.623	-5.17	0.78652
		Admin.	3.01	.871		
Organizational Structure		Academic	3.13	.506	-3.97	0.55336
		Admin.	3.41	.549		
Staff Job Performance		Academic	3.77	.519	-3.05	0.385356
		Admin.	3.97	.458		

Source. Researcher's survey, 2024; **SD** = Standard Deviation; **T** = T-test; **ES** = Effect Size

Table 7 indicates statistically significant differences between the academic and administration staff across all categories but with minor effect sizes. Administrative personnel reported considerably higher scores than academic staff in all of the OSC features, including RO ($t = -5.173$, $p < .001$), JC ($t = -.727$, $p < .001$), HA ($t = -1.587$, $p < .01$), and DM ($t = -3.972$, $p < .01$). In a similar vein, administrative employees reported considerably higher work performance scores than academic employees ($t = -.059$, $p < .001$). As to the research participants' perceptions, structure change at AAU is more appropriate for administrative staff than the academics.

DISCUSSION

This study explores how AAU encourages flexible and dynamic environments promoting various leadership styles. The purpose of this research is to investigate the relationship between OS and SJP. The first research question assessed the intensity and direction of relationships between the variables. Accordingly, the link is weak between all dimensions of OS and SJP. The OS dimensions have a positive relation, which indicates improvements in the OS dimensions led to enhancements in SJP, except for the RO factor at AAU. These findings align with research by George et al. (2019) on OS and employee performance in Kakamega County, Kenya, and Mensah's (2023) study at Ghana Broadcasting Corporation. However, this finding contrasts with Alipoor et al. (2017), who studied the link between OS and SJP at private healthcare facilities in Ahvaz, Iran. They found that structural characteristics negatively affected SJP in these hospitals. This divergence and convergence of studies emanated from various factors. If structural change and improvement are aligned with all units and entities of the organization, the relation with staff performance is positive. Second, where there is staff understanding of change, it reduces the negative relation with performance. Thus, structural change reduces a negative link with performance diminishes over time (Funminiyi, 2018; Mensah, 2023). Generally, the basic question indicates a positive and significant link between changes in the OS dimensions and SJP at AAU. Thus, the directional null hypothesis was rejected, and the researchers' alternative hypothesis was replaced.

The second research question examines how OS dimensions—DM, HA, JC, and ROs—affect SJP. The findings indicate decentralizing decision-making positively influences SJP. This aligns with Funminiyi (2018), who found decision decentralization positively impacts employee productivity. In contrast, Johari and Yahya (2019) reported it did not significantly enhance employee productivity. However, the current study indicates that decentralization enhances SJP. The discrepancies in spans of control can result in different outcomes for an organization depending on its objectives (Meier & Bohte, 2000). The data also indicates AH at AAU positively impacts employee performance. This aligns with Abdulrahman (2019) and Shabbir (2017), who found that a high structure significantly affects employee performance. However, this study contrasts with Alipoor et al. (2017), who found a higher structure limits staff flexibility. Research by Funminiyi (2018) suggests that better employee performance results from a flatter organizational hierarchy. Previous research on non-educational institutions did not favor a hierarchical structure, but at universities, hierarchy, and seniority are vital for administration, which may explain the difference. The data also indicate that JC at the university has a positive and significant while the changes made by AAU to RO reduce staff performance. A possible explanation suggests that higher rule compliance reduces the university's SJP, with other factors remaining constant. The findings align with Abdulrahman (2019), Johari and Yahya (2019), and support the hypothesis that a slight increase in the span of control may reduce performance (Meier & Bohte, 2000). Overall, improved organizational structure enhances SJP at AAU. The study rejected the null hypothesis, leading to acceptance of the alternative hypothesis.

The findings of research question three and its hypotheses highlight the disparities in the

dimensions of OS and SJP among different staff categories. Consequently, the investigation revealed significant variations in each component of OS, including DM, HA, RO, and JC, as well as in SJP. This could indicate the structure change at AAU is more appropriate for administrative staff than the academics (Mensah, 2023).

CONCLUSION, IMPLICATIONS, AND LIMITATIONS

The study concluded that OS was positively associated with SJP at AAU. The SJP's strengths increased dramatically as the OS dimensions improved, except for the RO dimension. The study also reveals that except for the rule observation factor, all dimensions of OS favorably contribute to AAU staff performance. The study indicated that while the HA contributed most to the SJP, the RO dimension contributed the least to the STP. Likewise, the combination of the four OS dimensions explained a 21% variance in the SJP. Lastly, concerning the difference in perception, AAU's administrative staff reported the greatest structural change compared to its academic staff counterpart.

The study's findings have implications for educational leaders and policymakers. It provides insights for improving staff performance in public HEIs. It offers valuable insights for managers at Ethiopian public universities and emphasizes the importance of an effective OS in enhancing SJP. Furthermore, it adds to the body of literature by focusing on the unique dynamics and challenges faced by research universities in Ethiopia. Likewise, it provides a foundation for future research and valuable insights for policymakers, practitioners, and leaders looking to improve SJP through OS modifications.

Limitations of the study must be considered when interpreting and applying the results. It employs a cross-sectional research design that limits the ability to establish a causal relationship between OS and SJP. Future research should utilize longitudinal study designs to gain a more comprehensive understanding. Furthermore, the sample of 242 personnel from four campuses may not represent the entire population of AAU. Similarly, there is an imbalance between academic and administrative staff. This may affect slightly the generalizability of the result. Even with strong rapport and adapted data collection tools, responses are still influenced by social desirability bias, causing participants to respond based on perceived social acceptance rather than their actual opinions.

RECOMMENDATIONS

Several recommendations were made based on the findings and discussions. Work units, including departments and colleges, should involve employees in decision-making by soliciting their feedback on job objectives. Second, leaders should foster colleague relationships, as a harmonious work environment motivates employees to increase performance. Third, the study suggests reducing formalization to promote staff autonomy in Ethiopian public universities. Fourth, policymakers should understand the role of organizational structure in future policy formulation. Finally, managers and leaders of public universities should encourage employees to partake in organizational affairs and decision-making.

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APPENDIX-A

Part I: Please use the scales 1–5 below to indicate the extent to which organizational change led to changes in the aspects of organizational structure for the last five years.

Not at all	To little extent	Moderate extent	Great extent	Very great extent
1	**2**	**3**	**4**	**5**

No.	Change at this university has led the current organizational structure to:	Options				
		1	**2**	**3**	**4**	**5**
1	Increase my participation in job-related affairs.	1	2	3	4	5
2	Improved my participation in the adoption of new initiatives.	1	2	3	4	5
3	Develop my participation in decisions for the adoption of new policies.	1	2	3	4	5
4	Enhance my participation in departmental planning.	1	2	3	4	5
5	Where I ask my leader before I do almost anything.	1	2	3	4	5
6	Where a person who makes his own decision is encouraged	1	2	3	4	5
7	Where issues sent to the immediate leader for approval were reduced.	1	2	3	4	5
8	Reduced actions that were taken here for the leader's approval.	1	2	3	4	5
9	Any decisions I make should be approved by leaders.	1	2	3	4	5
10	Where I feel that I am in charge of most matters.	1	2	3	4	5
11	A person can decide without checking with their leaders.	1	2	3	4	5
12	A place where how the work is done is left up to the individual worker.	1	2	3	4	5
13	I perform my work without considerable interference.	1	2	3	4	5
14	The rule prohibits me from creating my work procedures.	1	2	3	4	5
15	I was continuously monitored to ensure that I obeyed the rules.	1	2	3	4	5
16	I feel as if they are continuously being checked for my rule violations.	1	2	3	4	5

Part II: Please use the rating scales below and kindly rate the following twenty (20) descriptive statements which are all related to your job performance.

Strongly Disagree (SD)	Disagree (D)	Undecided (UD)	Agree (A)	Strongly Agree (SA)
1	**2**	**3**	**4**	**5**

No.	Staff Job Performance	Options				
1	I maintain a high standard of work.	**1**	**2**	**3**	**4**	**5**
2	I am capable of handling my assignments without much supervision	1	2	3	4	5
3	I am very passionate about my work.	1	2	3	4	5
4	I know I can handle multiple assignments.	1	2	3	4	5
5	I complete my assignments on time.	1	2	3	4	5
6	My colleagues believe I am a high performer.	1	2	3	4	5
7	I can separate main issues from side issues at work.	1	2	3	4	5
8	I work in a planned manner to complete my tasks on time	1	2	3	4	5
9	I extend help to my co-workers when asked or needed.	1	2	3	4	5
10	I love to handle extra responsibilities.	1	2	3	4	5
11	I extend my sympathy to my co-workers when they are in need.	1	2	3	4	5
12	I actively participate in group discussions and work Meetings.	1	2	3	4	5
13	I praise my co-workers for their good work.	1	2	3	4	5
14	I derive a lot of satisfaction from developing others in the organization.	1	2	3	4	5
15	I share work knowledge and ideas with my team.	1	2	3	4	5
16	I maintain good coordination among fellow workers.	1	2	3	4	5
17	I guide new colleagues beyond my job description.	1	2	3	4	5
18	I communicate with my colleagues about organizational problems.	1	2	3	4	5
19	I came up with creative solutions to new problems.	1	2	3	4	5
20	I kept looking for new challenges in my job.	1	2	3	4	5

HOW ONE UNIVERSITY IN CHINA PROMOTES ITS POSITIVE IMAGES*

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ABSTRACT

The purpose of this study is to explore the strategies used by universities to promote their positive images. A university in China known for its success in promoting its image is cited as a typical example of the strategies it employs. The researchers were given permission to review related files of the university offices and relevant university websites. The data collected through this review process were verified by a university administrator to be valid. The findings of the study identified not only the unique strategies employed by the university to promote its image, but also the aggressive legal actions taken by the university to sue the infringers of the university image and trademarks.

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INTRODUCTION

The university image is a representation of a composition of all the elements that contribute to the university reputation. As expressed by Gutiérrez-Villar, Alcaide-Pulido and Carbonero-Ruz (2022), institutional reputation is a determinant factor in measuring image of an institution in higher education. The image of a university as perceived by Hernes (1993) is a powerful center of knowledge in which the university plays in thinking and research, personal growth, and social change. In their research on institutional images, Alcaide-Pulido, Alves and Gutiérrez-Villar (2017) conceptualized institutional images to be formed of four constructs: external communication and values, national and international recognition, economic value, and facilities.

A higher education institution (HEI) assumes great social responsibilities. Not only does it need to offer high quality services to the public, but it also has to create and promote an attractively positive image to distinguish itself among all other global institutions. narrated by Alcaide-Pulido, Alves and Gutiérrez-Villar (2017), "It is crucial that HEIs develop diverse marketing and management strategies, above all image management, since this will make them competitive in the market and provide their managers with decision-making capacity." (p. 164) Munjin (2022) also added that it was crucial for educational institutions to build the brand image to survive within the competitive struggle in higher education. Therefore, it is important for universities to adopt strategies that create competitive advantages for themselves. Creating a positive image of the university is one such strategy (Panda, Pandey, Bennett & Tian, 2019).

Since the promotion of university images is of prime significance to a university, it is the purpose of this study to examine how top research universities in China plan to establish and promote their images to distinguish themselves from other competing universities in the world. This article starts with a review of current literature that relates to the development of institutional images in higher education. Then, data were collected from the file documents of a selected research university in China to see how it plans to promote its university image. A critical review of the strategies the university uses to promote their images is made with reference to the literature reviewed. Recommendations are made by the authors to the university strategic planners to enhance

their effort in promoting the image of their university. What this top Chinese research university has experienced in promoting the university image offers valuable lessons for other universities to learn.

REVIEW OF LITERATURE

Preferences to Higher Education Institutions

High school students and their parents work hard to look for universities that suit their particular needs. Images of universities as they have heard and observed play a significant role in their university preferences and their final decision for application and admission.

Parents make their decisions to send their children to institutions of higher education. Their decisions are often made through reviewing the information they receive about the images of higher education institutions. Landrum, Turrisi and Harless (1999) studied the images of a regional university and found that the significant components of university image could influence parents' decision to send their children to that university. In response to that, Chen also explained that brand image is considered as a myth of the school by some parents (Chen, 2016).

Students also make preferences to the universities of their choices based on the general images they perceive. In the study by Emanuel, Baker and Challons-Lipton (2016), high school students chose the universities they wanted to attend by identifying the general images of the universities followed by personalities, events and landmarks, and art and social movements of the universities. According to an Australian study by Stanley and Reynolds (1994), high school seniors' preferences to universities are linked to their own perceived level of academic achievement and overall images of the universities.

Factors Contributing to University Images

The image of a university is created through the observation of the public by examining the overall performance of the university in cumulative years. Many university-related factors contribute to the image of the university. University reputation is certainly the most determinant factor among all in building the university image (Gutiérrez-Villar, Alcaide-Pulido & Carbonero-Ruz, 2022).

Plungpongpan, Tiangsoongnern and Speece (2016) investigated the effects of university social responsibility (USR) on the image of private universities in Thailand. University image in Thailand is important for prospective high school students to consider and evaluate options for university study. Results of their study indicated that the university USR activities can contribute to their positive image and help move the university into the brand consideration set.

Aghaz, Hashemi and Atashgah (2015) examined the factors that relate to the university image in Iran. The post-graduate students were surveyed to solicit their perceptions of the university image. The findings of their study showed that the factors contributing to university image range from internal and international reputation, university members, and academic planning, to university environment.

A similar study was conducted in the Czech Republic to seek the opinions of the university students to understand how they considered as the crucial components in building the university image (Chládková, Skýpalová & Blašková, 2021). The results of the study indicated that the image of a university was closely related to quality teachers, innovative teaching methods and modern environments of the university.

University Culture and Images

Simplicio (2012) explored how a university's history, values and vision form its culture and how this culture in turn affects its image of stability and continuity. He also claimed that university culture helps new students and newcomers to get acquainted with the university environment and ways to get things done on campus. Wilson-Stykes (2023) also agreed that an institution's culture helps new students develop accurate expectations for their college experience with positive images.

Kose and Korkmaz (2019) examined the relationship between organizational culture and student academic performance in Turkey. They found significant relationships between academic performance and both competitive culture and innovative team culture in four universities. However, the sole significant predictor of academic performance was competitive culture. Both the competitive culture and the innovative team culture are displaying distinct images of the universities.

Student Satisfaction and University Images

If higher education institutions need to compete through image building, attention must be paid to measuring the university image held by their students. Traverso, Roman and Gonzalez (2012) claimed that the organizational image was one of the most important intangibles to work with. In their study of university images, they found that the determination of the internal image of a university was developed from the perspectives of students. Lee and Chen (2018) studied the university images in Taiwan and found that the dimensions of the stakeholder image and student image were on the top priority of all the elements that contribute to university image formation. Panda, Pandey, Bennett and Tian (2019) also found that a distinct brand image plays an important role in students' level of satisfaction across both in India and the United States.

Studies have shown that, in general, university image is important to attract and retain students and that university image, student satisfaction and student citizenship are closely related. When students' perceptions of the image of their university are positive, the students' trust in their university is also enhanced (Aghaz, Hashemi & Atashgah, 2015). Student loyalty to a university is predicted by student satisfaction, which is in turn predicted by the student perceived image of the university (Alves & Raposo, 2010; Brown & Mazzarol, 2009). Tanyildiz and Serin (2020) also confirmed that there was a positive relationship between organizational citizenship behavior and organizational image.

University Strategies in Image Promotion

Many universities in the world have recognized that the excellent quality work performed by their universities as a result of the continuous effort of their leaders, faculty and staff needs to be publicly known by promoting the positive images of their universities. Their image promotion strategies will certainly help push the university enrolment by attracting many high-quality students.

Wilkins and Huisman (2013) studied the criteria used by prospective students to evaluate university images promoted by universities in the United Arab Emirates (UAE). It was found that information and opinions sought from personal relationships and the media explained over half of the variability in the enrolment intentions and decisions of the prospective students. The UAE universities really put in a great deal of effort in promoting the university images through the media and interpersonal relationships.

In the study of Iranian universities, Aghaz, Hashemi and Atashgah (2015) examined the effort of the top universities in promoting their images among the students. The findings of the study indicated that the universities focused on promoting their images by improving their internal and international reputation. Their educational planners placed great emphasis on quality academic planning and the modern university environment that supported student learning.

Munjin (2022) studied university images in Islamic education with a focus on specific strategies universities used in promoting public images. It was found that Islamic universities employed a variety of promotion strategies by providing education and socialization to the community through arranging creative competition events for prospective students, seminars, social services, educational exhibitions, involving schools in local and national events, publishing school achievements in print and electronic media, and creating social media platforms such as, Facebook, IG, blogs, TikTok, etc. Moreover, some universities even develop brand awareness by highlighting the distinctiveness and excellence possessed by their universities as a form of distinguished character to differ from other educational institutions.

Promoting Images in Chinese Universities

In building their images as world-class universities, Chinese universities need to focus on quality assurance and decentralization of governance structure (Shen, 2022). Shen further explored that Chinese universities need introducing third-party quality assurance bodies or networks to establish a quality assurance system while government should grant more autonomy to universities with emphasis on accountability.

In her study of Chinese universities, Zhang (2018) claimed that Chinese universities promote their images with an aim of increasing enrolment, competitiveness, cooperation, mobility and fund raising. Promotion strategies they usually employ include positive messages through their own students, exchange programs, informative brochures and online scholarship attractiveness. In response to that, Liu and Ma (2022) also found that most Chinese universities use words, graphics and letters as elements to convey different messages to promote their images. They considered words and other combined trademark elements convey the most direct information to allow consumers to know the services of the universities.

THEORETICAL FRAMEWORK

The study of Duarte, Alves and Raposo (2010) is aimed to review the organizational image construct, to explore the process of image formation and to analyze the impact of the different source factors on university's image. The results show that the university social life atmosphere and employment opportunities are the most important predictors associated with the promotion of institutional images. The study serves as a significant framework to support our current research to analyze the strategies of image promotion employed by the university in our case. It broadens the researchers' horizon of looking for all the factors that help promote institutional images.

RESEARCH QUESTION

What strategies are employed by a prestigious university in China to promote its positive images?

METHODOLOGY

Case Setting

In this case study, a research university in northern China is cited as a typical example of employing effective strategies of promoting its university image to enrich its educational programs. The university is a public university ranking on top of the list of research universities in China. Even though the university is a top-of-the-class university in teaching and research activities known nationally and internationally, the university administrators understand the importance of promoting

the positive image of the university to the general public. The administrators, the faculty, the staff and all the stakeholders participate enthusiastically in promoting the image of the university they are proud of. Therefore, this university is used as an exemplary case of success in image promotion.

Research Design

"What case study researchers have in common is that they call the objects of their research cases and they focus their research on the study of such cases." (Fraenkel, Wallen & Hyun, 2011, p. 435) A qualitative approach is employed in this study with focus on the instrumental type of case study in which the researchers are interested in studying the case as a means to some larger goals (Fraenkel, Wallen & Hyun, 2011). The purpose of this study is to investigate how the university in the case study promotes its image to popularize its programs. The setting of this study suits the instrumental case study design.

Data Collection Procedures and Analysis

The researchers reviewed the current literature of promoting images of higher education institutes. Particular attention was paid to the strategies employed by universities in China to promote their images to upgrade their university status. Then, permission was sought from the case study university to review the available documents in file to identify the strategies the university uses to promote its image. The researchers were also allowed to review and cite information from the university website as evidence of image promotion strategies. The data collected through the review of university documents and websites were verified by an administrator of the university to reflect the reality of image promotion practices. The data were examined by using a documentary analysis approach in which relevant contents are highlighted and coded and categorized accordingly into themes (Creswell, 2009). The researchers further analyzed the nature, the orientation and the effectiveness of the different strategies of image promotion. The findings of this study were discussed with reference to the current literature reviewed.

FINDINGS

No matter what strategies a university uses to promote its image, the basis of the attractiveness of the university is not what it looks good or perceived to be good, the university must be really good both in teaching, scholarship and services. The work of image promotion is only trying to bring the university attractiveness to the immediate attention of the students, parents, the stakeholders and the public. Therefore, assuring the high quality of the educational programs of the university is the core of the effort in image promotion. Without the assurance of high program quality, there is no image to promote.

The university in this study has a history of over 100 years. It has gone through many years of distinguished leadership and has been benefitted by the contributions of the talented and diligent faculty the university has been able to recruit. The university now has earned its high ranking as one of the best research universities of the world. Despite its outstanding academic standards and high global popularity, the university leaders continue their rigorous effort in promoting the university image. They believe that continuous effort in image promotion is the way to disseminate the achievements of the university and to make the university world known.

In reviewing the emerging themes because of data coding and categorizing, the researchers of this study were able to detect the strategies used by the university in promoting its positive images. These strategies fall into the following categories:

Developing the University Culture

The image of a university is strongly impacted by the culture the university so uniquely developed through its long years of history. University culture represents the spirit, the beliefs, the ethics and the traditions of the university. Excellent cultural heritage is an important factor that continues to influence the brand image of universities. The university in this case study has placed great emphasis on developing the inheritance of university culture and spirit in enrollment, talent cultivation, alumni activities, and other academic work and social services. As inscribed in the university motto, the university shall strive for "continuous self-improvement and high ethical standards of individuals and love for all". This positive university cultural excellence supports a strong university image. (Information retrieved from university website and provided by the faculty and the staff.)

Building Academic Strength

Understanding the positive image of a university comes from its popularity of academic strength, the university administrators set high academic standards for the different colleges and departments to attain. A strategic planning department at the university level is established to oversee the goal setting and the program planning of the academic units. Specific guidelines are given to the colleges and the departments to plan for outstanding accomplishments in teaching, research, curriculum programming, international connections, occupational advisement, cultural development and social service offerings to meet the university expectations. The university strongly encourages and supports faculty to stay in the forefront of leadership in the universal exploration of advanced level scholarship. For example, unique research centers are well established in search of the latest development in the areas of Artificial Intelligence, Electronic Technology, Big Data and Human Brain Development. Faced with these demanding challenges, the faculty and staff work together under the university leadership and guidance to achieve these difficult tasks one after another. The distinguished achievements of the university place the university status in high ranking among other universities of the world. This is the basis of the university in building its positive images. (Information retrieved from university website and provided by the faculty and the staff.)

University Campus and Activities.

To promote its image, the university has created many photos and videos of its beautiful campus and the student and faculty activities on campus. The campus itself is located at a site known of historical happenings. This is enough to attract many potential students and parents. These photos and videos also depict important national and international events hosted by the university on campus. Additionally, the visitations of the university campus by many national and international scholars shown in photos and videos increase the popularity of the university. These photos and videos also display the outstanding politicians, scholars and scientists that graduated from the university. Featuring the campus and the activities in photos and videos contributes much to promoting the university image by impressing the public with solid evidence of the university achievement. These photos and videos are posted on the university website. Some photos are also printed in university publications including newsletters and periodicals for publicity. (Information retrieved from the university website.)

Student Recruitment.

The university has established a large network year-round for the recruitment of students. Every province and each of the four direct administrative cities are visited by assigned faculty members to connect with the potential secondary school graduates who are updated with the latest information about the university excellence and admission requirements. The faculty members meet seasonally with the secondary school principals, head teachers and students of the graduating classes to prepare student applications to the university. The head teacher of each secondary school is assigned as the university ambassador to connect with the students. June and July is usually the busiest time of the recruitment team because it is the time students and their parents make their final enrollment decisions. The university puts in great effort to recruit distinguished students for every academic program. This is done through the promotion of a positive image of the university. The university makes best use of faculty attending international conferences to recruit high achieving international students by meeting with potential students in person. The impression the students and their parents get is that this is a caring university to which they want to belong. (Information retrieved from university files and direct contact with university staff.)

Establishment of Education Foundation.

The university establishes the Education Foundation as a non-public foundation to promote the development of educational causes of the university, to improve educational quality and academic level, to strengthen the relation between the university and society and to strive for support and donations from domestic and foreign sources. For what the education foundation has been doing all these years is to build the university reputation and promote its image. The fund of Education Foundation is mainly used to support talent cultivation, teaching, scientific research, building of a teachers' team and campus infrastructure construction of the university and carry out public services for society by giving play to the overall advantage of the university in science, technology and talents. The popular image of the university grows with the Education Foundation. (Information retrieved from the university's Education Foundation website.)

University Alumni Association.

The university establishes the alumni association to strengthen the connections between alumni at home and abroad, and the connections between alumni and their alma mater. It provides services to the university alumni, carries forward the university's traditions, and contributes to the national rejuvenation and reunification, as well as the university's development. The alumni association has extensive contact with alumni. It has contacts with 80% of the alumni. Presently, with its headquarter in Beijing, the alumni association has 150 branch associations in China and abroad. Out of the total, 50 of them are abroad located in 18 different countries. The alumni association is committed to creating a warm and vibrant communication platform for overseas alumni and building a bridge of communication between overseas alumni and their alma mater. The association members are loyal to their alma mater and assist in building a positive image of the university from which they graduated. The university alumni associations, local and abroad, help in spreading the gospel of the university, supporting for various university activities at home and overseas, and encouraging alumni to give back to their alma mater and society. In addition, the association welcomes international alumni to join the alumni association family and encourages them to play their respective positive roles in local alumni organizations to promote the university image. (Information retrieved from university office documents and the university alumni association website.)

International Connections.

The university's work of international connections is handled through the Global Communication Office and the Office of Public Relations. The university administrators understand well that the academic standing of a university needs to be globally recognized through close working relationships and exchanges with other popular universities of the world. Therefore, collaborative programs, exchange of faculty and students, joint research projects and co-hosting of academic events are among some of the many connections between the university and over 300 known universities of the world. In addition, the Global Communication Office and the Office of Public Relations in collaboration with the Registrar's Office have recruited many outstanding international students on campus. Connections with international universities help promote the image of the university and bring the university ranking to a higher standing. (Information retrieved from the university office documents; Ministry of Education of the People's Republic of China, 2018)

Protection of Positive Images.

As one of the top universities in China, the university in this case study enjoys a high reputation both at home and abroad. Its positive image is often presented in the format of trademarks which include its full name in both Chinese and English, the abbreviated name in both Chinese and English, the seal, the university slogan, the landmark buildings, and other elements. As the popularity of the university grows high, many people have taken advantage of its excellent reputation and sought to exploit its reputation illegally. They created consumer confusion, obtained improper business interests, and infringed upon the trademark rights of the university. In recent years, the university has established special work units to protect the university image by actively suing many infringers to defend its trademark rights. A large number of infringement cases that the university won have actually helped the university to promote its image and trademarks. The university's efforts to promote its image and protect its trademark awareness make it an exemplary for other universities. (Information retrieved from university office documents and the university website.)

A Summary of Strategies for Image Promotion.

As aforementioned, the university earns its great reputation by recruiting the top-of-the class students, hiring quality faculty and staff and providing quality innovative programs. The university is determined to promote its image by disseminating news of its many areas of achievement. It poses its excellence of university cultural heritage. It displays its beautiful campus and the student and faculty activities and achievements through professional photography. Its frequent local and worldwide recruitment effort delivers warm touches to the students and the parents. The university education foundation and the alumni associations provide strong support for the university through fund drives and image promotion. Its strong international connection helps build the university ranking worldwide. Additionally, the university takes the initiative to protect its image and trademarks by taking legal actions against the infringers. The university continues to seek new ways to promote its image and trademarks.

DISCUSSION

Alcaide-Pulido, Alves and Gutiérrez-Villar (2017) conceptualized institutional images to be formed of four constructs: external communication and values, national and international recognition, economic value, and facilities. The findings of this study agree with Alcaide-Pulido, Alves and Gutierrey-Villar. The university values national and international connections as a significant strategy for promoting university images. It makes special efforts in protecting the economic value of its images and trademarks. The university takes pride in its modern facilities in

support of its innovative programs.

Emanuel, Baker and Challons-Lipton (2016) found that high school students chose the universities they wanted to attend by identifying the general images of the universities: personalities, events and landmarks, and art and social movements of the universities. The university in this study pays special attention to extending personal touches to the potential students who are in high school graduating classes. It constantly introduces to them the outstanding university graduates and faculty members and reports on the current events and activities of the university. What this university acts in promoting its image is in alignment with the findings of the study by Emanuel, Baker and Challons-Lipton.

The findings of this study show that this university has placed great emphasis on developing the inheritance of university culture and spirit in enrollment, talent cultivation, alumni activities, and other academic work and social services. The promotion of positive university cultural excellence supports a strong university image. This reflects the points of view as expressed by Simplicio (2012) and Wilson-Stykes (2023).

The university in this study builds its positive image based on its strength in teaching, research and service qualities as experienced by the students. This agrees with the findings of Chládková, Skýpalová and Blašková (2021) indicating that the image of a university is closely related to quality teachers, innovative teaching methods and modern environments of the university. Aghaz, Hashemi and Atashgah (2015) also evidenced that when students' perceptions of the image of their university are positive, the students' trust in their university is also enhanced.

Munjin (2022) found that Islamic universities employed a variety of image promotion strategies by providing education and socialization to the community through arranging creative competition events for prospective students, seminars, social services, educational exhibitions, involving schools in local and national events, and publishing school achievements in print and electronic media. Some universities even develop brand awareness by highlighting the distinctiveness and excellence possessed by their universities. The university in this study places emphasis on a strong network of community contacts particularly on the graduating classes of secondary schools. Through organized seminars, workshops and social events, the university recruitment teams disseminate university program information and help secondary school graduating students to prepare their applications to the university.

However, in addition to promoting its positive image, the university in this study also takes positive initiative actions against parties that infringe on the benefits of the university by illegal use of the university image and trademarks for commercial purposes. The aggressiveness of the university in acting against the infringers pays off in the end. Consequently, for every legal case that the university wins, the image of the university soars higher. Other universities should learn from the lesson of this university that they need to be brave enough to face adversity to protect their images.

IMPLICATIONS TO EDUCATIONAL PLANNING

The outcomes of this study have significant implications to planners of higher education. Through the unique example of this university, higher education planners need to recognize that the image of a university is generated from its excellence in cultural heritage and academic strength. The promotion of the image of a university has to be strongly backed up by its national and international standing. The current students and the graduates of the university can serve as the best sources to verify the quality of the university programs. In other words, the alumni associations could serve as the best voices to promote the university image. In addition, the many achievements of the university could provide solid evidence to promote the positive image the university deserves.

CONCLUSION

The findings of this study have indicated that the promotion of the image of a university is actually the work of advertising the success stories of the university. First, the university must be publicly recognized to be good with evidence of professional accreditation. Then, there is a good collection of many success stories to tell. The strategies of promoting the image of a university are dependent on the identified targets of disseminating the gospel and the many progressive channels to be used to achieve the purpose. The unique strategy used by this university to promote its image is the counterattack on the infringers who acted to damage the reputation of the university for their own selfish benefits. The decisive strategy of the university to beat the infringers through legal action is to be applauded.

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TRANSFORMING SECONDARY EDUCATION SERVICE PLANNING WITH GIS TO ADDRESS DISPARITIES IN CLARENDON, JAMAICA

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ABSTRACT

Addressing the educational disparity regarding equitable access and optimal services is a continuing challenge for government agencies mandated to promote quality education as a fundamental human right for every child. The Ministry of Education, Jamaica, is one of such government agencies facing challenges of ever-growing demands from population growth, geographical barriers, teacher shortages, inadequate infrastructure, and uneven resource allocation to deliver equitable access to quality education, particularly in diverse and dynamic regions like Clarendon. This study applied the Geographic Information System (GIS) approach to identify disparities in the spatial equity of secondary schools and services in Clarendon Parish, Jamaica. Accordingly, though the spatial distribution of the secondary schools followed the settlement patterns of the Parish's population, the disparity in access to optimal services is evident in the school's overcrowding. Parish's secondary education is generally overcrowded by 28% more students, though the rate varies between schools (e.g., Claude McKay High) and sub-regions (e.g., 48% in Vere). GIS-based location-allocation model, considering parameters such as population demands, transportation infrastructure (accessibility), and school availability, selected three suitable sites (in Vere, Chapelton, and Alston subregions) for secondary school construction to dispel the current pressure on schools, validating the capability of GIS in unveiling educational disparities and sound planning for remedy.

INTRODUCTION

Article 26 of the United Nations Universal Declaration of Human Rights (UDHR) states that education is a fundamental human right. In Jamaica, a UN member state, the Ministry of Education (MoE) is a government entity responsible for managing and administrating the country's education, with a mandate to secure and provide quality education to all citizens (Gordon, 2022; Thomas-Brown, 2020). The MoE organized the country's education system into four levels: Early Childhood, Primary, Secondary and upper secondary school, and Tertiary (Ministry of Education [MoE], 2012). According to Jamaican MoE (2012), early childhood education is a pre-primary school education on social skills and foundational learning for kids in the age category of 3-5 years, whereas primary education is for students in the age group 6 – 11 years and enrolled in grades 1 -6; where core subjects such as mathematics, English, Science, and social studies are introduced. Secondary education is for age groups 7 – 13 years and is divided into lower and upper secondary schools. Lower secondary school is grades 7 – 9 for students in the age group of 12 – 15 years to engage students with a broad curriculum of general education (Language and Literature, Math, Science, Social Sciences, Foreign languages, technical and vocational subjects). Upper secondary school is between grades 10 - 13 for the age group 15 – 18 years. Upper secondary education prepares students for higher education or vocational training, depending on students' chosen career

path. Tertiary education is for those students aged 18 years and vying for higher learning in colleges, universities, or vocational training institutions. The Jamaican MoE also divides the country into six education regions for administrative and operational purposes. These are Kingston, Port Antonio, Brown's Town, Montego Bay, Mandeville, and Old Harbor.

Approximately 788,000 students are enrolled, and the demands for educational opportunities are growing due to population growth, the need for a higher-trained workforce, and an overwhelming perception that education is a reliable tool for upward economic mobility (Lobban, 2017; Witter et al., 2009). However, improving quality, equity, and access to the country's education services remains daunting. Realizing educational equity that ensures all students have access to quality education regardless of socioeconomic status, geographic location, or other potential barriers is critically important (Darling-Hammond, 2013; Eason & Lamoni, 2015; Miller, 2017). It is closely linked to social justice, socioeconomic betterment, and curbing cycles of poverty for marginal communities with limited opportunities (Asfahani et al., 2023).

Clarendon is one of the largest parishes in Jamaica and is characterized by diverse physical features ranging from relatively flatter topographies in the coastal areas to rugged mountainous in the interior. The socioeconomic landscape is equally dynamic, with urban centers like May Pen and surrounding rural communities. The parish also hosts a range of educational institutions that are critical in providing education opportunities to youth, particularly with the nationally prominent secondary schools such as Glenmuir High School and Vere Technical High School. Additionally, the parish takes advantage of several programs, such as National Education Trusts, the Program for Advancement through Health and Education (PATH), local non-governmental organizations (NGOs), and community groups to support quality and accessible education services (Cook, 2020; Levy & Ohls, 2007). However, despite these efforts, like the rest of Jamaica, education landscapes in Clarendon are challenged with evident disparities in educational access and outcomes, such as poor student performance and school infrastructure (Henry, 2023; Ikpuri, & Egba, 2023; Jennings, 2014; Lobban, 2017). Outstanding challenges to the provision of optimal secondary education services in the parish include geographic and socioeconomic barriers, a shortage of teachers, inadequate teacher training, poverty, and gender disparity, uneven resource allocation, and accessibility problems in remote areas (Darling-Hammond, 2013; Jennings, 2014; Kinkead-Clark, 2018; Thomas-Brown, 2020). Optimal secondary education services would be the educational institutions equipped with good infrastructure (spacious classrooms, well-equipped laboratories, stocked libraries, indoor and outdoor sports grounds), adequately trained teachers & exposed to regular faculty development programs, and pedagogically sound curriculum and assessment policies (Ali, 2024; Barrett, et al., 2019; Yangambi, 2023).

Leveraging Geographical Information Systems (GIS), Clarendon can address these challenges by improving educational planning and understanding the spatial context of existing secondary schools and educational resources. GIS is increasingly used for analyzing spatial disparities and access in various fields, including urbanization (Gala & Boakye, 2020; Mengeste et al., 2021), community healthcare (Kunene et al., 2018; White & Gala, 2022), demographics, and socioeconomics (Hunley, & Gala, 2020; Vasovic, 2020), and environmental management (Boakye, & Gala, 2021; McKenzie, & Gala, 2023; McKenzie, 2022), due to its ability to handle large datasets and generate a visualization that gives required insights. It, therefore, can also play a pivotal role in Clarendon for identifying spatial patterns of secondary education service inequities and guiding decision-making processes related to the allocation of resources, including the placement of new educational facilities to improve access, particularly in underserved areas of the parish.

Several successful case studies of improved educational planning with GIS have been reported (Fujita et al., 2021; Mammen et al., Menezes et al., 2014; Macharia et al., 2023; Meena et

al., 2023; 2014; Slagle, 2000; Sohoni & Saporito, 2009; Schmitz & Eksteen, 2014). For instance, in the United States, GIS has been used to analyze the distribution of educational facilities and identify areas with inadequate access to schools (Mammen et al., 2014; Slagle, 2000; Sohoni & Saporito, 2009). Similarly, in African countries like Kenya and South Africa, GIS has been instrumental in mapping educational resources and planning new school constructions to address regional disparities (Macharia et al., 2023; Schmitz & Eksteen, 2014). Moreover, in India (Meena et al., 2023) and Brazil (Fujita et al., 2021; Menezes et al., 2014), GIS has been utilized to optimize the services of educational resources such that disadvantaged communities receive adequate support.

Although these case studies demonstrate the effectiveness of GIS applications for addressing educational disparities, their use is limited in Jamaica and the surrounding Caribbean islands. The agency or department responsible for school location planning is the Education Planning Unit under the MOE. School mapping is done by collecting data manually using handheld GPS devices to keep the roster of the schools up-to-date. By so doing, the MoE audits educational institutions to assess and alleviate issues arising from population shifts that are impacting the access and disparity in schools' services. Demographic data often drive the planning for adding new schools without utilizing the GIS capabilities of spatial analysis and other relevant data (Vijil-Morin et al., 2023). However, contextual data, for instance, school distribution, service area, population density, accessibility, travel time, land cover, infrastructure, resources, and topography, are critical for more accurate and dynamic analysis of identifying existing patterns of inequity and informing policy decisions of resource allocation for planning inclusive, equitable and quality education. The above case studies demonstrate the possibility of effective implementation of GIS to address educational disparities and planning in Clarendon and beyond the Caribbean islands. This article uses GIS to identify disparities in the spatial equity of secondary schools' resources and services in Clarendon Parish, Jamaica. The study aims to unveil inequalities in access and distribution of public secondary schools based on reliable spatial, aspatial demographic, and socio-economic data and improve the Education Service Planning for Clarendon.

THEORETICAL FRAMEWORK

Education is often regarded as an investment in citizens' social well-being to enhance society's productivity and economic growth (Psacharopoulos & Patrinos, 2004). Equitable and inclusive education investment, where all students have equal access to quality learning opportunities, members of society have access to necessary knowledge and skills demanded by the labor market, higher incomes, and improved socioeconomic status. Educational planning, which is grounded in the theoretical frameworks of the Capability Approach (Robeyns, 2012) and System Theory (Mwambia, 2020) is a process by which educational policies, infrastructural resources, service delivery, and curriculum are made equitable. Beyond infrastructural resources and students' headcounts (i.e., enrollment), the theory of the Capability Approach towards educational planning considers effective access and benefit measured by equity, inclusivity, and availed opportunities of marginalized groups. On the other hand, systems theory emphasizes the need for holistic consideration in educational planning. The theory advocates well-coordinated planning encompassing curriculum development, teacher training, infrastructure, and student needs.

Jamaica gained its independence from Britain in 1962, and one of the legacies of colonial slavery is systemic inequalities, which is an intricate component of Jamaican society, especially in education (Mujtaba, 2005). Educational disparities in Jamaica are characterized by socioeconomic and structural barriers to education, which originated from long travel distances, marginalization, economic constraints, and discrimination (Eason & Lamoni, 2015; Espeut, 2016). It is rooted in institutionalized and systemic racism fully developed in the eras of colonialism and slavery in the

Americas. Social Reproduction (Nash, 1990) and Resource Dependence (i.e., Kholmuminov & Wright, 2019) theories are theoretical frameworks employed to inform this disparity. The theory of Resource Dependence highlights that education disparity originates from relying on unequal funding from external sources. Consequently, impoverished and powerless communities struggle with limited budgets, outdated facilities, and insufficient teaching staff. Conversely, Social reproduction theory explains how such disparity persists across generations due to inherited systemic and social structural barriers from historical injustices, such as colonization or slavery. Therefore, students from this social background often face resource shortages and a lack of well-trained teachers, academic support systems, and technologies.

School mapping is an important approach to support educational planning that aims at equity, inclusion, and diversity. The approach emphasizes optimal school locations and their even distribution to ensure equitable and inclusive access to education and efficient resource allocation. Spatial analysis theory is the theoretical framework that provides the understanding of school mappings in the context of equitable and inclusive educational planning (Lubienski & Dougherty, 2009). According to this theory, optimal school locations that are geographically accessible and evenly distributed are determined with geospatial data of the physical environment, demographic characteristics, and transportation networks.

METHODOLOGY

The Study Area: Clarendon Parish, Jamaica

Jamaica is an island country in the Caribbean Sea and is the fifth-largest island country in the Caribbean (Figure 1). The island, 10,990 square kilometers (4,240 sq mi) in area, lies about 145 kilometers (90 mi) south of Cuba and 191 kilometers (119 mi) west of the island of Hispaniola, which contains the nation-states of Haiti and the Dominican Republic. Jamaica is divided into three counties – Cornwall, Middlesex, and Surrey with 14 parishes, including Kingston, St. Andrew, St. Catherine, Clarendon, Manchester, St. Elizabeth, Westmoreland, Hanover, St. James, Trelawny, St. Ann, St. Mary, Portland, and St. Thomas. Each parish has a capital town, and Kingston, located on the island's southeast end, is Jamaica's capital. As the largest English-speaking Island in the Caribbean, Jamaica is known worldwide for its vibrant culture, sporting prowess, and physical beauty. It boasts a favorable climate, geographic location, and considerable progress towards meeting international standards in several key social indicators. These are the achievement of high life expectancy, near-universal enrolment in primary and junior secondary education, and widespread access to potable water.

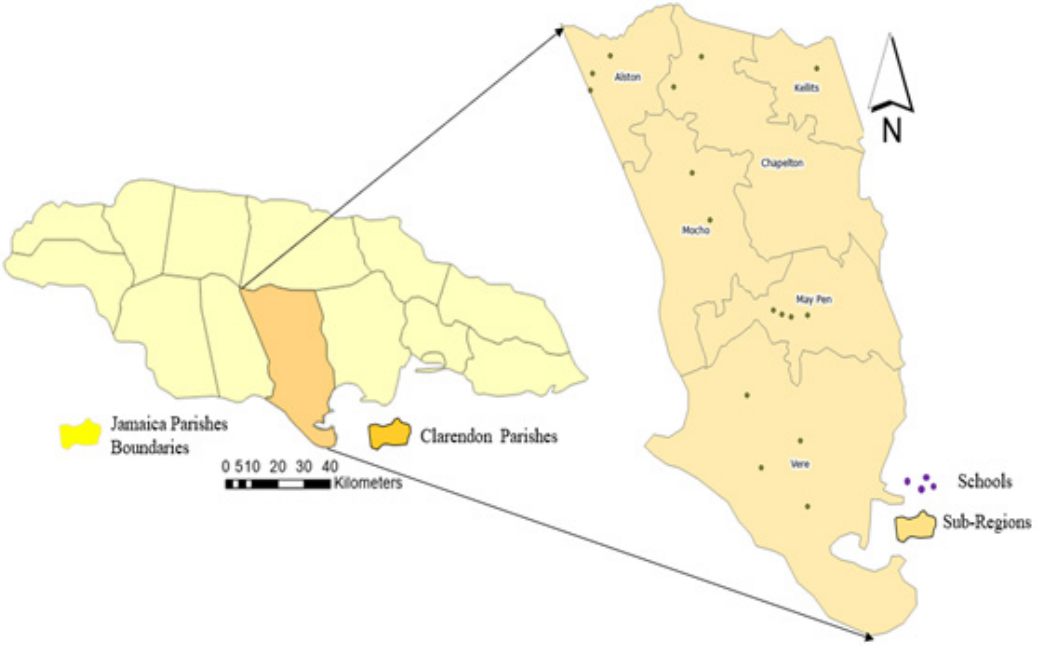


Figure 1. *Map Showing Location of Study Area in Jamaica*

Clarendon is located on the southern side of Jamaica, roughly halfway between the eastern and western ends of the island. It is bordered on the north by St. Ann, west by Manchester, east by St. Catherine, and south by the Caribbean Sea (Figure 1). Covering an area of 461 sq mi, Clarendon is the third largest parish, approximately 33 miles long from north to south and 14 miles from east to west. Clarendon is predominantly a vast plain between the Braziletto Mountains in the east and the Carpenter's Mountains (the Manchester Highlands) in the west. Towards the northern end of the parish lies the Mocho Mountain (2000 ft) and Bull Head Mountain range (2800 ft), considered the island's geographical center, while the Vere plains are noted in the south. Clarendon is classified into six sub-regions: Alston, Chapelton, Kellits, Mocho, May Pen, and Vere (Figure 1). These sub-regions were created based on the distance of primary schools to the nearest secondary institutions. These primary schools are called feeder schools to the nearby secondary-level schools (s). While Vere is the largest sub-region encompassing 36% of the parish, Chapelton follows with 21%, and Mocho is 16%. The smallest sub-region in the parish is Kellits (7%), slightly exceeded by Alston (8%), and May Pen sub-region covers 12%.

Data Acquisition, Description, and Quality Control

The GIS data needed for a study aimed at identifying disparities in education services and planning equal opportunity are Public Schools, Settlements, Streets and major Roads, Census, Parishes, and Topographic maps (Table 1). These data are available over Jamaica's GIS clearinghouse and are built for distribution after being pre-processed for quality control and are used by policymakers and researchers. The data were initially developed by the National Works Agency (NWA). For instance, NWA developed road and infrastructural network data, including street centerlines, through large-scale digitization of the urban areas, while GPS handhelds were

used in rural areas. All data were spatially referenced into AD_2001 WGS84 spatial reference and quality controlled a high-resolution Google Earth for accuracy. The specification data is described in Table 1.

Table 1. The Specification and Spatial Reference Systems of Available Data

File	Type	Projection
Public Schools	Point	JAD_2001
Settlements	Point	JAD_2001
Streets	Line	JAD_2001
Major Roads	Line	JAD_2001
Census	Polygon	JAD_2001
Parishes	Polygon	JAD_2001
Topographic Map	Raster	JAD_2001

Secondary Schools and Enrollment Data

There are 17 secondary high schools in the Parish of Clarendon, Jamaica. Schools vary with their enrollment numbers (Table 2). The school with the highest enrollment is Edwin Allen High School (2282 students), followed by Vere Technical High (1912) and Central High (1901 students). The school with the lowest enrollment is Alston Secondary High School (784), slightly exceeded by Foga Road High School (811 students) and Thompson Town High School (955 students). The average school enrollment is 1382 students, and the parish's total number of public high school students is 23,497.

Table 2. Secondary High Schools in Clarendon Parish of Jamaica and their current Enrolment

Rol. No	Secondary High Schools	Enrolment
1	Foga Road High	811
2	Kellits High	1012
3	Lennon High	1036
4	Clarendon College	1668
5	Knox College	1312
6	Spaldings High	1524
7	Thompson Town High	955
8	Alston High	784
9	Garvey Maceo High	1409
10	Central High	1901
11	Kemps Hill High	1203
12	Edwin Allen High	2282
13	Vere Technical High	1912
14	Bustamante High	1130
15	Claude McKay High	1175
16	Denbigh High	1611
17	Glenmuir High	1772
	Total	23,497

Geospatial Analysis of the Schools and Population Settlements

The spatial distribution of populations and settlements across the parish and their interconnectivity are essential for determining the demands of education services and resource allocation. Population data is the critical driver; hence, data at the finest scale is vital to capture precisely where the educational facilities for the service are located in the parish. Therefore, the pattern of the co-variance of the geographical distribution of secondary schools and population settlement was analyzed using buffer and density analysis toolsets, which are both built-in ArcGIS.

Buffer analysis is essential to answer basic questions, such as the catchment service areas of each school in Clarendon, Jamaica, for its ease of calculation. Buffer Analysis constructs a catchment of a polygon having 6 miles distance around the schools. In Jamaica, the MoE abides by a standard that states that a secondary school student should not travel more than six miles from home. Hence, a buffer distance of six miles was done for each of the 17 secondary institutions. There are two ways of constructing a buffer in ArcGIS: Euclidean and geodesic distance. Euclidean distance calculates a straight-line distance between two points. It is well suited for projected coordinate systems and relatively small areas. In contrast, the geodesic distance calculates the distance between two points on a curved surface in the account of the actual ellipsoid shape of the earth. In this study, the catchment area is calculated with a Euclidean distance for a school location (x, y), and vertices of each point of the catchment (buffer) polygon (a, b) are given by:

$$dist((x, y), (a, b)) = \sqrt{(x - a)^2 + (y - b)^2} \qquad (1)$$

Density analysis was conducted to identify co-concentration areas of the secondary schools and population settlements. The density analysis produced a continuous surface of the varying areal concentrations of the population settlements and the number of schools in a given area. It is done with a kernel algorithm, which sums up the points or lines on the search area and divides them with the search area (Silverman, 1986). According to Silverman (1986), the kernel density calculator algorithm is given by:

$$Density = \frac{1}{(radius)^2} \sum_{i=1}^{n} \left[\frac{3}{\pi} \cdot pop_i \left(1 - \left(\frac{dist_i}{radius} \right)^2 \right)^2 \right]$$

$$\text{For } dist_i < radius \qquad (2)$$

where:

i = 1, …. n, are input schools or population settlements within the search radius distance of the (x, y) location.

pop_i = is a population field value of point (i); this is optional and only applied for the population density delimited by the radius search.

$dist_i$ = distance between point i and the (x, y) location.

On the other hand, the algorithms used to calculate a search radius is given by:

$$SearchRadius = 0.9 * \min\left(SD, \sqrt{\frac{1}{\ln(2)}} * D_m \right) * n^{-0.2} \qquad (3)$$

where:

D_m: is the median distance from mean center.

n: is the number of people living in a settlement area.

S_D: is the standard distance.

The standard distance is given by:

$$SD = \sqrt{\frac{\sum_{i=1}^{n}(x_i - \bar{X})^2}{n} + \frac{\sum_{i=1}^{n}(y_i - \bar{Y})^2}{n} + \frac{\sum_{i=1}^{n}(z_i - \bar{Z})^2}{n}}$$

(4)

where:

x_i, y_i, and z_i: are the coordinates for secondary schools or population settlements *i*

$\bar{x}$, $\bar{y}$, and $\bar{z}$: represents the mean center for the secondary schools or population settlements

n: is equal to the total number of secondary schools or population settlements.

Location-Allocation and Accessibility Modeling

Public facilities, such as schools, hospitals, libraries, fire stations, and emergency response services (ERS) centers, can provide optimal services to the community when accessible locations are chosen during the planning phase. Therefore, the issue of secondary school access disparity in Clarendon, Jamaica, can be resolved through location/allocation modeling. The most common location/allocation model is the p-median, in which the school facility sites are chosen. The facilities are chosen from a set of candidate sites to optimize the aggregate travel cost (time) from each demand point (settlement areas) to the nearest facility (Church & Sorensen, 1996). According to Church & Sorensen (1996), the notation for the p-median model formulation is given by:

$I = 1,---,m$ demand points

$J = 1,---,n$ facility locations for facilities

K = the maximum distance to be traveled by pupil.

a_i = population (number of pupils) at the demand point *i*.

d_{ij} = shortest distance between location *i* and location *j*

p = number of schools to be established

$$X_{ij} = \begin{cases} 1 & \text{if children of school i are assigned to site } j \\ 0 & \text{otherwise} \end{cases}$$

$$Y_J = \begin{cases} 1 & \text{if school } j \text{ is selected} \\ 0 & \text{otherwise} \end{cases}$$

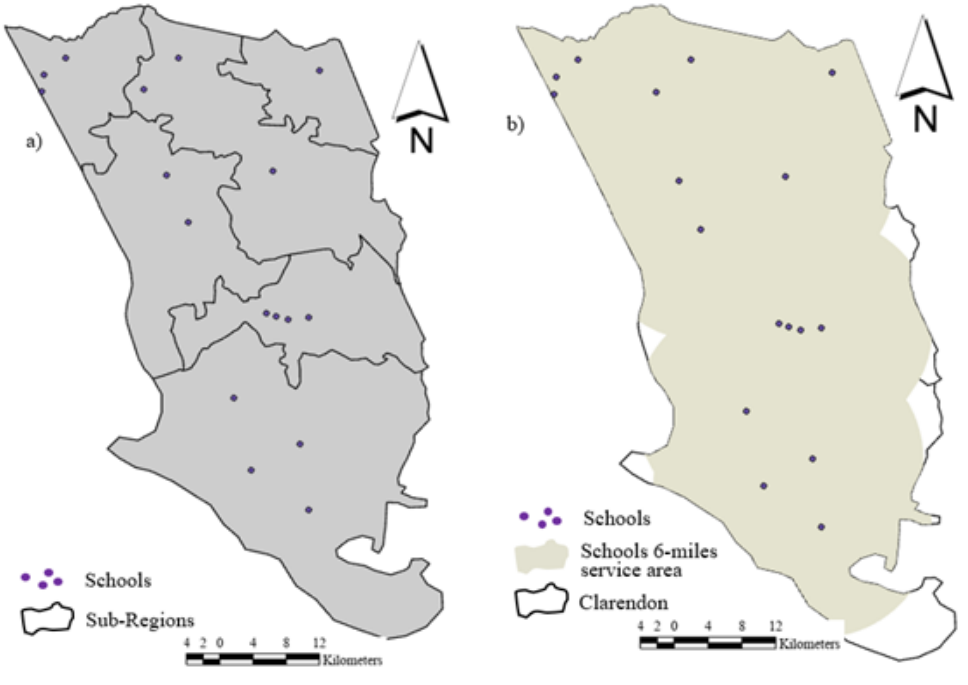
RESULTS AND DISCUSSION

Access to Public Secondary Schools in The Parish of Clarendon, Jamaica

Figure 2 shows the geographical distribution of public secondary schools throughout the Parish (2a) and the buffer analysis (2b) result to determine secondary school access. The number of schools in these sub-regions varies, perhaps indicating that there is no equal access to secondary schools in the Parish. According to Figure 2a, May Pen and Vere have the largest number of schools (four each), whilst Kellits has only one. On the other hand, the Chapelton sub-region has three public high schools, whereas the Mocho and Alston sub-regions have only two schools each. While the allocation of four schools in the largest sub-region of Vere is justified by its size, the allocation of

the same number of schools in the somewhat smaller sub-region of May Pen would raise questions about disparities in the allocation of secondary schools in the Parish. Similarly, while the Alston and Kellits sub-regions are about the same geographical dimension, the allocation of twice as many high schools in Alston, vis-à-vis Kellits, points to a potential regional disparity of students' access to the schools (Henry, 2023; Ikpuri, & Egba, 2023). (Ikpuri, & Egba, 2023) noted disparities in access to education services in Jamaica, particularly in rural and low-income areas like Kellits and Alston. Similarly, Henry (2023) observed the effect of such disparities on student performance. Jamaican students from a high socio-economic background are eight times more likely to succeed in education and to join college than those from low status.

Conversely, the schools' service area delineation based on a six-mile Euclidean distance cutoff set by the MoE showed that 95% of the Parish is well-covered. The Parish sections not covered are found in the eastern part of the Chapelton sub-region, in the west end of the Mocho sub-region, and in the southernmost part of the Vere sub-region, which are geographically in peripheral regions. The secondary schools' service area, estimated based on straight-line Euclidean distance, is subjected to estimation bias (Li et al., 2022), especially in rural and larger areas (Ludrosky et al., 2023). According to Li et al. (2022), using a straight-line Euclidean distance buffer for service area estimation may yield a significant bias compared to a service area delineated by the network buffers. Moreover, the straight-line Euclidean distances may deviate from the actual travel distances, especially in determining healthcare access for rural patients (Ludrosky et al., 2023). Therefore, the 95% service coverage of Clarendon Parish's secondary school with a six-mile straight-line Euclidean



distance should be read with some degree of skepticism.

Figure 2. *Map showing the geographical distribution of secondary schools (a) and buffer analysis for determining service areas of the secondary schools as per six- the -mile distance policy of*

Jamaica Ministry of Education (b)

Density Analysis of Secondary Schools in The Parish of Clarendon, Jamaica

Through density and spatial association analysis, Figure 3 shows evident disparities in secondary schools, obscured by service areas delineated based on the Euclidean six-mile radius cutoff (Figure 2). The density analysis of population distribution and secondary schools in Clarendon, Jamaica, dynamic spatial associations that unveil disparity in school access. Clarendon's population density ranges from 0 people to 590 people per km^2, and on average, the population density of the Parish is 180 people per km^2. Most central, northwestern, northeastern, and southcentral parts of the Parish are densely populated. In contrast, the majority of the southern end and peripheral regions of the Parish have low population densities. The high-density areas correspond to central May Pen, Alston, Kellits, and western Chapelton sub-regions and are surrounded by areas with moderate population density. Similarly, the secondary density of the Parish is also dynamic, ranging between 0 to 0.05 schools per km^2 and, on average, 0.013 schools per km^2. The school densities are the highest in the central areas of the May Pen and Alston sub-regions. Vere and Mocho sub-regions had a moderate density of schools, while Kellits and Chapelton sub-regions and the peripheral areas of the Parish showed lower secondary school densities.

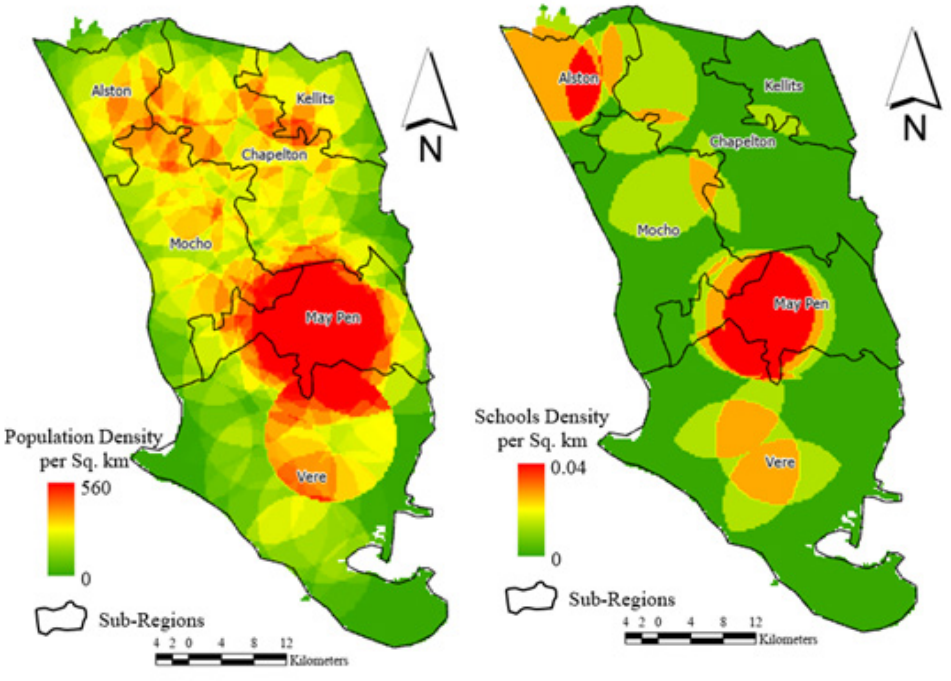
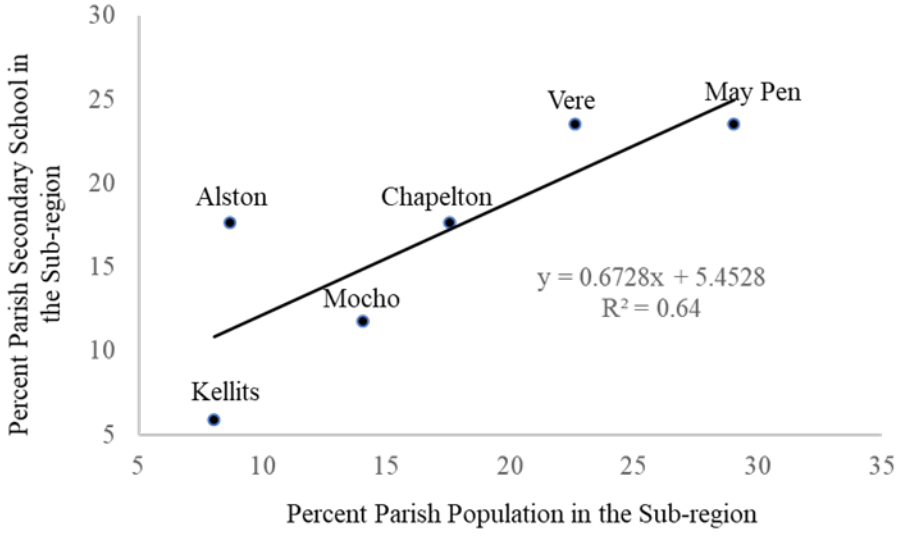


Figure 3. *Density maps showing the density analysis for the population settlement (a) and secondary school distribution (b) in the Clarendon parish of Jamaica*

The high secondary school density in the May Pen sub-region corresponds to the concentrated population settlement density in the area. On the other hand, the high density in the Alston sub-region has to do with the population density of a city in the neighboring Manchester Parish across the boundary. Areas with low school densities in the south, southwest, and peripheral

regions are also associated with low population density. Similarly, significant portions of the Parishes in the northeastern part (i.e., Alston, Kellits, and Chapelton) and the southern part (i.e., Vere sub-region) showed concurrent moderate densities for both population settlements and schools. The association between the spatial distributions of public schools and population settlements is demonstrated in other studies (Lagrab & Aknin, 2017; Lastra-Anadón, 2018; Makino & Watanabe, 2002). (Makino and Watanabe, 2002) found a similar relationship between public secondary schools and population settlement distribution using GIS in Bangkok, Thailand. Similarly, Lagrab and Aknin (2017) analyzed educational services distribution in four southern districts of Mukalla City, Yemen, and reported the correlation between the population settlement patterns and school centers, corroborating the above findings.

In general, Figure 4 showed a strong (R^2= 0.64) correlation between the patterns of population settlements and the number of secondary schools in the Clarendon parish, Jamaica. Except for Alston, whose school population is more influenced by the neighboring city on the other Parish, the correlation of the rest falls along the regression ("the best fit") line. This validates deep-seated Jamaica's MoE practice of school mapping and education service planning primarily based on demographic factors (i.e., population settlement patterns) (Vijil-Morin et al., 2023). However, the discrepancies in the northwestern part of the Parish (i.e., Sub-regions of Alston, Chapelton, and May Pen) suggest unequal access to educational resources and services. Here, the density of secondary schools is moderate, while the population density is high, demonstrating possible classroom overcrowded conditions. Classroom overcrowding is a classic condition of schools in developing countries serving big communities (Matshipi et al., 2017). Therefore, access and service disparity in Clarendon's secondary education is better explained by resource limitations from overcrowding,



although the facilities may have sound spatial equity.

Figure 4: *The relationship of the percent Parish's population settlements and secondary schools*

Secondary School Overcrowding and Improving the Education Service Planning for Clarendon, Jamaica

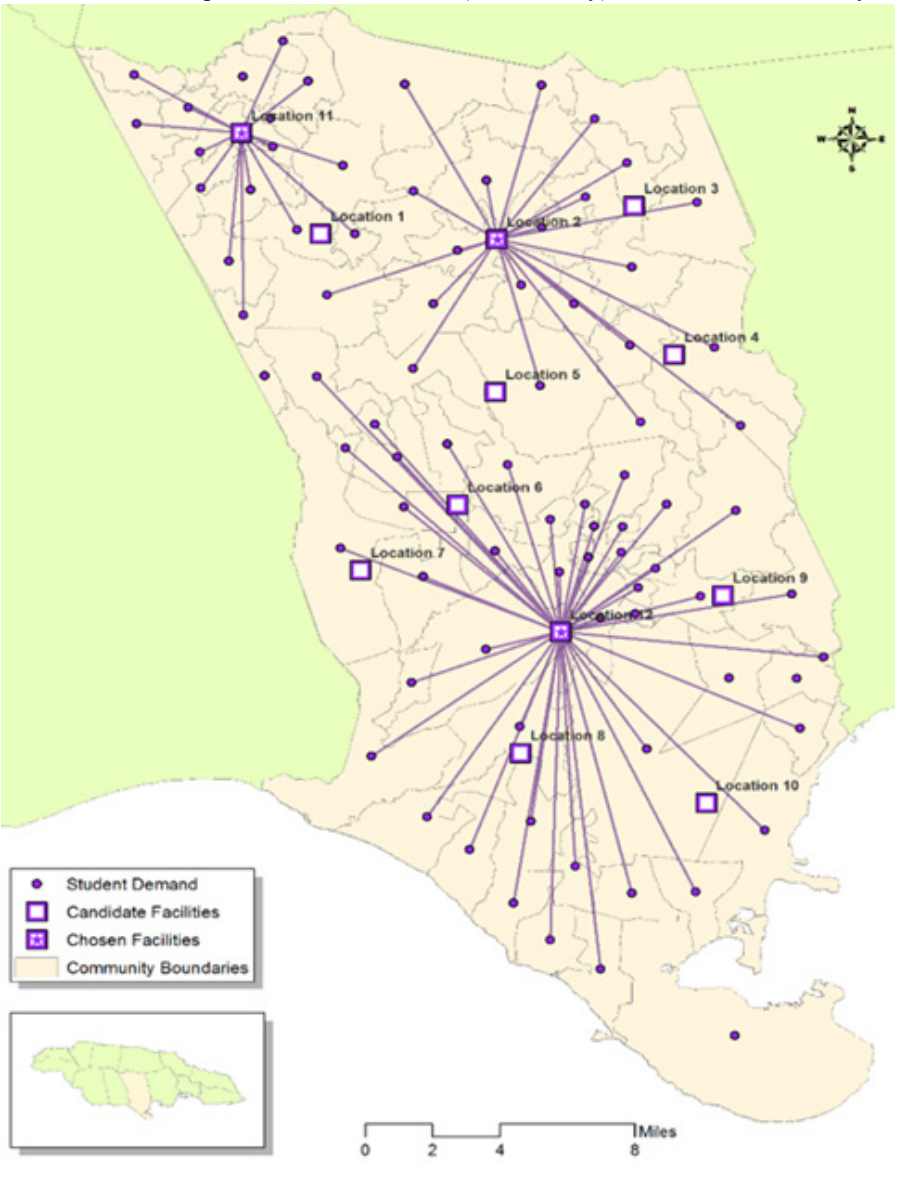
The classroom overcrowding condition of secondary schools in Clarendon Parish, Jamaica, is shown in Table 3. Almost all the 17 secondary schools in the Parish are experiencing classroom overcrowding, ranging from 1.2% and 1.4% at Kellits and Foga Road high schools in Kellits and May Pen sub-regions, respectively, to 88.3% and 95.3% at Bustamante High Vere sub-region and at Claude McKay High in Kellits and Chapelton sub-regions; respectively. On average, secondary school classrooms in Clarendon Parish are overcrowded by 28% more students than their capacity to accommodate. In general, on average, schools in the Vere sub-region are the most crowded (i.e., 48.2% more students above their capacity), followed by Chapelton (i.e., 42%) and May Pen (i.e., 23.6%). Kellits is the sub-region with the least overcrowded classroom (i.e., 1.2%), while both Mocho (i.e.,11.7%) and Alston (i.e., 16.3%) sub-regions are overcrowded at a rate below the Parish's average (i.e., 28%).

Overcrowded classrooms affect the quality of education services due to their negative impacts on teachers and students. Teachers' unbearable workloads, noisy and disruptive learning environments, and poor student engagement lessen the efficiency of transmitting and translating educational materials to students. On the other hand, students' learning performance is negatively affected by the shortage of textbooks and educational materials, constraints of physical spaces, and exposure to bad health and safety conditions. Overcrowded classrooms deteriorate students' learning outcomes (Javed et al., 2016) as students receive less attention from the teachers to answer their individual questions and concerns. Besides, a high student-to-teacher ratio would mean more work and a less effective teaching approach (Oduwan & Francis, 2023).

Sub-Region	Schools	Enrolment	Capacity	Size of Overcrowd	Overcrowd Rate (%)	Average Subregion Overcrowd Rate (%)
Alston	Spaldings	1524	1400	124	8.9	
	Knox College	1312	1200	112	9.3	
	Alston	784	600	184	30.7	
					Subregion's Average	16.3
Chapelton	Clarendon College	1668	1600	68	4.3	
	Edwin Allen	2282	1800	482	26.8	
	Claude McKay	1175	600	575	95.3	
					Subregion's Average	42.13
Kellits	Kellits	1012	1000	12	1.2	
					Subregion's Average	1.2
Macho	Lennon	1036	1000	36	4	
	Thompson Town	955	800	155	19.4	
					Subregion's Average	23.6
Foga Road	May Pen	811	800	11	1.4	
Central	May Pen	1901	1600	301	18.7	
Denbigh	May Pen	1611	1000	611	61.1	
Glenmuir	May Pen	1130	1000	130	13	
					Subregion's Average	23.6
Garvey Maceo	Vere	1409	1200	209	17.4	
Vere Technical	Vere	1912	1400	512	36.6	
Kemps Hill	Vere	1203	800	403	50.4	
Bustamante	Vere	1130	600	530	88.3	
					Subregion's Average	48.2

Table 3: Capacity and Deficit Places of Secondary Schools in Clarendon

Overcrowding of secondary schools reflects the need for educational facilities to provide adequate services in the Parish. On average, the Parish public secondary schools' capacity is 1083 students. With a total of 5097 students' surplus, the construction of a total of 5 schools is needed to offset the overcrowded classrooms. However, for this exercise, the construction of 3 secondary schools is proposed, as otherwise, five new schools' facilities would mean approximately a 30% increase at once, which may not be practical. Therefore, based on spatial-resolved factors such as population demands, transportation infrastructure (accessibility), and school availability, the GIS-



based location-allocation tool found ideal locations for the new school's construction (Figure 5).

Figure 5. *Choosing institutions*

Finally, the first location is in the Vere sub-region just outside of the May Pen sub-region, where we found the highest overcrowding of schools (i.e., 48%). Schools such as Bustamante High, in the sub-region, are overcrowded by a rate as high as 88.3%, corroborating the accuracy of the location-allocation site selection model. It can also draw students from May Pen, the density population sub-region of the Parish. The second selected location for school construction is in Chapelton, the second most overcrowded sub-region (i.e., 42.13%). It is also the sub-region where the most crowded high school in the Parish, i.e., Claude McKay, is found and can also draw students from Kellits. The third and last selected site for school construction is in the Alston sub-region. Overcrowding in Aliston is not as dire as in the May Pen sub-region. However, the availability of schools, transportation infrastructure (accessibility), and adjacency of the Mocho sub-region may have factored in determining the third site's location to Aliston in the location-allocation model.

Clarendon's secondary school location and allocation model findings were comparable (Abdel-Latif, 2007; Al-Rasheed & El-Gamily, 2013; Hameed, 2016; Shah et al., 2011). It is comparable to Hameed's (2016) deployed procedure to identify the urgent need for boys' and girls' schools in Karbala City, central Iraq. There was a need for a total of 31 primary schools for boys and 30 primary schools for girls, and it was found that the existing schools in the city did not cover most residential areas. Similarly, it is consistent with the approach used to recommend sites for relocating existing and constructing new schools in Kuwait's State's Ministry of Education (Al Rasheed & El Gamily, 2013), the District Khanewal, Pakistan (Shah et al., 2011), and Manial district in Cairo, Egypt (Abdel-Latif, 2007).

CONCLUSION

This study has unveiled the spatial inequity and uneven resource allocation of the public secondary schools in Clarendon, Jamaica. Generally, there are 17 secondary schools organized into five sub-regional (i.e., Alston, Chapelton, Kellits, Mocho, May Pen, and Vere) school systems to accommodate the 23,497 students in the Parish. The schools were distributed such that May Pen and Vere sub-regions each have 24%, Chapelton and Alston each have 17%, Mocho has 12%, and Kellits has the remaining 6%. The distribution of the schools followed the population settlement pattern of the Parish, a classical reflection of Jamaica's school and education planning mainly driven by demographics.

The density and service area analysis of the secondary schools in the region also reinforced the above findings. Although the population density of the Parish ranges between 0 to 590 people per km2, and secondary schools range from 0 to 0.05 schools per km2, their dynamic patterns were concurrent. The high population density subregions (i.e., May Pen and Alston) also have parallel superior school densities, whereas the Parish's peripheral areas exhibited low densities for both population settlement and schools. The mismatch was observed in the Chapelton and Mocho subregions, where the moderate population density is tallied with low school density. The service areas of the schools were calculated based on the maximum 6-mile distance students would travel, which was designated by the MoE to travel between home and schools and cover 95% of the Parish. The service does not cover only peripheral areas, which also have low population density.

The major shortcoming of Clarendon's secondary school planning and disparity in access to education is pronounced in classroom overcrowding. Almost all schools in the Parish are overcrowded, with their students' enrollment mounting at 1.2% to 95.3% above the capacity to accommodate. Except for the Kellits sub-region (1.2%), the rest of the sub-regions also experience double-digit rates of classroom overcrowding (i.e., 11.7% % - 48.2 %), whereby the construction of new schools would dispel this pressure. GIS location-allocation models presented an efficient

tool for school mapping and education planning to this effect. The model, which accounted for parameters like population demands, transportation infrastructure (accessibility), and school availability, selected three suitable sites for the new school construction. The sites were in the Vere, Chapelton, and Alston sub-regions of the Parish, where the rate of classroom overcrowding was on the higher end.

Although these findings are significant, the qualities are contingent on the accuracy of the data or parameters used in GIS for modeling. In Jamaica, GIS datasets are gathered from multiple agencies with limited standardized data collection and quality control protocols. A centralized GIS clearinghouse administered by a unit in the MoE monitoring standardized data collection, maintenance, and quality control would improve efficient future planning. Additionally, feasibility studies of the engineering structures, environmental impact assessments (Gala et al., 2011), and foundational and geological (soils) stabilities must be parameterized for better modeling practice. The inclusion of these parameters in further planning would improve the outcome.

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THE IMPORTANCE OF UNIVERSITY SETTINGS AND DESIGN FOR STUDENT SUCCESS IN SWEDEN

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ABSTRACT

People's quality of life and opportunities for activity are influenced by their surrounding environments. A substantial body of literature on the positive effects of nature and greenery has emerged during the last 50 years. Additional research has focused on other types of environmental qualities. While some Higher Educational Institutions (HEIs) are surrounded by parklands, others are located in more urban settings. This study focuses on the importance of environmental qualities, including greenery, for student success. After controlling for a number of factors established as important in previous studies, our results indicate that the presence of greenery in the immediate surroundings of HEIs is positively correlated with graduation rates. There is also no indication that other environmental characteristics have any correlation.

INTRODUCTION

Graduation is an obvious goal for most students, with retention being a crucial step along the way. Both are important to Higher Education Institutions (HEIs) as their role is to "produce" various skills and proficiencies for the benefit of society at large. Graduation and retention rates may also influence the allocation of resources to individual HEIs, although this varies both between and within countries.

Most research on variations in retention and graduation rates has focused on individual attributes (e.g., school grades or socioeconomic background) and/or organizational aspects of education. However, studies of human performance more generally have also paid considerable attention to physical environments. This study examines whether university settings (i.e., the physical areas surrounding HEI facilities) impact students' academic performance. On a more applied level, this can be rephrased as the question of whether student performance can be improved by (re-)designing university settings (primarily to include more greenery).

LITERATURE REVIEW

The general idea that humans benefit from contact with nature can be traced back to Aristoteles. There is an extensive body of literature in this field, with environmental psychologists playing a prominent role (for a recent overview see Silva et al., 2023). Even when focusing specifically on university students' relationships with nature and greenery, the number of studies is overwhelming (see van den Bogerd et al., 2020, for a comprehensive review). Most of these studies focus on students' stated perceptions or preferences, generally indicating positive views on nature. However, this does not necessarily mean that greenery has a positive effect on their academic performance.

A smaller part of this literature adds an "objective" perspective to students' views by relying on experiments rather than surveys. Participants, some of whom have been exposed to nature and others not, are typically asked to complete some form of measurable test or performative task. Recent studies include Chen et al. (2020), who observed superior cognitive performance among research subjects exposed to a wooded garden environment compared to a traffic island; Prentice & Waliczek (2021), who reported negligible differences in verbal and non-verbal abilities among students in outdoor versus indoor classrooms; and Kimura et al. (2023), who concluded that outdoor exercises, compared to indoor ones, increase neuronal activity in brain regions related to creativity. Most of these studies also report positive effects of exposure to nature. For a more comprehensive overview, see Mason et al. (2022).

Despite the positive relationships between greenery and students' perceptions and performances mentioned above, greenspace is not a common factor in general studies of prospective students' assessments of higher education facilities (see Hemsley-Brown & Opatka, 2015 for an overview), and where it has been considered, it has not been highlighted (Reynolds, 2007), nor is it given much prominence by HEI administrators (Bélanger et al., 2007). On the other hand, Temple (2014) suggests that attractive HEI environments may be a prerequisite to attracting and retaining students, rather than a sufficient factor (Winter & Chapleo, 2017).

The limited role ascribed to greenspace in attracting, retaining, and graduating students by administrators, as well as by students themselves, may explain the scarcity of empirical studies operationalizing these exact factors. Nonetheless, according to an American study by Hajrasouliha and Ewing (2016), the presence of green areas (as well as housing and general urban qualities) is positively related to both retention and graduation rates. However, Hajrasouliha (2017) is cautious about interpreting the results due to limited data and difficulties in revealing causal relationships. Moreover, in a follow-up study (Hajrasouliha, 2019), the relationships are weaker, and survey data on student perceptions do not match the objective explanatory data. The author discusses whether this discrepancy could be due to varying student expectations or difficulties in measuring important physical qualities. These challenges, and how to address them, have been further elaborated by Tanner (2014) and Earthman (2017, 2018), who point to the importance of measuring the environment in a way that allows for logical comparisons with student outcomes.

The factors included in general studies of student success and failure are often subdivided into two types, following the theoretical understanding within the field (Burke, 2019). *Individual factors* include school grades, as well as the usual attributes related to socioeconomic, ethnic, and demographic characteristics (Müller & Klein, 2023), but also factors such as term-time employment (Hovdhaugen, 2015) and whether a major subject has been declared (Pickenpaugh et al., 2022). In Sweden, factors such as prior knowledge/skills, gender, age, foreign background, and motivation to enter a study program have been found to be significant (Bertilsson et al., 2022; Carlhed, 2015, 2017b; Juura, 2019; UKÄ, 2017). Institutional factors refer to various attributes of HEIs. The ability to socially integrate new students into the academic community and provide them with a sense of belonging is often emphasized (Bowman & Culver, 2018; Chronholm & Andersson, 2011), but there are also studies on the importance of indoor environments (Earthman, 2017; Leijon et al., 2022), as well as student composition, size, and expenditure (Peng & Zhang, 2022). In Sweden, importance has also been attributed to the type of HEI and the educational program (Carlhed, 2017b; Dalberg, 2019; UKÄ, 2017).

Student retention and graduation obviously take place within a complex system with many influencing factors of various kinds (Forsman et al., 2014). Forsman et al. (2015) argue that a system-wide approach is needed to enhance student success. Another challenge for researchers is that data on key aspects of student success (e.g., retention, graduation) are operationalized and

measured differently across countries, and the prerequisites for higher education vary (Carlhed, 2017a, 2019; Earthman, 2018), as do the physical settings of HEIs. Nonetheless, comparable data are published, and if taken at face value, they indicate huge differences between countries, with poor indicators for Sweden (OECD, 2022).

THEORETICAL FRAMEWORK

The biophilia hypothesis, popularized by and often associated with the biologist Edward Wilson (1984), suggests that humans have a natural affinity for nature as a consequence of our evolutionary history. Thus, if humans generally benefit from contact with nature, it is not far-fetched to propose that such contact may also enhance study performance. Although the general consensus in the literature is that exposure to greenery improves people's performance, including that of students, the message is not unequivocal. While the mainstream literature on student performance focuses primarily on individual and institutional factors, these are not the central concern of this study. However, due to extensive empirical and theoretical support, we acknowledge their importance and will consider them. Since the mainstream literature on student retention and graduation often omits environmental qualities, the goal of the present study is to integrate these two, as yet rarely combined, bodies of literature.

It is also clear from the literature that comparing different study settings poses challenges, particularly because some key data are missing. Therefore, this study will be necessarily preliminary, tentative, and exploratory.

PURPOSE

The aim of this study is to provide preliminary insights into how the environmental qualities of higher education institution (HEI) environments relate to student performance. By exploring possible correlations between student performance across programs at Swedish HEIs and their surrounding environments—while controlling for student population characteristics—we contribute insights based on unique and detailed data. An indicator of student performance will be used as the dependent variable. In addition to indicators of HEI environmental qualities, several control variables will be included as independent variables to account for non-environmental attributes that are already known to influence student performance.

RQ1 Do the morphological settings of an HEI affect the performance of its students?

RQ2 Does the urban context of an HEI affect the performance of its students?

RQ3 Does a holistic assessment of HEI surroundings affect the performance of its students?

METHODOLOGY

Research Design

First, we collect and compile the necessary data, including data on student performance and the three dimensions presented in the research questions. Then, we explore the relationship between the HEI morphological and urban context dimensions and student performance in various programs across different locations at specific universities. After performing a set of Ordinary Least Squares (OLS) regression analyses on the relationship between performance and the variables representing these dimensions, we add variables to control for established explanations for variation in student performance and uncover any remaining significant correlations.

We chose to display the standardized coefficients from the OLS regressions. These represent the change in the dependent variable (performance) associated with a one-standard-deviation increase in the independent variables while controlling for the effects of other independent variables. Furthermore, we chose to weight the observations from each study program using the number of Full-time Student Equivalents (FSEs) in each program. This gives more weight to larger programs in our sample, and we believe that this is appropriate when observing programs of varying sizes. In addition to using aerial photography, maps, and satellite imagery data, the manually assessed restorative qualities presented below have also been included in the regressions, both with and without the "objective" data on campus morphological qualities. This serves to show how these holistically and manually collected qualities fare when compared to "objectively" gathered characteristics.

It should be noted that there is a strong autocorrelation between some of the variables describing the surroundings of the HEI buildings. The strongest indications of multicollinearity are found between the same variable at different buffer zones (i.e., the 50- or 400-meter buffer). Hence, to begin with, we make use of these variables together, but we chose to build a model where we can include as many variables as possible to increase explanatory power while restricting the inclusion of variables when tolerance values are below 10.

Research Setting: Sweden

The data employed in this study refer to 211 educational programs leading to specific vocational degrees (e.g., medical doctor, engineer, teacher, etc.) at 58 different addresses within 20 locations across five Swedish HEIs. They concern student performance, various attributes of the study locations, and background information about the students. Educational tracks at the studied HEIs, lacking sufficient data in these respects, have been excluded from the study.

The educational programs constitute the backbone of higher education in Sweden, and most of them are offered at several HEIs. In addition, there are also freestanding shorter courses available. Most of the higher education activities are arranged by the 35 state-controlled HEIs spread across the country. Among them are old and large universities as well as smaller, more recently founded university colleges.

In the standard Swedish reference on university morphology, Caldenby (1994) identifies four types of HEIs: *campus universities* (where academic premises, accommodation, and leisure facilities are provided for students and staff in a distinct locale), *commuter universities* (also in secluded locations, but lacking the complementary facilities characteristic of the campus type), *city universities* (integrated into their surrounding urban area), and *dispersed multi-site universities* (of varying morphologies). Calvo-Sotelo (2001) and van den Heijer et al. (2012) present similar taxonomies in other countries.

Nowadays, after centuries of expansion, the oldest universities in Sweden tend to be dispersed, while the HEIs of the postwar decades usually belong to the commuter type, and the city model constitutes the most recent ones. There are rarely any examples of campus universities in Sweden. Amcoff (2020) reports a tendency during the first decades of the 21st century to re-localize Swedish university facilities to more central locations.

The HEIs included in this study are two city universities with various urban morphological qualities, as they are spread out across the cities. Additionally, there are two commuter universities located slightly outside city centers but lacking some of the facilities associated with traditional campus sites, and one university situated outside a densely built-up urban area.

Research Instruments

In this study, we used register data as well as data on HEI surroundings based on both secondary sources and information collected by the authors. The aggregated data on student performance and the student population composition of the different study programs come from the Swedish Higher Education Authority (UKÄ), while admission data was supplied by the Swedish Council for Higher Education (UHR). Study programs have been linked to geographical locations by geocoding their host departments. Register data from Statistics Sweden (SCB) was used to gather information on housing and amenities around each study location. Data collection on the HEIs' other environmental and morphological attributes was made possible using detailed maps, aerial photography, and lidar data, all sourced from the Swedish Land Survey Agency (Lantmäteriet). Additionally, Google Earth imagery has been used as a complement. Finally, the Swedish Transport Administration (Trafikverket) provided data on roads and street networks, allowing for the estimation of road intersection density. Several of these data sources were combined to calculate connectedness to surrounding urban areas. Using GIS, we matched all variables to the HEI premises of each department hosting a program in our study.

Variables

The selection of variables is inspired by the work of Hajrasouliha (2017) in the U.S.A. However, we need to consider that Sweden differs in terms of HEI morphologies, as well as the educational system and data availability (Carlhed, 2017a).

Our dependent variable, student *performance*, is operationalized as the share of passing grades among the number of FSEs in an educational program. FSE measures the number of students enrolled in a program divided by the total coursework they are enrolled in, thus accounting for the occurrence of part-time students.

To operationalize the "surroundings of HEIs", two sets of geographical proximity buffers have been constructed around each HEI building hosting a studied educational program. A 50-meter buffer aims to capture the students' experience of the environment directly outside the university buildings, as seen from the windows or experienced during short breaks, while a 400-meter buffer aims to capture the students' experience of the environment when walking or biking to and from the respective HEI buildings.

Table 1 presents descriptive statistics for the variables used in our empirical analyses. The first section displays our independent variables of primary interest relating to the HEIs' morphological dimensions, all of which refer to locations within the respective buffers. The *density of buildings* is measured as the built-up share of the buffer area.

Table 1.
Descriptive statistics of variables in the analysis, with definitions

	Variable type	Variable name	Variable definition	N	Mean	S.D.	Min.	Max.
HEI morphological dimension	Compactness	Density of buildings 50	Share of built-up area – 50-meter buffer	195	0.23	0.05	0.07	0.45
		Density of buildings 400	Share of built-up area – 400-meter buffer	202	0.15	0.07	0.03	0.36
	Greenery	Permeable land 50	Share of non-solid permeable ground – 50-meter buffer	202	0.39	0.08	0.07	0.70
		Permeable land 400	Share of non-solid permeable ground – 400-meter buffer	202	0.48	0.15	0.18	0.86
		Tree canopy 50	Tree canopy coverage- 50-meter buffer	201	0.18	0.06	0.03	0.49
		Tree canopy 400	Tree canopy coverage – 400-meter buffer	202	0.24	0.09	0.08	0.34
	Street network	Road intersections 50	Road intersections per area – 50-meter buffer	195	0.57	0.33	0.14	1.41
		Road intersections 400	Road intersections per area – 400-meter buffer	202	0.46	0.21	0.14	0.86
		Connectivity 50	Road network integration to surrounding area- 50-meter buffer	195	1.44	0.21	0.95	1.92
		Connectivity 400	Road network integration to surrounding area- 400-meter buffer	202	1.38	0.14	1.09	1.87
	Restorative qualities	Restorative qualities	Campus premises deemed to have three or more of the restorative environmental qualities in their vicinity	197	0.66	0.47	0.00	1.00
Urban context dimension	Population and housing	Housing density 50	Number of residential properties – 50-meter buffer	195	3.10	4.79	0.00	23.00
		Housing density 400	Number of residential properties – 400-meter buffer	202	97.04	67.45	1.00	329.00
		Student housing density 50	Number of student housing properties – 50-meter buffer	197	0.68	0.84	0.00	3.00
		Student housing density 400	Number of student housing properties – 400-meter buffer	197	7.80	11.37	0.00	61.00
	Services	Stores 50	Number of retail stores – 50-meter buffer	195	1.92	5.18	0.00	68.00
		Stores 400	Number of retail stores – 400-meter buffer	202	14.43	27.61	0.00	224.00
		Restaurants 50	Number of restaurants – 50-meter buffer	195	4.14	3.75	0.00	20.00
		Restaurants 400	Number of restaurants – 400-meter buffer	202	20.37	22.77	1.00	137.00
		Other Services 50	Number of other consumer services – 50-meter buffer	195	0.74	2.14	0.00	28.00
		Other Services 400	Number of other consumer services – 400-meter buffer	202	17.30	24.52	0.00	170.00

Table 1 (continued).
Descriptive statistics of variables in the analysis, with definitions

	Variable type	Variable name	Variable definition	N	Mean	S.D.	Min.	Max.
Student population characteristics dimension	Gender	Female students	Share female students in program	199	0.49	0.19	0.22	0.95
	Education	Tertiary educated parent(s)	Share of students with at least one parent having at least 3 yrs of tertiary education	199	52.92	13.47	21.29	76.86
	Age	Age -24	Share of students -24 years old	198	0.61	0.13	0.21	0.77
		Age 25-34	Share of students 25-34 years old	198	0.32	0.08	0.21	0.55
		Age 35-	Share of students 35- years old	198	0.07	0.07	0.01	0.34
	Admission points	Admission	Lowest admission points for program - based on GPA from upper-secondary school	202	18.17	2.13	11.96	22.29
	n Students	FSE	Number of full-time student equivalents (per year)	202	176.81	305.14	3.25	1973.93
	Level of performance	Performance	Share of passing students among FSE	202	0.88	0.08	0.54	0.99

Source: Authors' calculations, using data from UKÄ, UHR, Statistics Sweden, and Lantmäteriet.

Following that, we have two measures of greenery: share of *permeable land* and *tree canopy* coverage. Three datasets were used to create the greenery variables: a detailed national topographic map (Fastighetskartan), multi-band aerial photography, and lidar point cloud data. For verification and digitization purposes, aerial photography was utilized. The method developed to identify permeable land and tree canopy involved first applying a Maximum Likelihood classifier to segment each HEI location into several land cover classes based on spectral distinctness. Each classified area was then manually compared with recent orthophoto and Google Earth imagery to assign it to a category of permeable, impermeable, or water. Road and building data from the digital map "Fastighetskartan" were processed into a raster and used as a mask for non-permeable surfaces. In the case of road line data, a buffer of 4 meters was first applied, assuming a road width of 8 meters. This updated the original multi-band imagery and allowed impermeable surfaces to be identified even when obscured in the image by tree canopy. Large natural or semi-natural water bodies available in "Fastighetskartan" were considered "permeable" in this context and also masked over the classified data.

Total area and class ratios were extracted per reporting unit using ArcGIS Pro Zonal Statistics as follows: The tree canopy count represents the number of cells with a value of 1 per reporting unit in a binary raster where 1 indicates canopy coverage. We utilized the mean cell value per HEI premise. Permeable land reports the mean cell value using the same type of binary raster.

Next, there are two measurements of the road network. *Road intersections* are measured as the density of street intersections per buffer. The *connectivity* variable is a so-called network integration analysis based on axial lines. The integration analysis, employing seven steps, considers the entire street network in the city to capture how well integrated an area is to its surroundings.

The presence of eight sensory characteristics (serene, natural, cohesive, diverse, shelter, open, cultural, social) in the surroundings of HEIs has been determined through a holistic method developed within environmental psychological research in Sweden (Skärbäck et al., 2016). The extent to which three or more of these manually assessed *restorative qualities* are present in the HEI surroundings has also been used as an independent variable.

In the urban context dimension, variables describing the number of *restaurants, stores, other consumer services*, as well as *housing units* and the proportion reserved for *student housing*, are listed (Table 1). However, in the analysis, we compute the density of these units in each buffer simply dividing the number of units (e.g., restaurants) by the size of the respective area buffers. While these are referred to in the same way in both Table 1 and the following tables, the tables differ in this respect.

Finally, the student population characteristics dimension describes the *gender, age, educational background* composition, and *admission levels* (using upper-secondary school GPAs; Grade Point Average) for the university programs (Table 1). We only use the upper-secondary school GPA required for admission as the measure of the difficulty level to enter a specific program at a specific university. There are several other ways to gain admission to different programs; however, we use the most common and comparable method to ensure consistency. We choose to separate the top 10% of programs with the highest admission points from the rest. This is because there are very small differences between most programs, and we want to highlight those that attract very high-achieving students.

The admission data spans the years 2015 to 2018, and the mean of the admission points is used. The performance measure is calculated using 2020 data, allowing for students who were admitted in, for example, 2015, to be included in the 2020 data five years after their admission. However, a drawback is that we do not have access to individual-level data and are thus unable to follow specific students through their educational careers. The remote sensing data describing the

HEI environments refer to 2010 and have been updated with map data as of 2022. The data on urban context refer to 2017. Since these quantities are fairly stable over a few years, this is not considered problematic. Due to the small changes in HEIs' characteristics, their locations, and surrounding features over time, the different time points of data collection pose a minor problem.

FINDINGS

First, we present an overall analysis of the relationship between variables representing the HEI morphological dimension and student performance. Secondly, we focus on the variables of the urban context dimension. Thirdly, we examine the (background) variables in the student population characteristics dimension. Afterward, we conduct analyses with all dimensions included in the same model. In all models, we control for admission points, as they potentially affect student performance.

HEI's Morphological Dimension

Both building density measures (at 50 and 400 meters) are non-significant but positively associated with student performance. The same observation applies to road intersections and connectivity. Tree canopy within the 400-meter buffer is negatively associated with student performance and significant, whereas the share of permeable land shows non-significant results (positively associated with student performance within 400 meters but negatively within 50 meters). This latter variable (permeable land) introduces multicollinearity issues when both the 50- and 400-meter buffers are used. Excluding the 400-meter buffer alleviates these issues without altering the interpreted effects of the other variables.

Table 2
OLS regression results, HEI morphology. Dependent variable: Performance. Displaying standardized coefficients. N=201 study programs

		Density	Intersections	Connectivity	Greenery
Variables	Std. coef. (S.E.) Sig.	Std. coef. (S.E.) Sig.	Std. coef. (S.E.) Sig.	Std. coef. (S.E.) Sig.	Std. coef. (S.E.) Sig.
Top 10% admission points	0.236(0.01)***	0.209(0.01)**	0.233(0.01)**	0.2(0.01)**	0.221(0.009)**
Density of buildings 50		0.027(0.08)			
Density of buildings 400		0.08(0.06)			
Road intersections 50			0.128(0.02)		
Road intersections 400			0.05(0.03)		
Connectivity 50				0.08(0.023)	
Connectivity 400				0.078(0.028)	
Tree canopy 50					0.12(0.077) -0.369
Tree canopy 400					(0.079)**
Permeable land 50					-0.091(0.063)
Permeable land 400					0.178(0.049)
R^2	0.056	0.064	0.066	0.072	0.135

Notes: Sig: *=0.010, **=0.005, ***=0.001
Sources: Authors' calculations, using data from UKÄ and Lantmäteriet.

Urban Context Dimension

Within the 50-meter buffer, housing density is positively correlated with student performance, while student housing density is negatively associated. In contrast, within the 400-meter buffer, housing density does not show any significant correlation with student performance, but student housing density does (positive). Additionally, the density of stores shows a positive and significant association with student performance in the 50-meter buffer. However, in the 400-meter buffer, student housing density is negatively associated with performance. The restaurant variables exhibit non-significant associations. Due to multicollinearity issues, we excluded the other services and stores-variables from the 400-meter buffer.

Table 3
OLS regression results, urban context of HEIs. Dependent variable: Performance. N=202 study programs

	Urban context
Variables	Standardized coef. (S.E.) Sig.
Constant (unstandardized)	0.913(0.01)***
Top 10% admission points	0.191(0.01)**
Stores 50	0.325(4.25)*
Restaurants 50	-0.154(11.24)
Student housing density 50	-0.364(50.51)***
Housing density 50	0.334(8.65)**
Restaurants 400	-0.208(142.58)
Student housing density 400	0.588(261.99)***
Housing density 400	-0.267(0.61)
R^2	0.160

Notes: Sig: *=0.010, **=0.005, ***=0.001
Source: Authors' calculations, using data from UKÄ, UHR and Statistics Sweden.

The literature on student performance highlights several other dimensions that may affect the correlations we have presented so far. In the OLS regression models below, we add several measures that indicate the composition of the student population in different programs.

Student Population Characteristics Dimension

Even after controlling for admission points, the share of students with tertiary-educated parent(s) and the share of female students are positively correlated with student performance, while the shares of students younger than 25 and older than 34 are negatively correlated, albeit not significant. Given the literature review above, several other control variables could have been included, but data constraints have made their inclusion unfeasible for this study. In any case, these results correspond well to findings from previous studies.

Table 4:
OLS regression results, student composition in program.
Dependent variable: Performance N=197 study programs

Variables	Standardized coef. (S.E.) Sig.
Constant (unstandardized)	0.796(0.053)***
Top 10% admission points	0.092(0.01)
Tertiary educated parent(s)	0.39(0)***
Female students	0.676(0.025)***
Age -24	-0.239(0.061)
Age 35-	0.259(0.122)
R^2	0.354

Notes: Sig: *=0.010, **=0.005, ***=0.001
Sources: Authors' calculations, using data from UKÄ and UHR.

Morphological Structure, Urban Context and Student Population Composition

Finally, we include all three dimensions (HEI morphology, urban context, and student population characteristics) in a single OLS regression. When using all variables in the same model, instances of multicollinearity arise. Therefore, certain variables have been omitted. There are various considerations when dropping variables, and we chose the strategy that maximizes the explanatory power of the full model. The excluded variables related to the urban context dimension are the density of stores and housing units in the 50-meter buffer, as well as the density of restaurants and housing units in the 400-meter buffer. Variables introducing multicollinearity from the HEI morphology dimension include connectivity to the surrounding area using the 50-meter buffer, the density of road intersections in both the 50- and 400-meter buffers, the average distance between buildings in the 50- and 400-meter buffers, and the density of buildings within the 400-meter buffer.

Table 5:
OLS regression results, all dimensions. Dependent variable: Performance. N=189 study programs. (Standardized coefficients)

Variable type	Variable	Standard. Coef. (S.E.) Sig.
Admission	Top 10% admission points	0.247(0.015)*
Student population characteristics	Tertiary educated parent(s)	0.239(0.001)*
	Female students	0.508(0.031)***
	Age -24	-0.37(0.084)*
	Age 35-	-0.41(0.177)**
Urban context	Restaurants 50-	-0.007(8.2620)
	Student housing density 50	-0.289(47.915)**
	Student housing density 400	-0.152(273.75)
HEI morphology	Tree canopy 50	0.329(0.099)*
	Tree canopy 400	-0.3(0.093)*
	Permeable land 50	-0.371(0.08)**
	Connectivity 400	0.128(0.029)
	Density of buildings 50	0.159(0.002)
	Adj. R^2	0.458

Notes: Sig: *=0.010, **=0.005, ***=0.001
Source: Authors' calculations, using data from UKÄ, UHR, Statistics Sweden and Lantmäteriet.

After removing variables that introduce multicollinearity, we are left with the variables presented in Table 5. This model shows a positive and significant association between student performance and tree canopy coverage in the immediate surroundings (50-meter buffer), as well as a negative and significant association with tree canopy coverage in the 400-meter buffer and permeable ground in the 50-meter buffer. Other aspects of HEI morphology are non-significant, as are the characteristics of the urban context dimension, with the exception of the negative association between performance and student housing in the 50-meter buffer. We report expected results from the student population characteristics dimension: a high share of students with tertiary-educated parents and a high share of female students are positively associated with student performance, whereas high shares of young (-24 years) and older (35- years) students are negatively related.

Thus, to the extent that we can draw conclusions about the effects of morphological qualities on student performance, it seems that greenery within a 50-meter buffer is positively associated with student performance. In contrast, using 400-meter buffers finds negative associations between tree canopy coverage and student performance. An alternative model with adjustments for dropped variables still displays the same significant associations as reported in Table 5. When using all explanatory variables in the same model (despite issues with multicollinearity), positive associations between local greenery and denser, more urban qualities in the 400-meter buffer zone and performance are also observed.

Using A Holistic Model to Categorize Campus Qualities

When using the three restorative qualities (manually assessed on site) in the OLS regression model, we find that student performance is positively correlated to presence of such areas in the vicinity. When adding control variables for the student population characteristics dimension and variables representing the urban context dimension using the 50-meter buffer, the restorative qualities remain significant and display a positive correlation with performance. However, in this model, there is multicollinearity among the variables describing the surroundings of the HEIs. From a potential full model, we exclude the density of stores in the 50-meter buffer, the permeable land measure in the 50-meter buffer, as well as the density of road intersections, connectivity, and housing unit density in the 400-meter buffer. There are various strategies for dropping variables to create a model that does not suffer from severe multicollinearity. An alternative model tested yields insignificant results for the restorative qualities while still showing the tree-canopy variable at the 50-meter buffer to be positively and significantly correlated with student performance.

Table 6:
OLS regression, all dimensions and restorative qualities. Dependent variable: Performance. N=190 study programs. (Standardized coefficients)

Variable dimension	Variable	Standard. Coef. (S.E.) Sig.
Student population characteristics	Restorative environmental qualities % of HEI area	0.142(0.009)*
	Top 10% admission points	0.27(0.014)**
	Tertiary educated parent(s)	0.265(0)*
	Female students	0.65(0.004)***
	Age -24	-0.275(0.083)
	Age 35-	-0.409(0.191)*
Urban context	Restaurants 50-	-0.141(14.427)
	Student housing density 50	-0.13(68.098)
	Housing density 50	-0.202(11.326)
	Restaurants 400	0.224(152.911)
	Student housing density 400	-0.236(312.322)
HEI morphology	Tree canopy 50	0.203(0.087)
	Tree canopy 400	-0.458(0.1)**
	Connectivity 400	0.286(0.028)
	Road intersections 50	0.012(0.024)
	Adj. R^2	0.456

Notes: Sig: *=0.010, **=0.005, ***=0.001
Source: Authors' calculations, using data from UKÄ, UHR, Statistics Sweden, and Lantmäteriet.

Summing up the findings in Tables 5 and 6 suggests that local greenery (measured here as tree canopy) and measures that allow for a more comprehensive assessment of local restorative qualities are important for student performance. However, these different types of measures, across varying geographical scales, tend to be autocorrelated in our models. This poses a challenge for using this type of regression analysis—at least with this relatively small number of observations. Despite these challenges, we conclude that student group composition needs to be included when measuring performance and that local qualities, such as greenery or other restorative features within a broader context of more urban environments, are positively correlated with student performance at Swedish HEIs.

DISCUSSION

The empirical approach in this paper is purely correlational and must be interpreted with the narrow sample of study environments in mind. That being said, some findings are similar to earlier research efforts and deserve attention, thus expanding the knowledge base in this field with the help of the Swedish case.

Turning to the educational programs and the background characteristics of the student populations within them, four points can be made. First, we find that higher admission points to a study program correlate with higher success rates for students. However, when considering whether a program belongs to the top 10% categorized by admission points, it becomes clear that those programs have even higher success rates. Second, female students consistently outperform male students across different school systems, and this trend is evident in our data as well. Success rates tend to increase with the proportion of female students. Third, we find that high proportions of unusually young or old students negatively impact success rates. This may be explained by younger students having less experience and possibly experimenting with their trajectories through (the free) higher education. Students aged 25 to 34 comprise the core group at Swedish universities. Fourth, and finally, parental educational background is correlated with student success. A higher proportion of students with tertiary-educated parents is positively associated with performance at the study program level. These results are expected and align with the mainstream research on retention and graduation.

When analyzing the urban context using data on the occurrence of restaurants, shopping options, and housing characteristics, we do not find any significant correlations to report from the full OLS regression models. Hajrasouliha (2017) found campus living to be important. Although proper campuses are absent among Swedish universities, student housing density within 400 meters of HEI locations does not show any significant influence on student performance in this study. However, within the 400-meter buffer, we find a positive and significant correlation between student success rates and the density of student housing units when analyzing only the urban qualities related to performance. That said, there are no significant correlates—at least not when controlling for other factors—regarding connectivity to the rest of the urban area, road intersection density, or other urban qualities used in the regressions.

Finally, turning to the main dimension of interest here—HEI morphology—we find a positive correlation between greenery, measured as tree canopy coverage in the immediate surroundings (within 50 meters) of a study location, and student performance. The measure of restorative qualities of the various study premises also displays positive correlations with success rates. Taken together, we find positive correlations between student performance and local greenery in the immediate surroundings of HEIs. Judging by previous studies (e.g., Hajrasouliha, 2017) in combination with our model results, our tentative conclusion, despite non-significant outcomes, is that density in the HEI settings and their connections to surrounding urban areas may also be

positively related to student performance. Environmental qualities farther away do not show any (positive) relationship.

LIMITATIONS OF THE STUDY

A few caveats need to be highlighted. Our results assume that students spend a lot of time at the HEI location where their respective study program is administratively located. This may not necessarily be the case (cf. Beckers, 2016). Additionally, we cannot control for all individual-level characteristics, institutional factors, or building interiors—factors that earlier research has found to be important. We also need to highlight possible selection effects. Urban universities, which are often several hundred years old, are popular. This increases the number of motivated students seeking their way through higher education at these prestigious institutions. These HEIs are also often located in urban environments, frequently with park space in the vicinity. It may be the case that this is the reason we find positive correlations between performance and local greenery in urban contexts.

IMPLICATIONS FOR PRACTITIONERS

Judging by the results of this study, educational planners keen to increase student performance will achieve the greatest effect by recruiting the best individual students (females, between 25 and 34 years old, with well-educated parents, and/or those with high upper secondary GPAs). However, while marketing campaigns could be directed toward students with these attributes, they will at best have some influence on their choice of HEI. Yet, the environmental qualities of HEI surroundings can often be influenced to a much higher degree by HEI administrators. Fortunately, our findings also suggest that these environmental qualities affect student performance. HEIs can take advantage of this effect by ensuring the presence of tree canopies and/or restorative greenery in the immediate surroundings of their educational premises and facilities.

FUTURE RESEARCH

Our results indicate directions for future research that should include individual-level data, such as the distribution of eight perceived sensory dimensions and their interplay in and around HEIs. Additionally, a larger sample of university settings would allow for multi-level modeling that considers both the university level and the different typologies of HEI environments identified in previous research within the Swedish context. Data on indoor learning environments, as well as institutional data on various educational tracks, would also be of great importance. Such a study, preferably using longitudinal data and more detailed information on actual courses, would enable conclusions to be drawn that could guide university administrators in planning and building HEI premises to increase the chances of student retention and success.

CONCLUSION

The research presented here has examined the possible effects of the physical surroundings of HEIs on student performance. We find no evidence of an effect from any specific urban context (RQ2), but there are indications that greenery in the immediate surroundings of HEI facilities may have a positive impact, whether it is operationalized as tree canopies (RQ1) or through a holistic assessment of the locales (RQ3). However, individual attributes (used as control variables here) appear to have a much greater effect.

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GENDERED REFLECTIONS ON THE IMPACT OF COVID-19 ON THE RESEARCH CULTURE IN TWO WEST AFRICAN UNIVERSITIES

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ABSTRACT

Globally, the Coronavirus (COVID-19) pandemic caused disruptions in socio-economic activities. It did not spare higher education institutions, and the research culture was the most affected area. Compared to industrialised countries, relatively little research has been conducted in West Africa on the impacts of COVID-19, especially considering research ecosystems and researchers. This motivated the present study, which explores how the pandemic affected African research culture from a gendered perspective. Specifically, this study focuses on two universities in West Africa: University of Cape Coast in Ghana and Université Félix Houphouët-Boigny in Côte d'Ivoire. Using data collected in these two universities, we examined the gender-specific impacts of COVID-19 on research culture in these institutions. The pandemic negatively affected time allocation to research, research funding and output, academic mobility, and career ambitions of researchers. The effects of the pandemic have been differently experienced by male and female researchers, particularly in terms of time allocation to research, research funding and career ambitions. Based on our findings, we recommend that West African higher education decision-makers increase budgetary allocations for research and implement targeted incentives to promote gender equality in academia. Additionally, we recommend that African HEIs develop and implement policies that foster an inclusive research culture.

INTRODUCTION

The COVID-19 pandemic escalated significantly in March 2020, leading to health and safety measures under the guidance of the World Health Organization and relevant national bodies. The pandemic has had significant socio-economic consequences on societies, as evidenced in recent literature on economic production (Glocker & Piribauer, 2021; Morgan et al., 2021), teaching and learning (Ansah et al., 2024; Pokhrel & Chhetri, 2021; Rossiter & Abreh, 2020), and mental health (Jones et al., 2021; Proto & Quintana-Domeque, 2021), among others. Given the varying levels at which societies and livelihoods have been affected, it is crucial to explore the effects of the pandemic through the perspectives of different actors and consider various factors and geographic regions. This article contributes to the body of literature on the impact of COVID-19 on research culture in African higher education institutions (HEIs) from a gender perspective.

LITERATURE REVIEW

Globally, education institutions have experienced disruptions of varying severity due to the pandemic, evidenced in the early literature on COVID-19 (Adedoyin & Soykan, 2020; Daniel, 2020; Grant etal., 2023; Liang et al., 2020). To ensure continuity of learning, many HEIs transitioned to online teaching and learning modes amidst various challenges (Essah et al., 2022; Llerena-Izquierdo & Ayala-Carabajo, 2021). Some challenges, especially in developing settings, included access to appropriate technological tools, internet and connectivity challenges and technical know-how of the end-users. These challenges, as reported in existing literature (Kaup et al., 2020; Mills et al., 2023; Neuwirth et al., 2021) posed threats to the capacity of faculty to deploy teaching and support students and pursue research activities, raising essential questions about how COVID-19 has affected research culture in HEIs.

Existing studies also explored the impacts of COVID-19 on research resources (Omeluzor et al., 2021; Radecki & Schonfeld, 2020) and geographical mobility (Hedding et al., 2020), as well as its effects on research culture and the continent's contribution to COVID-19 research. While Gwenzi and Rzymski (2021) raising concerns about the absence of African countries and universities in the global COVID-19 research, (Nowakowska et al. (2020) it was demonstrated that Africa's contribution to this body of research has been exceptionally low. Moreover, existing evidence indicates that research projects across various regions have faced significant disruptions (Goolam, 2020). In Africa, 85% of HEIs reported that COVID-19 adversely impacted research activities within their institutions (Marinoni et al., 2020). Nevertheless, assessing the impacts on the academic space, which is investigated across genders, remains a notable research gap.

West African countries were also affected, as the SARS-COV-2 virus spared no region. Figure 1 shows the evolution of infections using Johns Hopkins University (2022) data. On 24th March 2022, the total number of positive cases in West Africa was 901,124, with 855,233 recoveries and 12,161 deaths. In the two countries considered in this study–Ghana and Côte d'Ivoire–there were significant differences in the number of cases and recoveries; specifically, in Ghana, there were 160,894 and 159,277 positive cases and recoveries. In contrast, approximately half of these tallies were observed in Côte d'Ivoire (See Figures 2 and 3).

Amid the pandemic, West African countries adopted response plans, including wearing facemasks and maintaining physical distancing (ECOWAS Commission, 2021). In addition, the University of Cape Coast (UCC) and Université Félix Houphouët-Boigny (UFHB) adopted local policies to reduce infections among students and faculty, such as discontinuing face-to-face teaching and learning and limiting access to libraries and research laboratories.

Fig. 1: COVID-19 in West Africa: Number of new cases confirmed daily

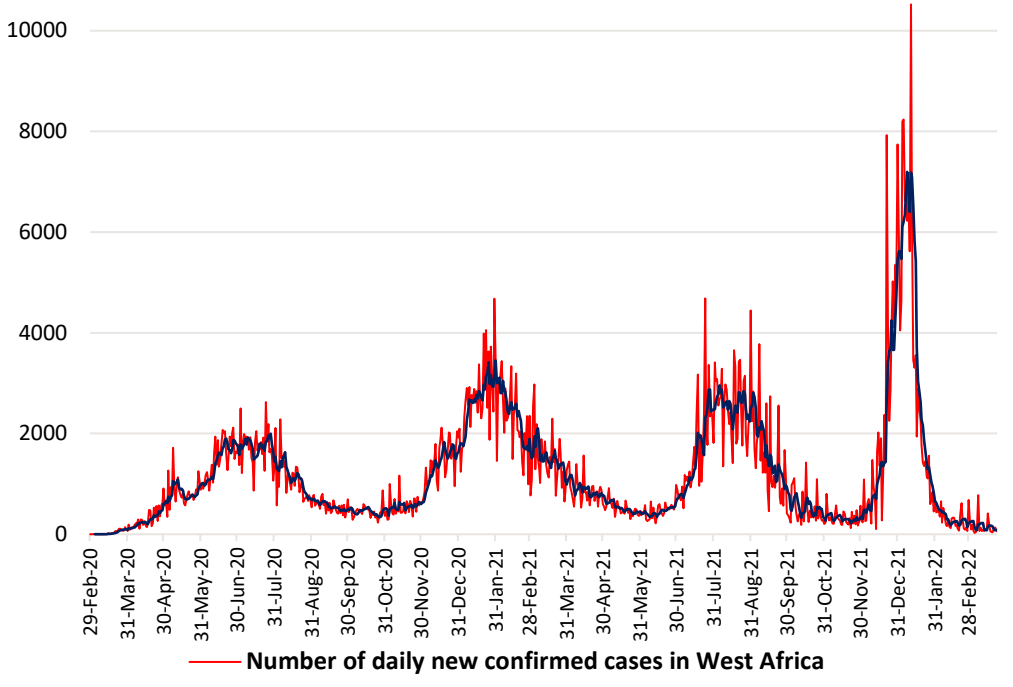


Fig. 2: COVID–19: Confirmed cases, recoveries and deaths, 24th March 2022

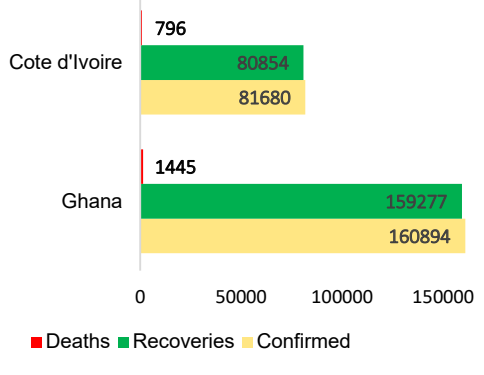
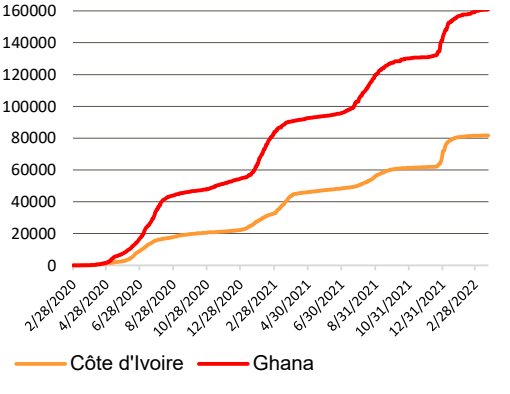


Fig. 3: Evolution of new cases confirmed



PROBLEM STATEMENT AND SIGNIFICANCE OF THE STUDY

Research in the West African context mainly focused on the impact of COVID-19 on teaching and learning, neglecting research culture. Specifically, studies of the effects of COVID-19 on time allocation to research, geographical mobility, and research output, among others, have received limited attention. Finally, challenges induced by the pandemic for research activities and culture examined across genders are overlooked, representing a notable knowledge gap. Our work aims to address these key knowledge gaps.

We argue that gender disparities in academia may have been exacerbated by the pandemic, affecting male and female academics differently. Exploring this is crucial for policymakers and educational leaders to foster an inclusive and resilient research environment. Therefore, investigating the gender-specific effects of COVID-19 on research culture in West African public universities is essential to address existing gaps in terms of both knowledge generation and targeted interventions.

To our knowledge, this is one of the few studies providing a gender-based analysis of how the pandemic has affected the academic space in this region. Specifically, the study investigates the differential effects experienced by male and female researchers, focusing on five factors: time allocation for research, access to funding, research outputs, geographic mobility, and career progression. By examining these elements, this work aims better to understand researchers' gender-specific challenges during the pandemic, ultimately informing more equitable support mechanisms for academic staff in West African HEIs.

THEORETICAL FRAMEWORK

This study on how COVID-19 affected the academic space in West Africa adopts Moser's (1993) the Triple Roles Framework to propose a gender-based analysis. The framework's relevance to gender studies, particularly in male-dominated spaces such as public HEIs in the region, makes it a valuable tool for examining the differential impacts on male and female researchers. By employing this framework, the study seeks to explore the gendered effects of COVID-19 in HEIs, shedding light on the distinct experiences of women and men.

Moser's (Triple) Roles Framework illustrates how women's multiple societal roles (reproductive, productive and community activities) can lead to over-burdening, reducing time and resource allocation to any single role. Applying this perspective to the academic sphere, the study investigates how women's social and contextual roles were influenced by the COVID-19 pandemic and related challenges, acting as either accelerators or barriers to achieving gender equality in academia.

During the COVID-19 pandemic, mentioning similar empirical studies, such as those by Staniscuaski et al. (2021) and Caldarulo et al. (2022), is instructive. These studies leveraged Gender Role Frameworks (Moser, 1993; Kroska, 2007) to show how female academics, especially (black) women, were most affected in terms of reduced productivity (meeting deadlines, submitting papers, etc.) within the space of unequal division of domestic labour. However, this is not the case for every woman academic, who may have had different experiences due to their unique position, roles, and access to resources.

In summary, research culture and productivity in higher education are intricately linked to sociocultural factors, such as gender norms, and other contextual elements (such as resource availability, psychosocial health, and well-being). Still, they are mediated by individual factors (including age, marital status, agency, etc.). Guided by Gender Role Frameworks, this study seeks to deepen the understanding of how emergencies like the COVID-19 pandemic influence gender dynamics within the research space.

RESEARCH QUESTIONS

This study investigates the gendered impact of the COVID-19 pandemic on the research culture in two West African public universities. To achieve this objective, the following research questions guided our analysis:

1. How has the COVID-19 pandemic impacted the research culture of universities in West Africa across the five indicators: time allocation for research, access to funding, research outputs, geographic mobility, and career progression?
2. Does the impact of the COVID-19 pandemic, measured through the five key indicators (time allocation for research, access to funding, research outputs, geographic mobility, and career progression), exhibit gender differential?

METHODOLOGY

Research Design and Data Collection

To probe the effect of the COVID-19 pandemic on the research culture in West African universities and its differences across genders, this study has developed and deployed data collection instruments. Hence, the data were collected through surveys administered between August and November 2021 at two West African public universities: UCC in Ghana and UFHB in Côte d'Ivoire. The data collection instruments, in English and French, have been collaboratively developed with the research partners from both universities to include elements of research culture likely to be affected by COVID-19-related challenges. Ethical approval was obtained from the institutional review boards of both universities, and informed consent was secured from all participants before data collection.

Data were collected using a structured questionnaire developed specifically for this study. The questionnaire was divided into four main sections:

1. Demographics: Collecting information on age, gender, marital status, academic rank, and years of experience.
2. Time Allocation for Research: Assessing changes in time dedicated to research activities before and during the pandemic.
3. Access to Funding: Evaluating the ease of obtaining research grants and funding during COVID-19.
4. Career Progression and Research Outputs: Measuring perceived impacts on career advancement opportunities and research productivity.

The questionnaire was pilot-tested with a small group of academics at UCC to ensure clarity, reliability, and validity. Based on pilot feedback, minor modifications were made to enhance comprehensibility and relevance. Appendix 1 presents the survey instruments or questions for this study.

By November 2021, a total of 75 and 180 academics (faculty members) from UCC and UFHB, respectively, responded to the survey. It is also important to mention that, given COVID-related social distancing measures, closure of laboratories and halt in face-to-face academic interactions at the time of the data collection, we could not rely on (or use) probabilistic determination of sample use. Therefore, we consider the number of responses, 255, sufficient for the analysis. Table 1 describes the respondents by HEIs, gender composition and age groups. The gender composition was approximately 69% male and 31% female at UCC, and 70% male and 30% female at UFHB. Participants' ages were categorised as less than 30 years, 30-44 years, 45-59 years, and 60 years and above, as detailed in Table 1.

Table 1: Sample description

University	Respondents	Male/Female	Age groups, %			
			Less than 30	30-44	45-59	60 and +
UCC	75	69% / 31%	8.45%	52.11%	38.03%	1.41%
UFHB	180	70% / 30%	3.05%	34.76%	52.44%	9.76%

A review by academic disciplines (see Fig. A-1., in Appendix) reveals that most respondents are Social Scientists, comprising around 50% at both UCC and UFHB, followed at UCC by 'Art and Humanities' and 'Agriculture and Natural Sciences', and at UFHB by 'Medical, Health and Life Sciences' and 'Agriculture and Natural Sciences.'

Data Analysis

Based on the research questions, we adopted a two-step approach. This involved assessing how the pandemic has affected research culture across genders and testing whether the observed differences are significant for all five indicators.

First, we use descriptive statistics to display responses to survey questions related to how researchers experienced the impacts of COVID-19 on research. By doing this, we dissociate responses from male academics from their female counterparts to show gender differential. This step presents the effects of COVID-19 as reported by male and female scholars. However, it does not help reach clear conclusions on whether the impacts of COVID-19, as reported, are statistically significant across gender, and this observation applies to all five indicators.

Second, we use inferential statistics techniques to test the differences across genders. Two simple methods to do this are the Welch two-sample t-test and a regression model that includes a gender indicator. We adopt the latter approach due to its practicality (the results of the Welch two samples t-test are reported in the Appendix). Intuitively, the regression model probes whether gender predicts the reported impact of COVID-19 on various aspects of research culture. If this is the case, then one concludes that the effect of COVID-19, as reported by male and female academics, shows gender disparities (differently experienced across genders).

Compared to the first-step approach, applying the second-step approach (regression analysis) requires recoding the responses using a Likert-type scale. Doing this, we are aware that applying the ordinary least squares method to data recorded by exploiting a Likert-type scale, similar to count data, may be subject to debate (see Cameron & Trivedi, 2013). Therefore, we check the robustness of our initial results using the well-known Welch's two samples t-test and report the results in the Appendix.

FINDINGS

To present the findings, we will consider the five key indicators of research culture: time allocation for research, funding, research outputs, geographic mobility, and career progression. To address our research questions for each indicator, the two-step method described above is used.

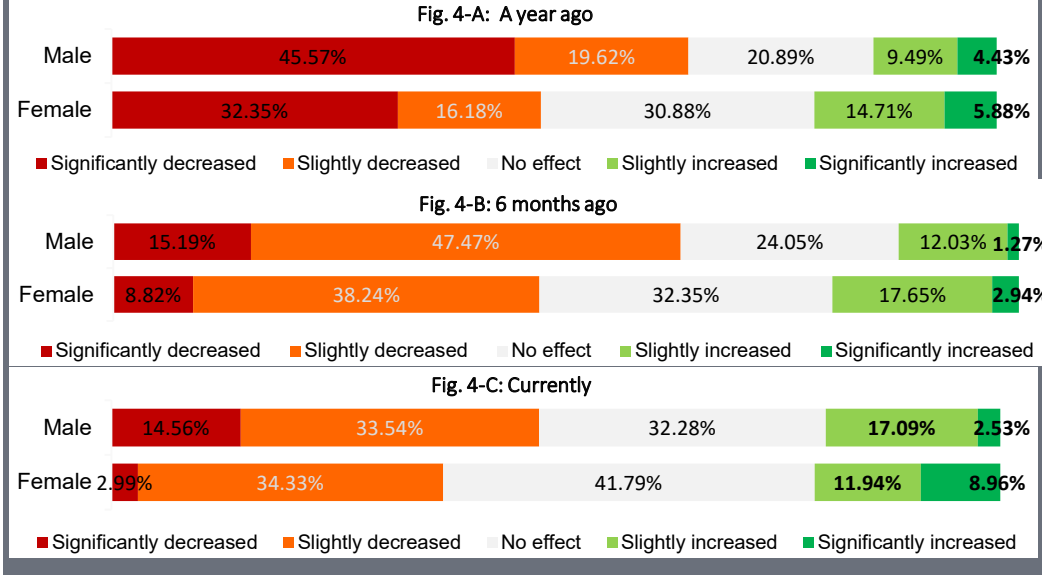
COVID-19 and Time Allocation to Research

Step 1: Impact on time allocation

Figure 4 illustrates the impact of COVID-19 on time allocation to research among academics at UCC and UFHB, compared to the period before the pandemic. The data indicate that a small proportion of male and female respondents reported increases in time allocated to research. In contrast, a significant number of male (46%) and female (32%) researchers reported that COVID-19 had significantly decreased their time allocated to research one year ago, specifically between August and November 2020, corresponding to the peak of the pandemic. Notably, when asked about the impact of the pandemic on time allocation to research six months ago and currently (at the time of data collection), the percentage of academics reporting a significant decrease declined from 46% to 15% for males and from 32% to 3% for females (see Figures 4A, 4B, and 4C).

These findings suggest a decline in the severity of COVID-19's impact on time allocation to research over time. Possible explanations for this reduction include easing COVID-19 restrictions and the widespread vaccination of researchers, which may have gradually restored a sense of normalcy in academic activities.

Fig. 4: How have COVID-19 and related restriction measures affected your time allocation to research relative to the period before it?



Notes: The data was collected between August and October 2021. Therefore, the terms *"currently"*, *"6 months ago"* and *"a year ago"* are relative to the timepoint of the data collection.

Step 2: Is there a gender differential in time allocation to research?

Table 2 reports the results of the second step, where we test whether the impact of COVID-19 on time allocation for research differs across genders. The results show that the gender parameters are statistically significant across all three examined periods. This demonstrates that the COVID-19 pandemic has differentially affected male and female researchers, with male academics experiencing more substantial reductions in the time they can dedicate to research activities.

Table 2: Results of testing gender effects in time allocation to research

Dependent variable: Impact on time allocation to research			
	A year ago	6 months ago	Currently
Males (ref = females)	-0.443** (0.178)	-0.296** (0.137)	-0.265* (0.155)
Control variables	Yes	Yes	Yes

Notes: The reported impacts were regressed on the gender indicator controlling for the age, discipline and university of the respondent. ***, **, and * represent the statistical significance at the 1%, 5%, and 10% levels, respectively. In parentheses are robust standard errors.

COVID-19 and Research Funding

Step 1: Impact on research funding

Before assessing the impact of COVID-19 on research funding, we probe to understand the landscape of research funding by asking researchers, *"What is your main source of research funding?"*. Responses to this question indicate that most researchers are self-financing their research (65% of males and 79% of females). This is followed by funding from private institutions, as reported in Figure 5.

Fig. 5: What is your main source of research funding?

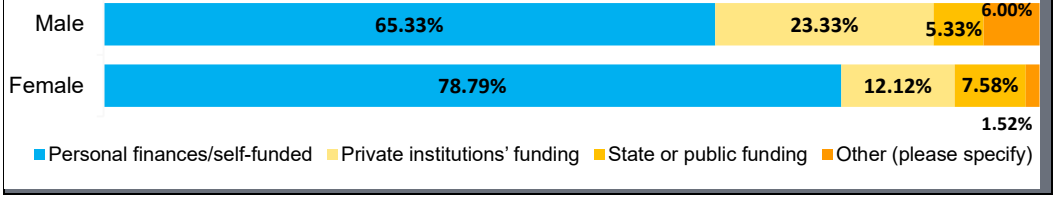
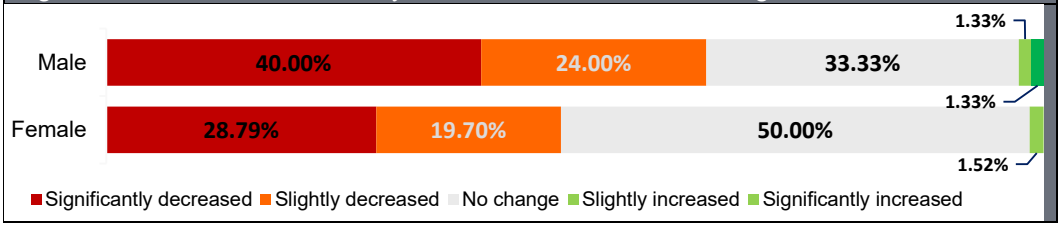


Figure 6 shows the reported impact of the COVID-19 pandemic on research funding among respondents at UCC and UFHB. The data indicate that 64% of male and 48% of female researchers experienced reduced funding due to the pandemic. This decline is likely attributable to changes in personal income during the pandemic period. Additionally, it was observed that 50% of female researchers reported no change in their research funding, suggesting that half of the female academics could maintain their funding levels despite the pandemic's challenges.

Fig. 6: How has COVID-19 affected your main source of research funding relative to times before it?



Step 2: Is there a gender differential in research funding?

Existing literature on gender differences in research funding allocation is divided between works supporting the presence of gender gaps (Bornmann et al., 2007; Yip et al., 2020) and those finding no evidence of such differences (Rissler et al., 2020; Zhou et al., 2018). We also explore this in the context of COVID-19, probing whether male and female academics at UCC and UFBH reported differences in the impact of the pandemic on their research funding.

The results in Table 3 support the gender effect hypothesis, indicating that the COVID-19 pandemic has been experienced differently by male and female researchers. Specifically, male researchers were more severely affected by COVID-19-induced reductions in research funding.

Dependent variable: Impact on research funding	
Males (ref = females)	-0.443** (0.178)
Control variables	Yes

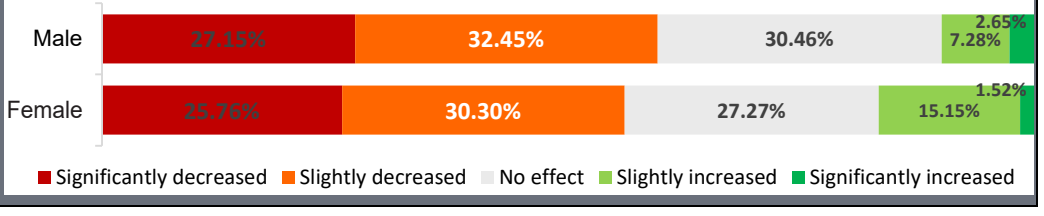
Notes: See Table 2 for comments.

COVID-19 and Research Output

Step 1: Impact on research output

Research outputs were assessed by evaluating the number of academic publications. Researchers were asked, "How would you rate the effect of the pandemic on your current research output relative to times before it?". Given that most researchers reported a decrease in time allocated to research due to COVID-19, a similar negative impact on research outputs was anticipated.

Fig. 7: How would you rate the effect of the pandemic on your current research output relative to times before it?



The responses, reported in Figure 7, show that for most West African researchers, COVID-19 has negatively affected their research outputs, as approximately 60% of male and 56% of female respondents report a decrease in their research outputs relative to times before the pandemic. Only 10% and 17% of males and females report increases in their research outputs.

Step 2: Is there a gender differential in research outputs?

We also investigated if the reported impacts by male and female researchers were statistically different. As presented in Table 4, the analysis yielded a statistically non-significant estimate, indicating no significant gender difference in how COVID-19 has affected research outputs. Consequently, male and female researchers at the two West African universities have equally experienced the predominantly negative impact of COVID-19 on their research productivity.

Table 4: Results of testing gender effects in the impact on research output

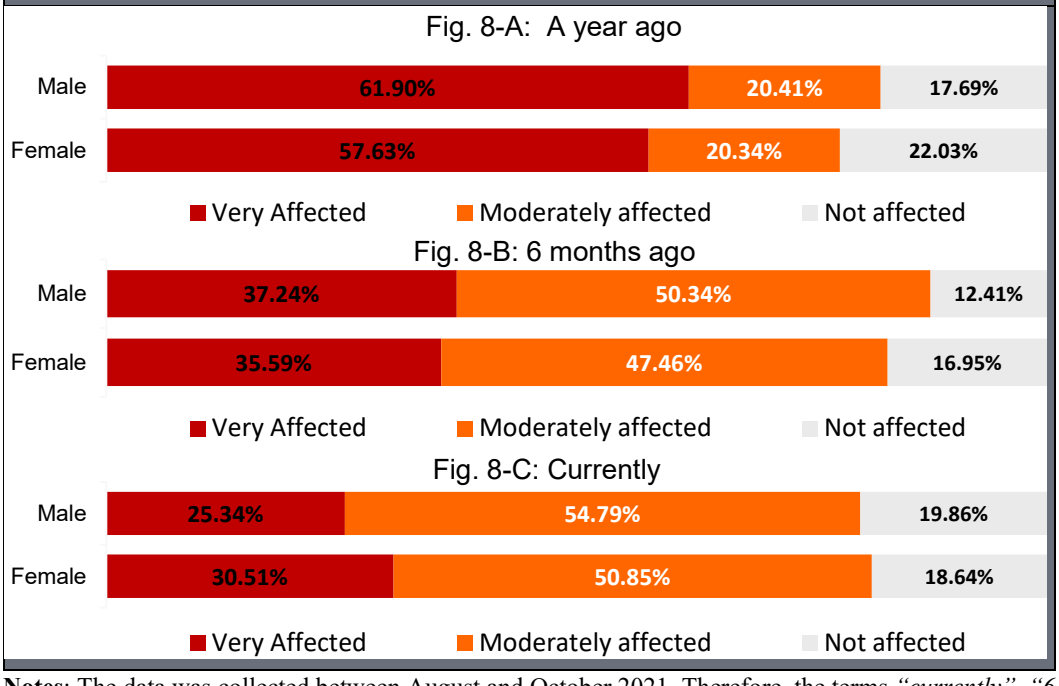
Dependent variable: Impact on research output	
Males (ref = females)	-0.126 (0.163)
Control variables	Included
Notes: see Table 2.	

COVID-19 and Academic Mobility

Step 1: Impact on academic mobility

Restrictions related to COVID-19 have impacted geographical mobility (Marinoni et al., 2020; Woolston, 2020). To assess this in the research space, we asked researchers to evaluate how COVID-19 has affected their research mobility (e.g., for teaching, conferences, research stay, etc.). Responses were collected using a 3-point Likert scale, prompting researchers to report the impact as experienced at three different periods.

Fig. 8: Compared to before the pandemic, please evaluate how much COVID-19 has affected your research mobility (teaching, conferences, research stay, etc..)



Notes: The data was collected between August and October 2021. Therefore, the terms *"currently"*, *"6 months ago"*, and *"a year ago"* are relative to the time point of data collection.

The data revealed that COVID-19 has disrupted academic mobility for approximately 80% of researchers, irrespective of gender and period considered (See Figure 8). Analysing its severity over time, Figure 8 demonstrates that the disruption to academic mobility has decreased. Initially, 62% of male and 58% of female researchers reported significant disruptions a year before data collection. By the time of data collection, these figures had declined to 25% of males and 30% of females. This reduction in severity is likely due to the gradual relaxation of COVID-19 restrictive measures, which has made mobility more feasible for researchers.

Step 2: Is there a gender differential in academic mobility?

To investigate whether a gender effect exists regarding the impact of COVID-19 on academic mobility, we also analysed the responses at three different time points, as in Figure 8. The results (Table 5) indicate that the impact of the COVID-19 pandemic on academic mobility has been equally experienced by both male and female researchers across all three-time points. This finding suggests no significant gender differences in how academic mobility was affected by the pandemic among researchers at the two universities considered.

Table 5: Results of testing gender effects in the impact on academic mobility

Dependent variable: Impact on academic mobility			
	A year ago	6 months ago	Currently
Males (ref = females)	-0.064 (0.122)	-0.034 (0.111)	0.087 (0.110)
Control variables	Yes	Yes	Yes

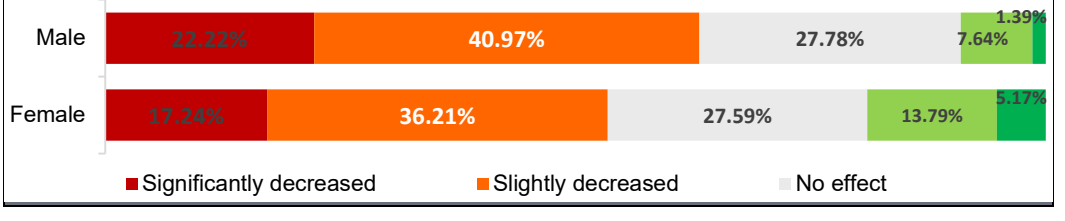
Notes: The data has been collected between August and October 2021. Hence, the mentions *"currently", "6 months ago"* and *"a year ago"* are relative to the timepoint of the data collection.

COVID-19 and Career Progression

Step 1: Impact on career progression

As evidenced by existing studies, COVID-19 has significantly impacted career progression opportunities (Herman et al., 2021; Radecki & Schonfeld, 2020). To understand the potential impact on the career of West African researchers, participants were asked how they would evaluate the impact of COVID-19 on their career progression opportunities.

Fig. 9: Overall, how would you evaluate the impact of COVID-19 on your career progression opportunities?



The responses show that COVID-19 has reduced career progression opportunities for most academics. Specifically, 63% of male and 53% of female researchers reported decreased career advancement prospects. Additionally, many respondents noted no effect on their career progression during the pandemic (See Figure 9).

Step 2: Is there a gender differential in career progression opportunities?

We investigated the presence of a gender effect using regression analysis. As presented in Table 6, the gender parameter is statistically significant, suggesting that the impact of the COVID-19 pandemic on career progression opportunities shows gender differences. Specifically, male researchers experienced a more severe negative impact on their career progression than their female counterparts.

Table 6: Results of testing gender effects in the impact on career progression

Dependent variable: Impact on research funding	
Males (ref = females)	-0.320** (0.161)
Control variables	Yes

Notes: See Table 2 for comments.

In summary, this study examines the impact of the COVID-19 pandemic on research culture and explores potential gender differences among academics at two West African universities. Specifically, we investigated this across five key indicators: time allocation to research, research funding, research outputs, academic mobility, and career progression opportunities. The data analysis reveals that COVID-19 has adversely affected all five factors. Testing the gender effect hypothesis, which posits that male and female researchers have differently experienced the impact, the results support our hypothesis for time allocation to research, research funding and career progression opportunities. In contrast, the research outputs and academic mobility analysis indicate that female and male academics have equally experienced the adverse impact of COVID-19.

To address potential concerns regarding the robustness of our empirical strategy for testing gender effects, we employed the well-established Welch's two-sample t-test to validate our findings. This additional analysis confirms that the observed gender differences in time allocation to research, research funding, and career progression are statistically significant. In contrast, no significant gender differences exist in research outputs and academic mobility.

DISCUSSION

This study investigated the extent to which the COVID-19 pandemic impacted research culture at two West African universities. Specifically, we addressed two research questions: 1) How has the COVID-19 pandemic impacted the research culture of universities in West Africa across five indicators: time allocation for research, access to funding, research outputs, geographic mobility, and career progression? 2) Does the impact of the COVID-19 pandemic, measured through the five key indicators, exhibit gender differential?

We adopted the philosophical assumption of Moser's Triple Roles Framework to support our research questions. The latter framework, as also discussed by ESSA (2021), Oforiwaa and Afful- Broni (2013) and Ogbogu (2011), suggests that social constructs on the role of women in (African) societies may place female scholars at a disadvantage. Drawing on this framework, we hypothesise that the impacts of COVID-19 may differ across genders. Our results support existing literature related, among others, to COVID-19 and research mobility/collaboration (EURAXESS, 2020; Hedding et al., 2020), research funding (Alam, 2021; Harper et al., 2020), research output (Augustus, 2021; Ucar et al., 2022) and career progression (Menon & Motala, 2021; van Schalkwyk, 2021). Concerning the gender differential effects of COVID-19 in West Africa, our work seems to be among the first articles to propose such a gendered reflection, to the best of our knowledge.

Measuring the Impact of COVID-19

Measuring impact involves collecting data on a phenomenon at two different periods and using specific tools to observe changes that have occurred. Our data collection was a one-time process. Nevertheless, we asked researchers to report the impacts of COVID-19 compared to the period preceding the pandemic. Therefore, the data researchers report reflect changes that occurred over time and can be consistently used to report on the impact of COVID-19. Our approach is even more acceptable because of its richness in simultaneously reporting on negative and positive effects across genders.

Gender Effects and Non-causal Inference

Regarding gender differential, our working assumption states that there is a gender effect if male and female researchers have experienced the impacts of the pandemic differently. To test this hypothesis, we initially used a regression method, estimating the parameter of the gender variable. Hence, when the latter is statistically significant, it can only be interpreted regarding gender effects. This helps draw conclusions supported by the robustness test conducted using the Welch two-sample test.

Testing for Gender Effects: Are Our Results Contradictory?

Our analysis revealed that for most researchers in the two West African universities, the COVID-19 pandemic harmed research culture. Moreover, of the five aspects of research culture considered, gender differentials have been confirmed only for three: time allocation to research, research funding and career ambitions. One may find it conflicting that while all five aspects have been negatively affected by COVID-19, significant gender effects are observed only in three cases.

As noted earlier, by definition, the presence (respectively absence) of a gender effect indicates that male and female academics have differently (respectively equally) experienced the impact of COVID-19. Hence, the lack of gender effects in some cases does not invalidate the impacts of COVID-19, as exposed in Figures 4, 5, 6, 7 and 9. Thus, the complexity of our analysis, which offers a group perspective and a cross-group comparison, cannot be misinterpreted as conflicting.

CONCLUDING REMARKS

This article explored the impacts of the COVID-19 pandemic on research culture in two West African universities. It tested whether male and female researchers have experienced the effects of the pandemic differently. To do this, we focused on five aspects of research culture: time allocation to research, research funding, research outputs, geographic mobility, and career progression.

Our data analysis showed that the pandemic has negatively affected most researchers' time allocation to research and research funding. Given this, one may expect a similar effect on research outputs. The data supported the latter perspective since approximately 60% of male and 56% of female participants reported decreases in their research outputs due to COVID-19 relative to the period before the pandemic. Regarding mobility and career progression, the responses indicate that for most academics, COVID-19 and related restriction measures have reduced their academic mobility and career progression opportunities.

Additionally, we probed how male and female academics have experienced the impacts of the pandemic. In doing so, our theoretical argument states that socio-cultural constructions associated with the division of labor between women and men condition women to reproductive, productive and community activities following Moser's Triple Roles Framework. Given these gender roles, the impacts of the pandemic may be differently experienced by male and female academics. Testing the

latter conjecture, the gender effects, we found results indicating that male and female researchers have differently experienced the impact of COVID-19 in terms of time allocation to research, research funding, and career progression opportunities.

Overall, this article demonstrated that COVID-19 has negatively impacted researchers in the two West African universities, in addition to providing evidence of some gender differentials, which signal potential gender inequalities among African faculty. The policy implications of our analysis recommend increasing budgetary allocations for research as well as introducing financial incentives to promote gender equality in the research space. It is also recommended that West African higher education decision-makers develop and implement policies targeting inclusive research culture with clear emergency-induced considerations.

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TEACHER PERSPECTIVES ON CONTEMPORARY CHALLENGES TO DIFFERENTIATED INSTRUCTION: A CASE STUDY

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ABSTRACT

An inclusive and equitable learning environment is a prerequisite for student success and well-being at school. Differentiated instruction helps to nurture a classroom environment where students feel they are at the center of the learning process. While teachers play a key role in the effectiveness of instruction in a differentiated classroom, they also need support, scaffolding, and training to further their efforts. In the post-COVID educational context, the integration of differentiated instruction into a teacher's professional practice seems more daunting. The present study is a qualitative exploration to understand teacher perspectives on their challenges in the practice of differentiated instruction. Recommendations from the study include policy implications for the provision of more educational funding for smaller class sizes, additional support personnel, and ongoing professional learning.

INTRODUCTION

Inclusive, equitable, quality education is critical to the United Nations Global Education Agenda 2030. *Quality Education for all* is the particular focus of the UN Sustainable Development Goal # 4 (UNESCO, 2020). Inclusive education is a fundamental human right of all learners and the foundation on which efforts for high-quality education are sustained and strengthened (Johnson, 2013; UNESCO, 2008). Formal education systems worldwide and student access to them are invariably shaped by the local culture, educational policies, resources, and economies (Bukodi & Goldthorpe, 2011; Marks, 2013; Boeren, 2019). These drivers impact the quality of education provided to students. Efforts to understand the barriers to quality education must be studied in a contextual framework against the intricacies of the intersectional threads that weave communities. While the overarching principles that support inclusivity, equity, and quality are generally universal, their translation into practice for effectiveness is intricately complex and diverse.

From a classroom perspective, inclusivity means that teaching, learning, and evaluation transactions are structured to make each student feel accepted, respected, valued, and holistically invested in the experience. The curriculum offers students opportunities for self-reflection and the discovery of their purpose and calling in the world, while implicitly recognizing student diversity as an asset to be valued (Ministry of Education, Ontario, 2009). The learning transactions in the curriculum account for differences in students' demographic profiles, skills, competencies, and achievements. New content is introduced to students at their point of readiness. Curricular objectives, activities, and evaluation systems are designed around the learning impact for the student rather than pre-set teacher criteria (Grift, 2020; Hattie, 2009; Polka et al., 2016). Knowledge acquired in such a classroom is generative, transferable, relevant, and applicable (Grift & Satchwell, 2007; Perkins & Blythe, 1994). When students discover that they can apply their academic knowledge to real-life situations and challenges, a sense of empowerment and self-efficacy develops within each individual. There is a paradigm shift as learning that was predominantly focused on rote memorization to get through a test moves into the realm of agency and ownership (Grosner, 2021; Tomlinson, 2023). Student-centered teaching is synonymous with differentiated instruction. This study explores the delicate nuances and perspectives on the complexities concerning greater integration of differentiated

instruction as experienced by PreK-12 teachers in their daily practice. The notion of differentiated instruction scaffolds the theoretical framework for the study. The practical challenges faced by PreK-12 teachers within the Greater Toronto Area (GTA) as they endeavor to further differentiated instruction in their practice in a post-COVID world form the conceptual framework for the study.

Understanding Differentiated Instruction

According to Tomlinson and Moon (2013), differentiated instruction encompasses five classroom elements: the learning environment, curriculum, assessment, instruction, and classroom leadership and management. A teacher who practices differentiated instruction works proactively to respond to student differences in preparedness, interest, and learning needs through modifications in curricular content, the teaching process, assessment products that showcase student learning, and the socio-emotional and cognitive stimuli students receive in class. Differentiated instruction extends Ausubel's theory of meaningful receptive learning through active subsumption (1968). The instructional approach in a differentiated instruction class reflects the principles of constructivism. Students are actively invested in the learning task as they consciously process new knowledge to form meaningful engrams based on their previous knowledge, cognitive concepts, experiences, social context, and motivation (Tileston, 2011; Sprenger, 2011; Eller et al., 2019; Hersi & Bal, 2021).

A progressive shift to student-centered instruction would require teachers to be acutely aware of its benefits and adequately prepared to elevate their teaching practice to meet their students' differentiated needs (Westwood, 2018; Valiandes, 2015; Nusser & Gehrer, 2020). Tomlinson (2023) cites examples of teachers who, driven by a personal ethic of excellence for their students, endeavor to create classroom conditions and curricular innovations that connect learning to students' lives, thereby motivating them to value and appreciate their time at school. One particular example is of a preschool teacher in California who inspires students to participate in meaningful conversations about their lives. Through this activity, children from a very young age begin to appreciate the wonder of their world while developing critical thinking skills that are nurtured through their teacher's efforts. Another example cited by Tomlinson is that of a teacher working with high-school students who come from a disadvantaged background of poverty and marginalization. This teacher encourages their students to participate in a year-long simulated exercise to build a civilization that could be more successful. Students put themselves in the role of world leaders and social architects to imagine a better world order where social justice transcends the historical disadvantages their families have traditionally faced.

Differentiated instruction builds on teacher agency and efficacy to promote a value-focused professional mindset, where a culture of care for students is coupled with a focus on excellence and equity (Tomlinson, 2023; Aranha et al., 2024). In a global context, where most formal learning systems in schools are marked by competition for grades, pressures from standardized testing, and a scarcity of resources that kill the joy and wonder of the educational process, a classroom where differentiated instruction is practiced holds out hope for the ideals of equity, inclusivity, and quality.

Differentiated Instruction Post-COVID

Greater integration of differentiated instruction has long been the gold standard for educators, administrators, and policymakers (Westwood, 2018; Smets et al., 2022), and most teachers direct their efforts to further this cause in their daily practice, despite its complex intricacies. However, researchers have found that the need for a focused and renewed effort to implement differentiated instruction in PreK-12 schools is even more pertinent in the aftermath of the COVID-19 pandemic

(Dorn et al.,2020; Zhao & Watterston, 2021). The prolonged school closures during the pandemic and the hurried transition to online learning systems have impacted students cognitively, socially, and emotionally. The consequences of these alterations have yet to be mapped and understood (Rose, 2021; Bennett, 2022; Science et al., 2021). As students return to in-person classes, previously unanticipated struggles are now surfacing. Teachers are confronted with the daunting task of helping students overcome their unique learning gaps while being perceptive to the socio-emotional needs of the students who seem to be on an uphill course in search of the rhythm, rigor, and engagement necessary for attending classes regularly and completing their schoolwork.

RESEARCH QUESTIONS

To explore the challenges teachers face in facilitating the practice of differentiated instruction in a post-COVID context, the researcher undertook an exploratory qualitative case study in the Spring of 2024. The research proposal was approved by the Institutional Review Board of Niagara University, USA (Protocol #2024-017). The study sought answers to the following questions:

1. What does differentiated instruction mean for practicing PreK-12 teachers within the GTA?

2. What are the challenges to differentiated instruction in PreK-12 schools in a post-COVID world?

3. What impact do these challenges have on the well-being and academic success of students?

4. How can teachers facilitate more student-directed learning in their classrooms?

5. What support structures or training can teachers provide to make differentiated instruction more prevalent in their daily teaching practices?

METHOD

To gather the perspectives of practicing PreK-12 teachers from the Greater Toronto Area (GTA) on integrating differentiated instruction, with a particular focus on student well-being and success, the researcher conducted interviews with six PreK-12 teachers from different school systems within the GTA. All schools within the GTA have to follow the directives of the Ministry of Education, Ontario. The Ministry of Education explicitly states that Ontario schools should strive to enhance academic outcomes for their students by creating learning environments that are positive, equitable, non-discriminatory, and respectful towards students and all members of the school community (Ministry of Education, Ontario, 2023). Equity and inclusivity are paramount to the educational focus in Ontario, as the province is home to a large immigrant population comprising over 250 different ethnicities. Visible minorities account for 55% of the total population in Ontario (Ryan, 2019; Statistics Canada, 2023).

Teacher participants for the study were recruited from the English public, Catholic, and private schools within the GTA. They taught students from different grade levels, ranging from PreK to 12. The demographic profile of the participants is provided in Table 1 below.

Table 1: *Demographic overview of the participants*

Teacher Participant	Years of Teaching Experience	Present Teaching Level	Type of school
Participant 1	6	Grades 6-8	Public
Participant 2	7	PreK-Grade 3	Private Catholic
Participant 3	20	Grades 9-12	Public
Participant 4	8	Grades 9-12	Private
Participant 5	5	Grades 6-8	Public
Participant 6	15	Grades 4-6	Public Catholic

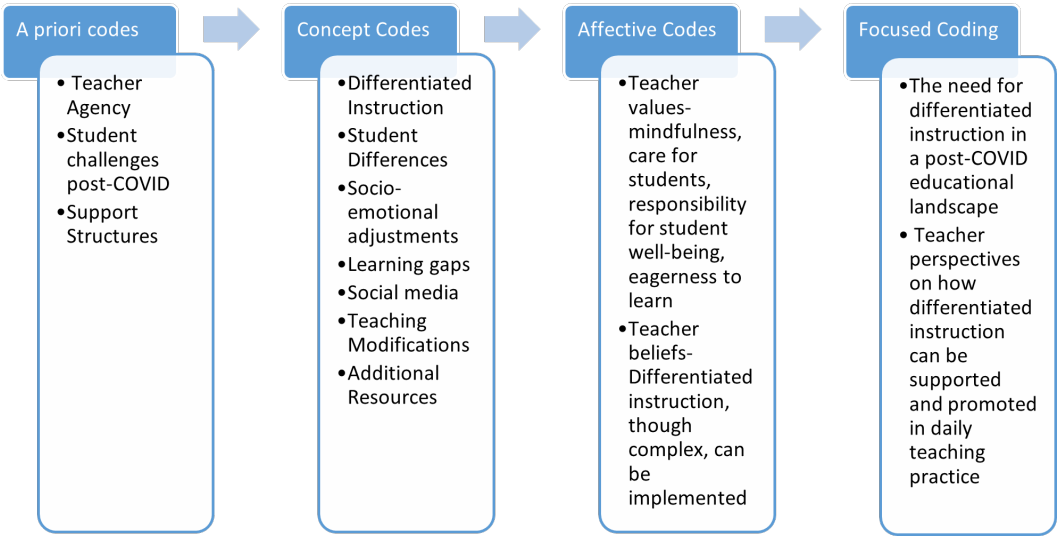
Participants were enlisted through convenience and snowball sampling (Guest et al.,2013; Creswell & Creswell, 2023). Personally identifiable information, such as the names of the participants and the schools where they taught, was kept strictly confidential. Data were collected through semi-structured interviews. Most interviews were conducted via Google Meet; one was conducted through an in-person meeting. The interviews lasted from 15 to 45 minutes. Data collected during the interviews were analyzed thematically using three coding cycles. To ensure consistency across these coding cycles, the researcher employed the inductive-deductive thematic analysis technique (Roberts et al., 2019). In the first coding cycle, based on a review of the research literature, the research questions, and a preliminary analysis of the raw interview data, the researcher generated a codebook with a list of a priori codes using the inductive approach (Antony- Newman, 2024; Marshall et al., 2022). In the second coding cycle, the researcher used the deductive approach to align the emerging themes with the a priori codes developed in the first cycle. This allowed the researcher to categorize codes into aspects that reflected the values, attitudes, and beliefs of the teacher participants, which cogently supported the research questions for the study, since teacher agency is a significant driver for facilitating differentiated instruction. The inductive-deductive approach enhanced the rigor of the research process because the emerging discrepancies prompted the researcher to scrutinize the data more closely, to identify instances that explained the anomalies. This led to the focused coding approach which was used in the third coding cycle.

In summary, the coding process involved employing concept coding in the first cycle to analyze the "big picture" ideas suggested by the data, affective coding in the second cycle to interpret the teacher participants' values, attitudes, and beliefs regarding the research questions, and focused coding in the third cycle to categorize data into broad themes (Saldana, 2021; Creswell & Creswell, 2023). The emergent codes from the three cycles included *teacher awareness and acceptance of student differences and exceptionalities, learning gaps and socio- emotional challenges in students post- COVID, the disturbing influence of social media on students, interactive teaching strategies, and increased support for teachers in terms of resources, feedback, and capacity- building initiatives.*

FINDINGS

Two interrelated themes emerged from the data: 1) the importance of differentiated instruction in a post-COVID learning environment, and 2) curricular approaches and support structures that could assist teachers to further differentiated instruction in their daily practice. The concept map depicted in Figure 1 presents a visual of the coding process that led to the themes that emerged from the data.

Figure 1: *Concept map from the coding process*



Importance of Differentiated Instruction Post-COVID

The teachers who participated in the study were in consensual agreement that the school closures and learning modifications in terms of online teaching-learning transactions diluted student achievement motivation and attention during the pandemic (Gallagher-Mackay & Brown, 2023; Page et al., 2021). In the post-pandemic learning environment, teachers observed that some students were struggling with mental health challenges, some with socio-emotional adjustments, and some with the ability to work on their tasks with integrity and honesty. The long periods of learning in isolation, in the absence of the physical presence of their teachers and peers, who form the social and human connections of learning, could be the possible reasons for these student struggles (Eyler, 2018; Cavangh, 2016). Some participants in the study shared the following observations:

> For example, when we discuss post-COVID learning in school, I find that the students' attention spans have definitely decreased. They are easily bored and find it hard to focus. (Participant 1).

> Some shy students may avoid interactions; they would rather have their own online class, sit by themselves, and work, or, you know, they do not want to be in the classroom situation, so they are free. They can move in and out and do whatever it is a little bit; they do not have to be that disciplined. If they cannot understand what they are learning, it becomes hard for them to cope. I had one student who, all of a sudden, had some mental health issues. This student was with me in the previous semesters, but then this semester, they had some issues, and then they could not come to class. (Participant 3).

> I think post-COVID, many of these students became lazy about learning. Because with online learning, you become lazy. They copy-paste things, and they cheat. And I think that is what happens when there are too many distractions at home. You know, when they are not in a classroom setting, they lose the ability to focus on their academic studies. (Participant 4)

The pandemic was an unprecedented event in history, bringing along fear, disease, loss of lives, and loss of livelihoods. Before the pandemic, people were never forced into lockdowns due to health and safety concerns. The adverse effects of these circumstances on the community and social life impacted children with an increase in depressive symptoms, anxiety, and stress. High-risk populations such as children living in poverty, children with behavioral problems and complex medical needs, and those in the care of Canada's welfare system were most affected (Public Health Ontario, 2020). Four years after the pandemic, these repercussions still affect students. Teachers have to be more mindful, empathetic, and compassionate when engaging in teaching-learning transactions with their students. As one teacher participant noted:

> After COVID, the children have more trauma. Some are dealing with the death of loved ones due to the pandemic; families are broken, parents are separated, and others have financial constraints brought on by the job losses after COVID. (Participant 6).

The periods of isolation away from school, peers, and outdoor activities during the pandemic caused children to spend more time on social media. Now there is reticence to feel connectedness and belonging at school. While social media can be educational, there is also a dark side to the addictive nature of social media platforms. The dopamine triggers built into social media notifications, which are cleverly paired with positive affirmations, make these platforms highly addictive and harmful to an individual's mental and physical well-being (Gripenstraw, 2022). According to Wachler (2022), teenagers are more susceptible to the opinions of influencers and celebrities since they lack the critical thinking skills to recognize one-sided relationships as they are lured into the glamour and fantasy of social media. The ill effects of social media on student well-being are another challenge for teachers in the post-COVID world. Teachers have to rethink their strategies to give students a sense of belonging and responsibility at school. Some teacher participants noted:

> Earlier, students would come to school modestly dressed. Now, it is different. It is difficult for me, as a teacher, to face a class of students when they are immodestly dressed. Social media is responsible for causing this situation. I had an educational resource worker (ERW) in my class some days ago, and the students, even though they were in the elementary grades, were more focused on the ERW's nails and aesthetics than the content being taught in class. Students are very materialistic in their outlook and demands; they follow trends detrimental to their well-being. (Participant 6).

> There is no initiative, and they do not have any goals to show any improvement. So if they are not doing well, they leave, or they do the assignment haphazardly, not giving their best, you know, whatever. They will submit their work partially and say this is what I have done. That is how their grades can be impacted if they are not getting help from the teacher. (Participant 3).

> It is not good for their well-being and mental health because they feel that school is not important to them. They may start developing a dislike for the school, right? I feel a good teacher always makes sure they know who their students are and then tries to build a relationship because building a relationship has a lot to do with making you feel that you belong here. Automatically, you are going to love your learning. (Participant 1).

Another grave concern expressed by most participants was the surfacing of learning gaps. Given the inclusive nature of the GTA classrooms, where students of varied abilities and exceptionalities are grouped together, teachers found it challenging to meet students at their point of need and to bridge the learning gaps in foundational concepts that should have been formed in the preceding years. These years could have been when students were forced to transition to online learning during the pandemic. Given the extraordinary circumstances at that time, school boards changed assessment standards, sometimes canceling final exams (Gallagher- Mackay et al., 2021). According to a report by the Higher Education Quality Council of Ontario (2021), there was a consistent increase in mean grades for students in grades 12 during the pandemic, even though teachers complained that curricular expectations were not adequately met. The implications of these measures are evident in the academic challenges students face in the present day. Participants shared the following thoughts concerning learning gaps in students post-COVID:

> Yeah, in this class, there are many challenges. There are nine or ten students on an IEP (Individualized Education Plan), so they are either math, language, or both. There is also a student with special needs, like autism, so it is really hard. There is a big gap in students. There are high students; then there are a whole bunch of low students. So it is hard to move on to something else that is more challenging because the lower students need to learn, like, you know, the basics before you can move on to some of the concepts from the earlier grades that are in the curriculum. I think this gap exists because of COVID. All those couple years of being online, you know, they lost out on a year and a half, being home, not in school. (Participant 5).

> Post-COVID, I think there are many gaps, especially in teaching online. It was extremely difficult to try to get students to work in groups, and even when you use those breakout rooms on Zoom, for example, how do you know that they are working? You know, as a teacher, I would have to go in and out of each room to see if they are working and I would notice they are not interacting, they are not talking, it is very difficult to observe students as they are learning. And it was also very difficult to see that they were on the right track. I cannot see their work. So that is like one of the challenges. Try to figure out how to close that gap. You know, now, after COVID, this is where the gap comes in where the teacher is able to do an observation and have a conversation with the student in person and be able to see their work and see what is going on with them and see what the gaps are, what they are missing. Especially if they are in grade 11 and taking, for example, university-level courses, they may not be prepared in their first year. They might not even do well in their first year. (Participant 4).

The data above show that teacher participants were conscious of the importance of differentiated instruction in meeting their students' needs in a post-COVID world. Teachers' attributes of care for their students, awareness of student needs, and empathy for the challenges that students face are definite strengths in the PreK-12 education offered to students in the GTA.

Curricular Approaches and Support Structures

Teacher participants showed an eagerness to work with agency and efficacy to further the practice of differentiated instruction for inclusion and equity in their classrooms. Many participants were of the view that reaching out to students at their point of need did require teachers to modify their teaching strategies, lesson plans, and student evaluations on an individual level, keeping in mind a student's readiness to learn, interest, and learning profile (Tomlinson & Moon, 2013; Stockall & Gartin, 2002; Hutchison et al., 2015). Student agency, they believed, would be an outcome of an engaging learning environment where students felt more confident about their ability to comprehend the curriculum. Some participants noted:

> Teachers must know the cognitive ability, learning style, personal motivators, interests, strengths, and talents of the child. They can do this through co-curricular activities like school plays, pantomimes, competitions, sports events, etc. Tapping the talents of the child can make them do much better and facilitate the learning experience for the child in the classroom. When children are involved in such activities, they become better kids and stronger learners. (Participant 6).

> Different resources. Having more engaging activities. More hands-on activities, for sure. That suits the needs of each child, whether they are auditory learners or hands-on, and provides definite resources for them to understand the material better. (Participant 2).

> Well, especially if they have any special needs, like learning disabilities, I use different instructional techniques and teaching strategies to help those students adapt to their learning styles. There are students who learn quickly when you talk to them; some learn better through demonstrations, some prefer videos, and some students need more visuals. Sometimes, when I am picking topics, I can draw; sketching is something that children like. They also like playing Minecraft, so maybe I will do something with Minecraft; it engages them. Especially with all the gaps and challenges and the students on IEPs, you know it is challenging for one teacher to do all this alone. (Participant 5).

> Differentiation can be done in a variety of ways. It can be teaching methods and resources offered to students. For example, incorporating technology, role-play scenarios, etc. For math, I use the resource called Math Hub. It follows the Canadian curriculum, and it has the same unit for grades five, four, and three. So if I am teaching the same unit and I think the student does not have the conceptual understanding as everybody, I keep the same unit but take the level down for that student so they do not feel like I am giving them something completely different or opposite. I keep this unit the same, but my expectations are different. (Participant 1).

Although the teachers were committed to making their practice more student-centered and inclusive through teaching modifications and instructional interventions, they did note that support structures in terms of parental engagement would have more beneficial outcomes for differentiated instruction. Parents play a key role in their children's learning, and bringing them on board would be a valuable asset in supporting a student's academic journey (Crozier et al., 2011; Vincent, 2017). Two participants noted:

> There's a student, there's a teacher, and the third end is parents. And when we work together, we can simply do our best for the students. So I feel that even building relationships by inviting parents and talking to parents in front of the students, then students feel that this is a safe place for me. This is where I belong. Because you know, there's a good relationship between parents and family, right? So if they are academically weak, then you know, providing resources to their parents and also supporting students while they're in school helps them to make their learning better. (Participant 1).

> To counter complacency in children, it is a good idea to get their parents on board to support their learning journey at home. The family's attitude toward school and learning needs to be positive for the child to be interested and invested in the learning at school. (Participant 6).

Most teachers in the study expressed the need for increased support in having an additional teacher in class, whether it was the presence of an educational resource worker (ERW) or an educational assistant (EA). They were of the view that class sizes were too big for one teacher to reach out to diverse students effectively. In public schools within the GTA, the standard class size is about 20-25 students, according to the TDSB (Toronto District School Board, 2021). Some teachers in the study spoke of class sizes exceeding 25 students. School classrooms have learners with different needs, strengths, and exceptionalities. Some students may have IEPs (Individualized Education Plans), and some students may be MLLs (multiple language learners). Some teachers stated that balancing diversity for differentiation was stressful:

> We have integration students who are multiple language learners. They are totally at different levels, depending on how old they are and at what grade they come in, because their needs can be super unique. Their worksheets may be totally different because they are still learning, right? There could be students with unique behavioral needs, too. But having everybody in a large classroom, sometimes you are torn into where to spend time and where there is a greater need. Prior to COVID, we used to have an educational assistant, but after COVID, there was a big cut in funding. Now, we have fewer and fewer educational assistants. So, you know, there is one teacher and sometimes 28, 26, or 25 students, and it gets challenging in some pockets. (Participant 1).

> If there are smaller class sizes, more support in the classroom from special needs teachers or support teachers or resource teachers that come in and help those groups of students that need a little bit more support to do their work, will benefit. (Participant 5).

> We need the assistance of ERW's, Special Education Teachers, who will give a personal touch to the learning experience, especially for autistic children. As teachers, we try to do our best, but we need more support personnel in the classroom. (Participant 6).

Another area where teachers thought they could be supported was in terms of training, professional development, technological resources, and ongoing feedback from the school administration. Continuous professional learning is integral to effective practice for better student outcomes (Ontario College of Teachers, 2016). Some teachers said:

> Teachers need to upgrade themselves to keep pace with the changing times. Differentiated Instruction is challenged by inclusivity- different kinds of learners in the classroom. We also need the support and backing of the administration, principal, and vice-principal. You cannot do much without their support. (Participant 6).

> There should be more resources for all the different topics we teach in different subject areas. If we could access different types of assignments that you can give. For example, there is one assignment, and there are different versions of it that you could use or some idea of how you could do it. These resources always come in handy. In one of the years, I had a blind student in my class, so all my assignments had to be modified for that one student so that they would be able to do it. Also, training to use different technologies and professional development sessions to deal with students' exceptionalities would help. (Participant 3).

> Participating in a capacity-building series will help me learn more to support the students in my classroom. There is this NIP series, it's a new teacher teaching, professional depth, professional series, something like that. So what happens is that the Ontario government pays for this program and we can sign up for this one. It gives us a lot of resources on how to teach students, how to bring more engagement, and how to incorporate technology. So this kind of training also helps teachers to understand differentiated instruction and how to support students by keeping the student at the center and then planning the learning accordingly. (Participant 1).

Overall the teacher participants who were interviewed reiterated their dedication to the well-being and academic success of the students in their class. Despite the many barriers to optimal integration of differentiated instruction, the teachers displayed a growth mindset with an eagerness to learn through professional development programs and draw support and feedback from collaborative relationships with parents and the school leadership.

DISCUSSION

As seen from the findings of this qualitative exploratory case study, the six PreK-12 teachers from the GTA who were interviewed affirmed the importance of differentiated instruction in their daily practice. Given the barriers and practical constraints they face professionally, they were mindful of the complexities surrounding the translation of differentiated instruction from intention to action. All six teacher participants interviewed for this study, irrespective of their years of teaching experience, the student grade levels at which they taught, or the type of school in which they were employed, acknowledged that the practice of differentiated instruction was even more pertinent now in the post-COVID context.

The codes that emerged from the attribute coding of the teacher responses reflected the empathy and care teachers had for their students. Evidence of the same was explicit in teachers' thoughts on cultivating a relationship of respect for their students, concerns about the family problems that students faced, especially as an outcome of the pandemic, and the influence of social media on students' well-being and value system. Most teachers expressed a commitment to the holistic development of the students in their care. The teacher participants from the Catholic schools in the GTA, both public and private, prioritized the importance of the emotional needs of the students in their classes. They spoke of how they went the extra mile to make their students feel accepted and cared for at school. In particular, two teachers noted:

> You have to be a teacher who is dedicated to every child and who looks into their total development. This is when you can be successful as a teacher. You have got to accept every child. Sometimes, it is difficult, but you have to put it aside and accept every child. (Participant 6).

> I think for me personally because I take the responsibility as a teacher to make sure that no matter what my day is like or what the schedule is like, there is individualized time with each student. I personally put myself in a situation where I can make sure that children have the attention that they need. (Participant 2).

The profession of teaching demands unwavering dedication. The results of the present study indicate the extent to which teachers are committed to their craft and their pupils. It is widely recognized that love and connection play a pivotal role in promoting positive educational outcomes (Noddings, 2003; Trujillo, 2019). Additionally, the attribute coding revealed that the participants were mindful practitioners who held a growth mindset. All the teacher participants interviewed for this study expressed genuine empathy for the happiness and success of the students in their care.

The explorations from the present study revealed that student agency continues to be an area for improvement. It can be enhanced through diligent efforts by the teachers and school administrators to cultivate a school environment that gives students a sense of belonging and confidence. Teachers spoke of investing time in relationship-building with students and their parents. Efforts were being made to implement teaching modifications aligning with students' interests, readiness, and learning profiles.

Teachers felt challenged by the large class sizes in the GTA and the diverse composition of students therein. This was particularly pronounced in the feedback from teachers in the public and public Catholic schools in the GTA. They expressed a desire for more support in the classroom, specifically assistance from an educational resource worker or special education teacher. They needed more learning resources, including training in the latest technologies and professional development sessions, to help them acquire new knowledge pertinent to the evolving needs of students influenced by social media and impacted by changing economic conditions in society. Teachers were seeking professional development and training support that could be sustained throughout the year. Even teachers with long years of experience in the profession acknowledged the importance and value of meaningful ongoing professional training to help them navigate the challenges in the post-COVID school environment. One participant noted:

> I think many workshops and professional training development are key for teachers to be more effective in supporting students. This should not just be done at the beginning of the school year or in occasional spurts. It should be ongoing and continuous, with accountability systems built in (Participant 4).

Teachers also felt that collaborative and supportive relationships with others within the school system, namely the parent community and the school administration, would help them in their personal efforts to further differentiate instruction for student well-being, academic success, equity, and inclusivity.

LIMITATIONS OF THE STUDY

The present research study is a qualitative case study and reflects the responses of a small sample of six PreK-12 practicing teachers from the GTA who participated voluntarily. The data collection methods used were convenience and snowball sampling. Given that there are over a thousand schools in the GTA, the responses of a small sample of 6 teachers may not be representative of the entire population. Teachers from French-speaking schools were not included in the study.

CONCLUSION

The results from the qualitative research exploration identified differentiated instruction as a key driver to supporting quality education for student equity, inclusion, well-being, and academic success. Teachers were conscious of the intricacies involved in differentiated instruction and the continuous effort required to facilitate the same because of the changing external conditions that impact students and education. The findings from the study emphasized the importance of differentiated instruction, particularly to remedy the learning losses and the related deleterious effects the COVID pandemic had on students' academic success and well-being. They also align with emergent literature that points to the need for better support structures for teachers in terms of professional learning and care for teacher well-being to help make teaching-learning transactions more student-centered (Napitupulu et al., 2023). The findings also make a case for government support in terms of funding for educational assistants, resource workers, and additional budgetary allocations to provide for more classes in schools in order to reduce the class sizes, which in some cases are in excess of 25 students in the GTA. Teachers valued the feedback and support they received from the school leadership team, and they advocated for additional parent engagement to further students' achievement and well-being. Teachers believed that increased student agency would emerge as an outcome of a greater focus on meaningful and engaging learning experiences for students.

Policy implications from this study include provisions from the government for increased spending on education to fund the recruitment of additional teaching personnel, weighing the cost benefits of reducing class sizes for schools within the GTA, more professional development programs that resonate with the specific training needs of teachers in the post-COVID context to support their efforts to build equitable, and inclusive classrooms. These also include efforts to train teachers in designing learning experiences for students that build on student efficacy for increased student agency.

Research implications speak to extending the scope of this study to gather teacher perspectives on differentiated instruction from a Canadian context in provinces across the country, as well as responses from teachers in French-speaking schools. An inclusive, equitable, quality educational experience for students is always an outcome of collaborative efforts between the administration that structures policy and financial allocations in the macro context and a dedicated congruence between the leadership team at each individual school and teachers and parents at the local level. Teachers definitely need support across their career span to hone their skills and practice differentiated instruction to further student success and well-being.

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LEADERSHIP DEVELOPMENT OF SECONDARY SCHOOL PRINCIPALS IN OROMIA NATIONAL REGIONAL STATE OF ETHIOPIA: POLICIES AND PRACTICES

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ABSTRACT

The purpose of this study was to explore and contextualize leadership development practices of secondary school principals in Oromia National Regional State using a parallel mixed research design. Data were collected from 48 principals and four education officials via questionnaires, semi-structured interviews, and document analysis. Quantitative data were analyzed using descriptive statistics and qualitative data through thematic categorization. The findings of the study revealed that the majority (68.8%) of public secondary school principals were assigned to principalship positions without any form of leadership preparation and, hence, were found to be underqualified to lead at this particular level. Exacerbating the problem, a considerable number of them had no appreciable experiences in school principalship. The study further indicated that professional development opportunities were scarce, mostly consisting of self-initiated activities such as unstructured daily experiences and reading guidelines. Education office-led initiatives were also sporadic and unsystematic, focusing on experience sharing, school visits by supervisors, and occasional meetings at the Woreda level. Despite the Federal Ministry of Education's efforts to establish policies for professionalizing educational leadership, there remains a significant gap between policy and practice, implying that these initiatives have not been effectively implemented on the ground.

INTRODUCTION

Secondary schools are places where the real catalysts of change and development are expected to be shaped. The success of schools in attaining these goals is; however, determined largely by the quality of its leadership (Bush & Jackson, 2002; Eacott & Asuga, 2014). In this regard, international studies in educational leadership preparation and development note that effective schools have strong and effective leaders and leadership (Bush & Jackson, 2002; Bush & Oduro, 2006; Darling-Hammond et al., 2007; Huber, 2004; OECD, 2014). Conversely, as rightly put by Bush (2009) "where there is a failure, inadequate leadership is often a major contributory factor" (p.386). Effective school leaders, who are recognized by eminent scholars for creating successful schools, do not just appear out of thin air; rather, they come out and pass through particular professional development or preparation pathways (NASBE, 2011; OECD, 2008). Hernandez et al. (2012) also opine that principals' quality is highly dependent on the quality of their preparation. The importance of preparing effective school leaders has specifically been emphasized that principals need continuous professional development opportunities to improve their leadership skills and remain up-to-date (Gumus, 2019; Gumus & Bellibas, 2016). All these research results imply that the effective leadership development of the school principals and the performance of the schools are related to one another.

Leadership development refers to an intentional effort to provide serving school principals with opportunities to learn, grow, and change (Huber, 2005). It refers to the capacity building of

positioned school leaders where they continually improve themselves through the formal and informal experiences of work requirements, training, and learning activities (Rushing, 2022; Sofo, 2012). The fundamental elements of these learning strategies, which have drawn a lot of attention in the literature (Bolden, 2007; Bush, 2009; Bush et al., 2011; Cothern,2020), include induction, mentoring, coaching, networking, action learning, problem-based learning, and online learning. These are designed to help school leaders become more proficient in their roles, which will enhance student learning and contribute to overall school improvement (Bush, 2012; Lumby et al., 2008).

In the Ethiopian context, of which the Oromia regional state is a part, research on the leadership preparation and development of secondary school principals is scarce. Even the few available and documented studies are found to be either very specific and limited to the analysis of the selection of secondary school principals (e.g., Tekleselassie, 2002); or comprehensive enough and focused on analyzing the existing University-based leadership preparation programs like Post Graduate Certificate in Secondary School Supervision (PGCSS); Post Graduate Certificate in Primary School Supervision (PGCPS); Post Graduate Diploma in School Leadership (PGDSL); Master of Arts Degree in School Leadership (MAScL), in Ethiopia (Maeregu *et al*.,2016). The recent study by Yohannes (2019) also focused on exploring the nexus between leadership preparation and the work demands of school principals.

Above all, even though the Federal Democratic Republic of Ethiopian MoE policy document 'The Blueprint' (MoE, 2007; MoE, 2013a) dictates that principals for secondary schools should be Master's degree holders who attended specialized training on school leadership, the Education Sector Development Program (ESDP) VI document reveals that only 29% of secondary school principals are qualified to lead at this particular level (MoE, 2021). This implies that nearly 70% of secondary school principals are underqualified to lead at this particular level. And hence, developing their knowledge, competencies, and leadership skills to the standard required is beyond question. There is no doubt that this will bring a significant challenge to their leadership and their respective secondary schools' effectiveness both at the national and the regional state level. Worsening the situation, to the best of the researchers' knowledge, no empirical study has been documented in the Oromia National Regional State.

RESEARCH QUESTIONS

Hence, this study set out to explore the practices of leadership development of public secondary school principals in Oromia NRS guided by the following key questions:

1. What proportion of secondary school principals are qualified in Oromia's National Regional State?
2. What types of professional development activities do secondary school principals in Oromia National Regional State engage in to develop their leadership skills?

REVIEW OF RELATED LITERATURE

The Need for Professional Training and Development of School Principals

The realization that being a principal is a specialized profession that demands specific training and continuous professional development is becoming more recognized in the twenty-first century for several reasons. Bush (2009), for instance, classified the reasons for this paradigm shift into four major categories: "(1) the expansion of the role of school principal, (2) the increasing complexity of school contexts,(3) recognition that preparation is a moral obligation, and (4) recognition that effective preparation and development make a difference" (p. 376).

The requirement for principals to possess professional qualifications also stems from the necessity of endowing principals with competencies and skills related to educational leadership. Black, Martin, and Danzig (2014) indicate professional development and continuing education programs for principals are necessary to "equip principals with ongoing and significant learning that advance education practice" (p. 9). Other researchers also vehemently argue that if continuous improvement is required, principals, like teachers, need both formal training and ongoing, on-the-job opportunities for professional growth (Derrington & Sharratt, 2008, as cited in Duncan, et al., 2011). Besides, knowledge and problem-solving abilities are acquired through preparation and development rather than being innate. Avolio (2005), as cited in Bush (2009; 2011) also conveys a strong argument for leadership development based on the idea that leaders are "made not born," which leads to the idea that deliberate preparation and development, rather than accidental experience, is more likely to generate effective school leaders. Hence, we should be concerned with the ongoing professional development of principals, especially since there is evidence that school principal practices becoming more effective with time (Bickmore, 2012; Kim, 2020).

Professional development activities are not only crucial to school principals' performance, but they are also becoming increasingly vital for initiatives aimed at raising student accomplishment in schools (Miller, et al., 2016). The evidence that high-quality leadership is essential for school improvement and student outcomes is linked to the need for specialized training for school principals. In this regard, Leithwood et al (2006) empirical study reveals that "school leadership is second only to classroom teaching as an influence on pupil learning"(p.4). As per this empirical finding, nearly twenty-five percent of the overall variance across schools, and between five and seven percent of the variation in student learning and accomplishment, could be attributed to leadership. These authors concluded that "there is not a single documented case of a school successfully turning around its pupil achievement trajectory in the absence of talented leadership" (Leithwood et al., 2006, p.5), which appears to be a compelling reason why the principals' professional qualifications are crucial.

Another important justification for the necessity of professional training and development for school principals is their potential influence on school improvement and organizational change. Studies have shown that principals who participate in continuous training can play a decisive role in school improvement and are more qualified to support the adoption of constructive organizational changes and ensure their long-term sustainability (Levin, et al., 2020; Rushing, 2022). One strong argument in favor of supporting leaders in charge of schools is the rising understanding and belief that they require reform (Rushing, 2022). School principals who are committed to their personal development are necessary for transforming a local school since organizational transformation has a personal component and typically begins with a mindset shift (Burke, 2018).

Overall, in a country where the general quality of education is deteriorating (MoE, 2021) and principal preparation is de-emphasized (Gurmu, 2019; Tekleselassie, 2002; Yohannes, 2019), the need for professional learning and development of secondary school principals appears to be obligatory than being a matter of choice or chance.

RESEARCH DESIGN AND METHODOLOGY

This study sought to explore and contextualize the leadership development practices of secondary school principals. Hence, the study employed a parallel mixed research design where both quantitative and qualitative data were collected concurrently to utilize the strengths of both approaches (Bryman, 2004; Creswell, 2014); and build on the synergy and strength between the approaches to understand the practices and challenges associated with the development of secondary school principals more fully than is possible using either quantitative or qualitative methods alone (Gayet al, 2012).

Sample Size and Sampling Techniques

A combination of cluster sampling, simple random sampling, purposive sampling, availability sampling, and snowball sampling techniques were applied to select the sample Zones, secondary schools, and the target respondents both for the quantitative and qualitative parts of the study.

Accordingly, for the quantitative part, a combination of cluster sampling and simple random sampling techniques was used to select schools; while the availability sampling method was used to select principals. Thus, out of the 243 Secondary Schools found in the region (OEB, 2022), 48 (20%) of them, which is acceptable in research undertaking of this sort (Gay et al., 2012), and, thereby, 48 principals were selected. Finally, using proportional sampling, the sample size was calculated to determine the number of sample participants in each zone by using Yamane's (1973) sample size determination formula which reads:

$$n = \frac{N}{1 + N\,(e)^2}$$

Where:
n = sample size
N = population size
e = error (0.05) reliability level 95% or; e = level of precision always set the value of 0.05.

Table 1 *Summary of the Sample Size for the Quantitative Study*

Cluster	Western Oromia	Eastern Oromia	Southern Oromia	Central Oromia	Total
Zones	West Shoa	West Hararge	Arsi	OSZS Finfinnee/ Sheger City	4
*Population Size	77	50	94	22	243
**Sample size	15	10	19	4	48

Source: *Oromia Education Bureau Annual Statistics Abstract, OEB (2020/21, p.193).
**Researcher's calculation using Yamane's (1973) formula.

Information for the qualitative part was gathered from two sources: relevant informants and pertinent documents. The relevant informants, one pertinent Education Official from the Regional Education Bureau, and three experts from Woreda/Town Education Offices were recruited using purposive sampling for they are appropriate education officials who have a stake in principal preparation and development policy formulation and execution. Moreover, four principals (two of them attended a university-based preparation program) were selected using a snowball sampling technique to learn their lived experience related to their preparation and on-the-job professional development activities practiced.

Data Gathering Tools

Multiple tools were employed, including questionnaires, semi-structured in-depth interviews, and document analysis. Accordingly, a self-developed questionnaire and an in-depth semi-structured interview guide questions were developed from an extensive review of the related literature. Moreover, the Education and Training Policy (MoE, 1994), Education Sector Development Programme, ESDPs I, V, and VI (MoE, 1997; 2015; 2021), National Professional Standard for School Principals (MoE, 2013b), the National Curriculum Framework for MA Degree in School Leadership (MoE, 2014), and the revised guideline for Principals', Assistant principals, and Supervisors' selection, placement and Career Development Guideline of 2018(OEB, 2018) were analyzed.

In this study, a pilot test was carried out and, the instrument's reliability was checked using Cronbach alpha. Accordingly, the internal consistency of the instrument developed was sufficient as the coefficient of Cronbach alpha was calculated to be 0.83 which was accepted as good (George and Mallery, 2003).

Method of Data Analysis

In this study, the quantitative data obtained through the questionnaire were analyzed using descriptive statistics like frequencies, percentages, mean, standard deviation, and rank to analyze and arrive at a conclusion. The data were then, analyzed with the help of SPSS, version 24. The data collected through interviews and document reviews were analyzed qualitatively. After revisiting each interview result to ensure the accuracy of the data, the researchers first transcribed and organized all interview data. In doing so, each participant's interview, both the recorded and short notes, were transcribed and analyzed according to the data analysis procedures suggested by Bogdan and Biklen (2007); Creswell (2007); and Saldana (2009), which call for development of coding, categorizing, mechanical sorting, and analysis of the data within each coding category. Data triangulation by document analysis was made to crosscheck the data collected through interviews and questionnaires.

RESULTS AND DISCUSSIONS

Demographic Characteristics of the Study Respondents

Four demographic characteristics: sex, age, qualification and specialization, and work experience were taken into consideration as background characteristics for the quantitative respondents in this study and each is presented and discussed.

Table 2 Sex and age categories of the respondents

Demographic Variable	Category	Frequency	Percent	Valid Percent	Cumulative Percent
Sex	Male	43	89.6	89.6	89.6
	Female	5	10.4	10.4	100.0
	Total	48	100.0	100.0	
Age	Between 30-39	37	77.1	77.1	77.1
	Between 40-49	11	22.9	22.9	100.0
Total		48	100	100	

The data in the table portrays that the majority (89.6 %) of respondents were male; while the percentage of the female participants in the study appeared to be only (10.4%). This condition looks like a reflection of the long-standing gender- imbalance persisting in educational leadership, as the number of male principals was by far larger than that of female principals at secondary schools in the region. This implies that there is a low representation of females in school leadership in secondary schools in Oromia.

The document reviewed also revealed similar findings. For instance, the recent ESDP VI, which provides a sector-wide framework for policy and execution for educational development for the years 2021-2025(MoE, 2021), revealed that the overall proportion of female leaders decreased from a baseline of 14% (2014/15) to 8% (2018/19) at secondary school (MoE, 2021,p.15). The finding of the current study is comparable to the finding of Yohannes's (2019) study which reported that women's participation in leadership and the teaching force is low which shows the persistent challenge of the education system of the country. This finding also corresponds with the results of a study by EDT (2019) that reports a lack of interest in becoming school leaders and the high turnover of female school leaders as challenges for low participation of females in school leadership. Furthermore, the Federal MoE in its ESDP VI (2021), referring to the findings of a study by Jimma University (2019), convened that the poor results in increasing the number of female leaders are due to the difficulty in attracting competent and experienced female teachers to the position.

Table 3. *Educational level and field of specialization of respondents*

Variable	Category	Frequency	Percentage	Valid Percent
Educational level	MA/MSc	44	91.7	91.7
	BA/B	4	8.3	8.3
	Total	48	100.0	100.0
Field of specialization	Subject area	33	68.8	68.8
	*EdPM/**EdL/***ScL	15	31.3	31.3
	Total	48	100	100

*EdPM=Educational Planning and Management; ** EdL=Educational Leadership;***ScL=School Leadership.

According to the data, only a token (8.3 %) held a bachelor's degree which is, in fact, and as per the policy of the federal MoE (2007; 2013a) appears to be below the minimal qualifications for one to serve as a principal in Ethiopian Secondary schools. However, the highest level of education attained by the vast majority (91.7%) of the respondents was found to be a master's degree, heralding good news that the majority of the secondary school principals in Oromia are Master's degree holders; but at what cost of leadership preparation/specialization is the next question. Accordingly, it was found that only (31.3%) of respondents claim to have specialization in school leadership/ EdPM/EdLM; while the majority (68.8%) of the respondents were subject specialists, specializing in various subject areas that are common in the curriculum for secondary schools in Ethiopia, as depicted in the following table.

The data in Table 4 portrays that only (31.3%) of the serving principals attended leadership preparation programs with different nomenclature as EDL, comprising 40%, the next larger group

being EdPM,33.3%, and the remaining ScL constituting nearly (26.7%). The data also revealed that the vast majority (68.8%) of the incumbent secondary school principals haven't attended any leadership preparation program. From this, it follows that the school principals' educational preparation is not in line with a direction in the FDRE MoE policy document / Blue Print (MoE, 2007; MoE, 2013a) that dictates that principals for secondary schools should be master's degree holders who attended a specialized training on school leadership. The document also states that principals for secondary schools should have one of their degrees in educational management.

The policy document reviewed, ESDP VI, also revealed that only 29% of secondary school principals are qualified to lead at this particular level (MoE, 2021). The situation in Oromia is almost similar to the national percentage of qualified secondary school principals which appeared to be only 29.9% (OEB, 2018). Needless to say, nearly three-fourths (70%) of secondary school principals are not qualified enough to lead at this particular level. Furthermore, the Federal MoE in its ESDP VI (2021), also explains the low rate of increase in the number of qualified secondary school leaders 'as being caused by trainees' lack of interest, as the qualification is not highly valued' (MoE,2021, p.15).

Table 4. *Whether or not Principals attended any Leadership Preparation Course*

Variable	**Category**	**Percent**	**Frequency**	**Valid Percentage**
Have you ever attended any Leadership preparation program?	Yes	15	31.3	31.3
	No	33	68.8	68.8
	Total	48	100.0	100.0
Type of Principal preparation program attended	EdAd		-	
	EDPM	5	33.3	33.3
	EDL	6	40	40
	PGDSL	-	-	-
	ScL	4	26.7	26.7
	Total	15	100.0	100.0

This finding is similar to the findings of Daniel (2013) that found (78%) of the primary school leaders in the Dire Dawa Administrative Region of Ethiopia had no leadership training but had educational qualifications for teaching different subjects in the schools. It is also consistent with the findings of Yohannes's (2019) study that found that (72.2%) of secondary school principals in Ethiopia had natural sciences backgrounds.

Table 5. *Work Experiences of Respondents*

Variable	Category	Frequency	Percent	Valid Percent
Years served in teaching	6-10	16	33.3	33.3
	11-15	5	10.4	10.4
	16-20	15	31.3	31.3
	>20	12	25.0	25.0
	Total	48	100.0	100.0
Years served as school principal	1-5	26	54.2	54.2
	6-10	22	45.8	45.8
	Total	48	100.0	100.0

The data in item one of Table 5 depicted that a little more than half (56.3%) of the current school principals have served as teachers for over 16 years; while the remaining 43.7% have served between 6 and 15 years.

Regarding respondents' work experience as school principals, a little more than half (54.2%) of them revealed that they have served between 1 to 5 years; the remaining 45.8% claimed to have served between 6 to 10 years in the school leadership position. It means that a little more than half of secondary school principals in the regional state have no adequate experience to be legible for the position as a direction in the FDRE MoE policy document / Blue Print (MoE, 2007; MoE, 2013a) dictates that one has to serve at least for five years as a teacher to compete for a principalship. In other words, the majority of them have served between one and five years which is the minimum service in the profession required to qualify as a principal (MoE, 2013a).

Leadership Development Practices of Principals

The following data gathered from participants were provided to capture their views on how frequently they were involved in different kinds of self-initiated leadership development practices to develop their leadership skills after they occupied secondary school principalship positions and their responses are summarized as follows in Table 6 below.

Table 6. *Respondents' Ratings on Self-initiated Leadership Development Practices*

1. Self-initiated LDP*	Rating scale (N=48)					
	Not at all (%)	Rarely/ Sometimes (%)	Many times/ Almost always (%)	Mean	Std. deviation	Rank order
Unstructured and non-intentional experiences resulting from daily work		25	75	3.75	.729	1
Reading (books, articles, manuals, guidelines, directives)		41.6	58.4	3.67	.859	2
Participating in a committee or working task-force		49.7	50.3	3.25	.601	3
Internal or external 'knowledge networks' or communities of learning	2.1	709	27	2.67	.907	4
Online learning through the internet	53	44.9	2.1	1.52	.545	5

*LDP=Leadership Development Practices

The data in the table revealed that the incumbent principals engaged many times in two self-initiated leadership development activities to develop their leadership skills. Accordingly, the majority (75%) of the principals disclosed that the top self-initiated leadership development strategy practiced frequently is unstructured and non-intentional experiences resulting from daily work (M=3.75, SD=.729) followed by (58.4%) of principals appears to be through reading books, articles, magazines, manuals, guidelines, and directives related to school leadership and management with (M=3.67, SD=.859), in that order.

The least leadership development activity among the five self-initiated development practices was found to be online learning through the internet which was rated as 'not at all' by the majority (53%) of the respondents with (M=1.52, SD=.545). This could be due to the lack of or inadequate internet services, particularly in rural areas of the regional state. Only (2.1%) of principals reported that they engaged in such activity 'many times' and this group could belong to those principals of secondary schools who were in the urban centers in the region. This finding corroborates the results of researchers (Kiggundu & Moorosi, 2012; Kusi, 2008; Scott & Rarieya, 2011; Usman, 2016) that reported restricted Internet usage in the process of school leader's development. The second least practiced leadership development activity that was reported 'rarely' by the vast majority (70.9%) of the principals was the internal or external 'knowledge networks' or communities of learning' with (M=2.67, SD=.907).

In addition, principals who took part in the interview were asked to share their personal experiences on developing their leadership skills and they mentioned reading resources like guidelines, directives, manuals, circulars, etc., sent to their schools by the Woreda Education Office,

Zonal Education Department, Oromia Education Bureau, and the Federal MoE at different times. Of course, irrespective of their initial training for the position, school principals need to refer to and master the guidelines and directives issued by higher officials to inform themselves build their capacity, and be able to lead their respective schools in line with the prevailing policy direction.

One of the participant principals added to the list 'supervisor's record book' while narrating its importance for professional development, he noted:

> As it gives a record of specific areas for further improvement at least before the next- round of supervision; I found that as one of the important means for developing my leadership skills. It focuses on the strengths as well as ways of improving deviations observed in the course of leadership practices (P-2, December 2023).

Interviewees also mentioned other reading materials they used to develop their school leadership skills during their leisure time. Interview P-1, for instance, indicated that "*I usually refer to the course materials and books on educational leadership and management I got from university at the time of my stay in the MA program in ScL*". The other two principals (P-3 and P-4), who stated that they had never taken any leadership course, indicated that, in addition to guidelines and manuals, they typically use their phones to surf the Internet, and that they look up information on school leadership to update on their knowledge.

Table 7. *Respondents' Ratings on Government/NGO- initiated Leadership Development Practices*

1. Government/*NGO-initiated *LDP	Rating scale (N=48)					
	Not at all (%)	Rarely/ Sometimes (%)	Many times/ Almost always (%)	Mean	SD	Rank order
Experience sharing at CRC* level		25	75	4.10	.778	1
Visiting and observing other effective school principals in action		16.7	83.3	4.00	.583	2
School visits by supervisors and/or super-ordinates		33.3	66.7	3.67	.753	3
Performance appraisals		49.3	50.7	3.21	.874	4
Conferences of school principals (at Woreda, zone, regional, and national levels)		75	25	3.17	.808	5
Workshops, Seminars, Conferences		75	25	3.17	.808	5
Working on CPD		83.4	16.6	3.08	.767	7
Internal and external meetings of school leaders	8.3	83.4	8.3	2.75	.729	8
Challenging work assignments or projects completed on the job	68.1	13.3	18.6	2.25	.838	9
Classroom training - short-term or long-term courses	68.8	18.8	12.4	2.08	.679	10
Formal university-based leadership development	68.1	31.9	-	1.81	.673	11
Induction	69.3	30.6	-	1.42	.525	12

*LDP=Leadership Development Practices; *CRC= Cluster Resource Centers

In Table 7, the data displayed that the top three leadership development strategies availed by government and/or non-government organizations for them and frequently practiced include experience sharing at CRC level(M= 4.10, SD= .778), visiting and observing other effective school principals in action (M=4.00, SD=.583), and coaching by supervisors, peers and/or super-ordinates (M=3.67, SD=.753). The data also further revealed that (75%) of the incumbent principals participated in workshops, seminars, and conferences of school principals at Woreda, Zonal, Regional, and National levels only sometimes and/or in rare cases, implying that such leadership development strategies are organized and practiced sporadically as these might have budget implications.

From the dark side, leadership development strategies that appear to be common in several principal preparation and development programs rated the least implying that the practice is a missing- gap in the secondary school principal preparation and development in Oromia. As can be observed from the data, the majority (69.3%;68.8%, and 68.1%) of the incumbent principals had the opinion that the induction program (M=1.45, SD=.525); formal university-based leadership development (M=1.81, SD=.673) and classroom training both short-term and long-term courses (M=2.08, SD=.679) have been reported rarely and in a severe case never, implying that the opportunity for formal leadership preparation for secondary school principals is scarce and inadequate to accommodate all the incumbent principals. These formal leadership preparation practices were deliberately included in leadership development strategies to triangulate responses given by principals under the biographic data section (tables 4.2, 4.3, and 4.4) above. This finding is comparable with Daniel's (2023) study which found that most (78%) of public school principals in Dire-Dawa City Administration of Ethiopia had no leadership training.

Even though, the policy by the federal Ethiopian MoE((MoE,2007; MoE, 2013a) dictates that principals for secondary schools should be master's degree holders who attended specialized training on school leadership; the majority of the incumbent secondary school principals in the region were not given the chance to take part in the leadership preparation and development programs. This implies that it is a common practice to assign teachers to principalship positions without any formally mandated leadership training necessary for their performance in the role. This further implies that the current education system operates under the assumption that anyone based on successful evidence as a teacher can lead secondary school, regardless of leadership preparation and development. However, it can be argued that principalship is a different role from classroom teaching and, hence, requires specific preparation and development for several reasons. The increasing complexity of principalship responsibilities is one of several factors that make it essential for school leaders to get professional training and development(Arikewuyo,2009; Bush,2009; Vaillant, 2015). The need for specialized training for school principals is also linked to the evidence that high-quality leadership is essential for school improvement and student outcomes (Bush,2009). Hence, education policy-makers need to bear in mind that principalship positions certainly require complex leadership skills that can only be learned through professional training and development as the job is becoming more complex and demanding.

Education Officials at Regional and Woreda Education Offices who participated in the interview were also asked to tell what sorts of leadership development [on-job training] strategies are available for the incumbent secondary school principals. Accordingly, an expert from Oromia REB opines that "we *used to arrange seminars and conferences, as need be, at regional level for introducing policy interventions, new directions, and guidelines. Other on-job trainings are expected to be organized at woreda level" (EB-1, November 2023).*

A similar question was raised to Woreda Education Officers and their responses were quite varied. One of the Education Officers, for instance, explained the experience at his Woreda as;

> Of course, as the majority of secondary school principals in our locality lack formal training on school leadership, we used to give orientation on their appointment; supervisors also visit schools and give the principals on things to be improved; arrange meetings to discuss students' disciplinary issues as the woreda is a politically hot area.

The respondent was further asked for more clarification on the orientations and the major themes emphasized.

> Education Officer-1 replied" *Yes, issues included how to handle teachers' as well as students' discipline; managing school's property; in general managing their receptive schools following the existing Education and training policy of the country ((EO-1, December 2023).*

The other two Woreda Education Officers (EO-2 and 3) simply disregarded the value of providing orientation to novice school principals at the time of deployment; arguing that the incumbent principals were not alien /new to what was going on in the school compound for they used to serve there as teachers. They rather emphasized the importance of organizing seminars and occasional meetings at the Woreda level for these would help them to share experiences and perspectives. One of the participants (EO-2) rather suggested providing novice principals a university-based formal training on school leadership and management if the country is aspiring to improve the quality of education at all levels.

Principals who participated in the interview were also asked to discuss their own experiences on whether or not they attended an induction program when they were initially appointed to the role of school principal. In addition, if the answer seemed to be "yes," by way of probing, a follow-up question was posed to find out "who organized and managed it" and "what were the topics/ issues covered?" Consequently, two of the principals (P-1 and P-4) who participated in the current study disclosed that induction programs were not that prevalent in our educational system; as new principals, they were not even provided with any sort of orientation upon taking on the role of a school principal. The story narrated by one of the interviewees, who is only a subject specialist and came to the principalship position two years ago, was quite telling;

> Inspired to be a school leader and expecting leadership training, I competed for principalship luckily I won the competition and was assigned to one of the secondary schools in our woreda. As the school and even the role were new to me, I expected, at least, a kind of orientation on how to handle issues related to school leadership. Sad- enough, they simply handed me over the letter of my new appointment and urged me to start the task as soon as possible. Imagine how difficult the situation was for a novice principal like me.

The respondent was asked to discuss the coping strategy applied to overcome the challenge and mentioned:

> The only choice I had was to consult senior teachers and unit- leaders to help me with how things used to be handled. And, I began doing things as usual guided by the senior staff members. Can you imagine a school principal who was supposed to lead the staff, in turn, led by them- shame on the experts in the education offices for not performing their duties in this regard (P-3; December 2023).

In fact, from a professional ethics point of view, it is unfair to assign a novice principal without prior orientation on how to lead and handle school-related issues. It is for this reason that several notable researchers in the area of educational leadership emphasized the importance of familiarizing the new incumbents with the context in which they are leading, including the school culture itself (Bush, 2008;2011; Donley et al.,2021; Fusarelli et al., 2018; Villani, 2006).

Generally, an effective induction program is meant to ease the transition for recently deployed principals, expedite their socialization process, aid in their understanding of the intricate realities of school leadership, and boost their self-confidence so that they can effectively perform their duties. Conversely, a lack of or an insufficient induction method might have an impact on and slow down the learning process. According to Bush (2008), there is a greater possibility that this kind of induction procedure may cause the newly appointed principals to become doubtful about their ability to lead effectively.

CONCLUSIONS AND RECOMMENDATIONS

As is shown in the findings, most public secondary school principals in Oromia were assigned to principalship positions without any form of leadership preparation and, hence, were found to be underqualified to lead at this level. Besides, a considerable number of them had no appreciable experience in school principalship. In effect, such assignment has adverse consequences both on the part of misplaced principals and the school itself. On the one hand, it contributes to the low morale of the principals as a result of low performance which might finally end up in psychological or physiological withdrawal. On the other hand, it may result in poor performance of schools thereby affecting the overall quality of education.

It is a truth that the shortage of qualified principals cannot be alleviated overnight for it requires ample resources. While the long-term responses to the shortage of qualified principals lie in improving the attractiveness of principalship as a profession, what may be done in the short term is to give priority to providing inadequately qualified principals with the opportunity to get University-based professional training in educational leadership and continuously develop their leadership skills on-the-job afterward. Arguably, school principalship is a different role from classroom teaching and, hence, just as physicians, lawyers, and pilots they require specific preparation and development. Therefore, the provision of continuous and appropriate in-service professional training for all under-qualified incumbent principals deserves serious consideration by the Regional Education Bureau.

The study also revealed that professional development practices for secondary school principals in Oromia are scarce and limited to self-initiated practices like unstructured and non-intentional experiences resulting from daily work, reading guidelines, and manuals. Education office-initiated practices were also limited to activities like experience sharing at the CRC level, school visits by supervisors, performance appraisal, and rarely from conferences and seminars of school principals(at woreda, zone, regional, and national levels). And, even where it is practiced, it appears to be sporadic, unorganized, and unsystematic. The study also revealed that even the professional development activities that are commonly practiced in other countries and proven to help develop principal's leadership skills like mentoring and coaching are not known and practiced by Woreda Education officials of the study area.

Cognizant of the far-reaching contributions of professional development practices in providing incumbent school principals with opportunities to learn, grow, and change; it appears to be timely to introduce on-the-job professional development interventions like coaching, mentoring, and many others, in the education system. In this regard, the Oromia Education Bureau in collaboration with the universities in the region needs to introduce the use of peripatetic University professors as

coaches and mentors. In this strategy, a professional trainer who is qualified and specialized in the field will be assigned to two secondary schools that have no geographical distance as mentors or coaches. For the successful implementation of this strategy, schools need to be arranged into clusters within one hour of travel. Moreover, mentors and coaches should also be provided with adequate financial and other incentives so that they can be motivated to accept this mode of professional development for incumbent secondary school principals.

The study also demonstrates that induction for novice principals in the secondary schools of the region is overlooked by Woreda Education Officials. However, it should be noted that an effective induction program is meant to ease the transition for newly deployed principals, expedite their socialization process, aid in their understanding of the intricate realities of school leadership, and boost their self-confidence so that they can effectively perform their duties (Bush, 2008). Conversely, a lack of or an insufficient induction method might have an impact on and slow down the learning process; and in a severe case, there is a higher chance that such an induction process may make the recently appointed principals doubtful about their ability to lead secondary schools effectively. Hence, newly deployed secondary school principals need to be systematically developed through induction immediately after appointment to enable them to become familiar with the context in which they are leading and the school culture. This could be done by attaching newly deployed secondary school principals to senior and successful principals in their nearby schools for induction.

Albeit the concerted efforts of the Federal Ministry of Education in preparing sound policies to professionalize educational leadership(MoE,1994), it was evidenced from the reality on the ground that it is far from being realized-implying that the prevalence of policy-practice gap. It should be noted here, however, that failure to realize policy to practice leads to the deterioration of professionalization of educational leadership at all levels in general, and secondary school principalship, in particular. There is no doubt that this discrepancy, in turn, adversely affects the principal's performance/role in ensuring secondary school's effectiveness and students' achievement. Hence, it is high time for the Federal Ministry of Education and the Oromia Regional Education Bureau in collaboration with public universities to formally prepare and continuously develop school principals as stipulated/envisioned in the Education and Training Policy (MoE,1994); Teachers', Principals' and Supervisors' Development Blueprint(MoE,2013a); National Professional Standard for School Principals (MoE,2013b); and Ethiopian Education and Training Roadmap(MoE,2017).

IMPLICATIONS FOR EDUCATIONAL PLANNING AND PRACTICE

The findings from the study on leadership development practices for secondary school principals in Oromia highlight several critical implications for educational planning and practice:

1. Strengthening Leadership Preparation Programs: The high percentage of principals entering their roles without formal leadership preparation points to an urgent need for structured training programs. Educational authorities should develop comprehensive pre-service and in-service training that equips principals with essential leadership skills and knowledge.
2. Enhancing Professional Development Opportunities: The scarcity of systematic professional development practices indicates a need for more intentional and structured opportunities for principals. Educational planners should design ongoing professional development initiatives that are aligned with the specific challenges and needs of school leadership.
3. Establishing Supportive Networks: The limited collaborative practices, such as sporadic experience sharing and school visits, suggest that creating supportive networks among principals could enhance leadership effectiveness. Establishing regular forums for principals to share experiences, challenges, and best practices can foster a culture of continuous improvement.

4. Policy Implementation and Monitoring: The identified policy-practice gap signifies the necessity for effective implementation and monitoring of educational leadership policies. Educational planners should ensure that policies are not only developed but also actively enforced and evaluated to bridge the gap between policy intentions and actual practices.
5. Utilizing Data for Continuous Improvement: The study's mixed-methods approach demonstrates the value of data-driven decision-making in educational leadership development. Educational institutions should regularly collect and analyze data on leadership practices to inform improvements in training and support systems.
6. Addressing Experience Gaps: Given that many principals lack adequate experience, mentorship programs pairing experienced leaders with novice principals could be beneficial. Such programs can provide practical insights and guidance that are crucial for effective school leadership.

By addressing these implications, educational planners and policymakers can work towards enhancing the quality of leadership in secondary schools, ultimately leading to improved educational outcomes in the Oromia region.

LIMITATIONS

The responses of a relatively small sample of 48 principals (20%) might have limited the scope for generalizability.

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