INCLUSIVE EDUCATION STRATEGIES AND LEARNERS' ACADEMIC ACHIEVEMENT IN NATIONAL TEACHERS' COLLEGES IN UGANDA

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A THESIS SUBMITTED TO THE SCHOOL OF EDUCATION IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF DOCTOR OF PHILOSOPHY IN EDUCATION ADMINISTRATION AND MANAGEMENT OF UGANDA CHRISTIAN UNIVERSITY

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ABSTRACT

This study examined the impact of inclusive education strategies on students' academic achievement in NTCs in Uganda with a mind of identifying and recommending the best strategy for maximum implementation. The study was guided by three objectives, 1. To analyse the effects of active teaching and learning strategy on the academic achievement of learners in National Teachers' colleges in Uganda, 2.To assess the effect of supportive learning environment strategy on learners' academic achievement in NTCs in Uganda, 3. To examine the relationship between instructional technology strategy and academic achievement of learners in NTCs in Uganda. Data was collected through a five-Likert scale questionnaire with some open-ended questions, interviews and documentary review. The study adopted a cross-sectional design and was underpinned by pragmatism philosophy with explanatory sequential type of mixed methods. Data was collected from 681 population. Quantitative data was analyzed using SPSS version 29 for statistical data and qualitative data was analyzed in themes to draw conclusions for the study. Findings revealed that at $p<.001$ value with 2 level of significance, instructional technology had a strong positive correlation with academic achievement. Conducive learning environment had an average positive correlation. The study revealed that the highest relationship for inclusive education strategies was on skills with the average correlation. Among the ATL strategy, learning stations, problem-based learning, project-based learning and learning contracts, all the methods promoted critical thinking, pedagogical skills, problem solving among learners, however this depended on the extent to which they were efficiently applied in terms of preparation, implementation and follow up of activities. All NTCs had conducive learning environment in terms of space, light, and accessibility by all learners. However, the utilization of different technologies across all NTCs had improved to boost learning outcomes. The study recommended that MoES should allocate enough resources for the purchase of instructional technologies and ensure that IT capacity for teacher trainers was built, and the equipment is well maintained. Since this study revealed that ATL promoted quality content, better pedagogical skills, problem solving, and communication skills, teachers in NTCs should be aware that learners are having some content for their own learning.

DECLARATION

I, Clare Atuhire, declare to the best of my knowledge that this dissertation titled inclusive education strategies and learners' academic achievement in National Teachers' Colleges in Uganda is my original work and has not been submitted anywhere for any award. Any literature used in this thesis has been acknowledged.

Signature:

Clare Atuhire

Date: 8th/08/2025

APPROVAL

This is to certify that this PhD Thesis satisfies the requirements for the award of the degree of Doctor of Philosophy in Education Administration and Management of Uganda Christian University. It has been under our supervision and guidance and therefore we accept to forward it to the school of Research and Postgraduate studies for examination with our approval.

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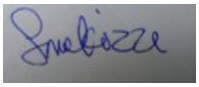

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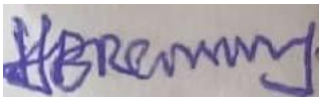

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Dr. Remigio Turyahabwe

DEDICATION

This work is dedicated to my dearest role model Mr. Gerald Tumwine. My mentor and husband Dr. Akwar Denis. My little children Akwar Rodrick, Harvey Mark, and Kemigisha Keyler who stood with me throughout my academic journey.

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LIST OF ABBREVIATIONS AND ACRONYMS

ATL	Active Teaching and Learning
CPDs	Continuous Professional Development
DES	Diploma in Education Secondary
ICT	Information Communication Technologies
IE	Inclusive Education
KYU	Kyambogo University
MOES	Ministry of Education and Sports
NCDC	National Curriculum Development Centre
NCHE	National Council for Higher Education
NTC	National Teachers College
PBL	Project based learning
PrBL	Problem based learning
T/L	Teaching/ Learning materials
TETD	Teacher Education Training and Development
TTE	Teacher Training Education
SNE	Special Needs Education
USE	Universal Secondary Education
MMR	Mixed Method Research
SNE	Special Needs Education
UNITE	Uganda National Institute of Teacher Education
TTIs	Teacher Training Institutions

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CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter introduces background to the study, statement of the problem, purpose of the study, objectives, research questions, hypotheses, conceptual framework, significance of the study, justification of the study, scope of the study and operational definitions.

1.1 Background to the study

This focused on historical, contextual, theoretical and conceptual background in relation to inclusive education strategies and academics achievement of learners.

Education serves as a fundamental pillar for personal, social, and economic development, and it must be accessible to all individuals, regardless of their diverse backgrounds or abilities. Inclusive education embodies this principle by promoting equal opportunities for participation and learning within mainstream educational settings, ensuring that every learner is valued and supported.

To realize the goals of inclusive education, it is essential to implement inclusive educational strategies—deliberate, active teaching strategies that accommodate diverse learning needs, foster a supportive and responsive environment for all students and foster instructional technology that is for all learners (Angwech et al., 2023)

These strategies not only promote a sense of belonging and participation among all students but also contribute significantly to improving academic achievement. Research consistently demonstrates that inclusive educational environments foster higher levels of engagement, motivation, and academic performance among both learners with and without disabilities (Bakare et al., 2022). As such, the implementation of inclusive practices is not merely an ethical imperative but a pedagogical approach that enhances the overall quality completion of learners' grades like from coursework, classwork, peer reviews, project work and exams. Skills such as pedagogical, communication, critical thinking, problem solving and technological

skills from the education system are achieved (Kuyini et al.,2020) Inclusive practices should as well aid learners' timely completion of their semesters and academic year.

1.1.1 Historical Background

While education is recognized as a crucial factor behind economic development, education faces significant challenges to drive economic growth due to diverse nature of society (Mugo et al., 2015). Education however remains a crucial aspect of societal transformation for both underdeveloped and developing economies in the world given that society is made of people of different categories with different abilities- some normal others with different disability levels (Mugo *et al.,* 2015). Real societal transformation through education requires that education should be as inclusive as possible to aid good grades from course work, project work, and exams (Vickerman, 2020). This should start as early as lower levels of education up to highest levels with the aim of balancing academic achievements like good communication skills, problem solving, critical thinking and technological skills of all learners irrespective of their physical abilities (Mugo et al., 2015)

In the modern world, inclusivity is a new normal in enhancing quality education globally. Among the many strategies on inclusivity, active teaching and learning strategies that arouse learners' interest in learning, create critical thinking and problem-solving skills was used in schools in America, Canada and learners' grades improved (Hay *et al.,* 2025). Active teaching and learning (ATL) strategy embraces techniques such as; project-based learning, problem-based learning, learning stations and learning contracts that foster quality classwork, projects as noticed in Netherlands (Navas et al., 2025). Kim et al., (2024) contends that use of responsive instructional technology that is appropriate for learners helps to create happy learning, good grades and timely completion with example from Korea schools. In Canada, teaching/ learning environment was made conducive to support learning for all with strategies like accessibility of the dormitories, space for learning, library accessibility, talking compound and learners were able to solve problems, do quality classwork, and timely completed their semester studies (Hay et al., 2025).

In China, Inclusive educational strategies like instructional technology were geared towards critical thinking, problem solving, good pedagogical skills, high technological skills, good communication with characteristics of good grades, quality coursework, evidence of quality project work (Wang, 2025).

According to Powell (2025) in European countries, inclusion in education involves a process-by-process systematic approach for enhancing learners' skills. In relation to competence development, learner centered methodologies like ATL with high level technology that is assistive to all learners were implored in Denmark but still learners could not complete their coursework and excel in exams (Powell, 2025). In Belgium, instructional technology greatly supported learners critical thinking with high level practical skills for societal technological transformation (Hefiela, 2024). France carried out a systemic reform embedding changes and modifications in content, teaching methods, approaches, structures and strategies in education and learner' completion rates were enhanced (Powell, 2025). This was to overcome barriers with a vision serving to provide all students of the relevant age range with an equitable and participatory learning experience and environment that best corresponds to their requirements and preferences for quality grades in project work, peer reviews, coursework and exams (Hefiela,2024). In Sweden, ATL strategy culminated into all learners completing classwork on time, very good communication and problem solving skills, quality assessment results and readiness to the world of work (Mentel et al., 2025).

According to Majoko (2019) placing students with disabilities within mainstream classes without accompanying structural changes for example, organisation, curriculum and teaching and learning strategies in Egypt, did not constitute inclusion and it meant that integration did not automatically guarantee the transition from segregation to inclusion to lead to academic excellence.

Mentel., et al. (2025). explains that all over developing economies especially Africa, the number of students with special needs that proceed from the start of the academic year to the end follow a pyramid logic in the education career with number of enrolment of students with special needs keep reducing as they progress to higher institutions as a case in Egypt (Mentel., et al. (2025) For example in sub- Saharan Africa, where there are no inclusive education strategies like supportive learning environment, numbers of students with special needs keep reducing significantly. There is low retention and completion rates for special needs learners as they climb

the academic ladders due to limited access to learning resources at schools in Morocco (Magumise & Sefotho, 2020). Even as numbers decrease, the performance is equally wanting due to reasons ranging from limited gadgets to use (assistive gears), low technical support from teachers and poor learning environment. In South Africa, completion rates for special needs students was very low especially in institutions of higher learning. Even in Tunisia, for those special needs learners who complete, there is evidence of poor grades attained at completion level, poor communication and low problem-solving skills (Parther, 2019).

UNESCO (2018) affirms that in African traditional societies, people with special needs were regarded as recluses, they were never taken to school, those who were taken were never taken care of by teachers and the learning environment excluded them automatically hence failure to complete levels, poor grades, poor coursework, failure to complete project work. Governments then set up special schools' strategy for the special needs children but these were majorly at primary levels and this left segregation effects to such children from the rest of other learners in terms of technological skills, problem- solving skills (Broomhead, 2018). In some communities in Zambia for example, persons with physical disabilities often stayed away from other people as they were under looked by everyone in society including families (Vicker, 2020). There was no accessibility to schools and those who dared were often ignored by peers and teachers until they missed classes, project work, coursework, exams and failure to complete studies. Those that persisted got very low score and subsequently they dropped out of school (Thorp, 2023).

In East Africa improvements have been made in lower education levels but higher levels of learning have not paid attention to inclusive strategies that enhance academic achievement in terms of grades, skills and completion rates (Vicker, 2020). Despite improvements in access to education for all, quality education remains a concern at institutions of higher learning and NTCs in particular with evidences of low learner academic achievement associated with different levels of physical and mental abilities, poor communication skill and technological skills (Katende, 2010). Due to the increasing population of persons with special needs in society, interventions have

been more for lower school levels than higher institutions of learning like colleges and university hence evidences or low enrollment, retention and poor grades both during class and at completion (Bannink et al., 2020). There is high level need to improve inclusive education for colleges for better enrolment, retention and quality completion of Special needs (SN) learners with better academic achievement like quality projects, classwork, coursework in order to realise society transformation (Bannink et al., 2020).

Whereas in developing countries like Kenya, Rwanda and Burundi not much had been achieved in terms of inclusive education. The struggle for normalizing quality education that is inclusive in East Africa continues with evidences of learner academic glory still wanting in terms of inclusive methodology, teaching and learning aids and inclusive learning environment (Bannink et al., 2020). There is no single, stand-alone strategy that has yielded academic achievement in East Africa. Many scholars and governments in East Africa still believe that students with special needs should attend special schools where they can be supported by specialist so as to achieve better competences through classroom activities that are learner centered, this has not yielded much still. Even with learner centered pedagogies implored, learners have however continued to battle with low self-esteem, low critical thinking skills, poor grades and failure to graduate after the course (Bannink et al., 2020). Despite Rwanda's ambitious curriculum reforms, learner-centered pedagogy has struggled to take root in teacher training institutions due to low problem solving, communication and technological skills. The gap between policy and practice was attributed to a complex interplay of limited educator capacity, systemic resource shortages, ingrained cultural attitudes, and insufficient policy support has hindered better learner skills in education in Rwanda. Without addressing these foundational challenges, the vision of transforming Rwandan education through learner centered pedagogy may remain aspirational.

In many Teacher Training Institutions (TTIs), especially in urban and semi-urban centers, learner centered pedagogy has led to observable changes in instructional practices with good technological, problem solving and communication skills. Mtika &

Gates (2010) reported on the use of problem-solving, student-led presentations, project-based learning, and collaborative group work, in Uganda facilitated critical thinking and active learning. Ngussa & Role (2015) also noted that preservice teacher education programs encouraged reflective practices through the use of journals, lesson critiques, microteaching, and peer assessment. These activities were seen to enhance trainee teachers' self-awareness and ability to plan for learner-centered lessons during teaching practice with better pedagogical skills.

In Ugandan early times, there has been a wide misconception of associating disabled persons with misfortunes, bad omen and curse. Some of such learners never accessed schools and so they remained illiterate (LUO, 2020). Later on, there were special schools in the country for special needs learners and these were situated very far from homes and families with poor learning environment with few or no instructional materials (Magumisire, & Sefotho, 2020). In the special schools, the attempt was to provide special care to quality learning for disabled children however this never yielded better academic performance in terms of quality skills, better grades and quality class work for learners (Veck, 2009). High level advocacy for the disabled learners to go to normal schools, be given support for learning, through inclusive practices like learner centered pedagogies, supportive environment in schools was a paradigm shift (Veck, 2009).

As part of the educational agenda, there was a reflection on having special needs learners into the mainstream schools and this led to the birth of inclusive education in Ugandan secondary school (Magumise & Sefotho, 2020). To date, many people still take special needs students as only those with severe cases. They ignore those with mild and moderate cases, so they were not given attention to support their learning for critical thinking, communication skills that aid academic achievement (Vickerman, 2020).

Uganda, like many developing countries, faces resource constraints to fully support inclusive education in schools (Vickerman, 2020). For example, there is no enough funding allocated to support the infrastructure, teacher training, and materials

necessary for inclusive education (Vickerman, 2020). To note, teacher training and capacity in Uganda has not been adequate for the trainees to gain enough knowledge and skills on inclusive education (Sikoyo, 2025). Teachers are not adequately trained to support inclusive education in terms of Active Teaching and Learning (ATL) methodology, teaching and learning aids and conducive learning environment (kisalama,2018). They have limited or no skills and knowledge required to address the diverse needs of students with disabilities or special educational needs (Kisalama, 2018). This has led learners to be low achievers in terms of response and scores in formative and summative assessment (Parther, 2019). Pather (2019) contends that in Uganda inclusivity has not worked as many schools lack the necessary infrastructure to accommodate students with disabilities which among others include accessible buildings, classrooms, toilets, and transportation.

Uganda's commitment to inclusive education has scored much in terms of major policy documents, including the Uganda Persons with Disabilities Act (2006), the Education and Sports Sector Strategic Plan (ESSP), and the Inclusive Education Policy (drafted 2011, revised in 2019). These policies emphasize the integration of children with special educational needs (SEN) and disabilities into mainstream schools but the implementation to enhance learners, grades, completion rates is wanting. Stroeken, & Idro (2016) argued that while policies were well-drafted, the translation into effective practice to aid quality classwork, effective grades, technological skills is inconsistent, particularly due to lack of resources, uneven training, and minimal accountability mechanisms.

To Majoko (2019) negative attitudes and stigma due to limited awareness and understanding of disability, societal misconceptions, still hindered the acceptance and inclusion of students with disabilities in mainstream school to aid quality education in Uganda. Further, Bannink et al., (2020) emphasized that while Uganda has made progress in developing policies and legal frameworks to support inclusive education, assessment results still show that the level of score is very low for special needs learners, there are many gaps in implementation and enforcement and this has worsened the level of academic achievement for learners with special needs in terms

of grades, skills and completion rates. Bakare, (2022) contends that addressing challenges to inclusive education requires a comprehensive approach involving government commitment, investment in infrastructure and resources, teacher training, community engagement, awareness-raising campaigns, and collaboration with stakeholders including parents, Non Governmental Organisation (NGOs), and international partners which has not been done sufficiently.

National Teachers' Colleges (NTCs) in Uganda have still battled with the poor historical norms among teachers, parents, school administrators, community members regarding learners with disability. The knowledge on how to implement inclusive education is still limited despite interventions like ATL. There is still resistance to inclusive education in societies because of ignorance about the importance of inclusive education (Bannink etal., 2020). Many stakeholders are stranded about interpretation of practices of inclusive education because the information is not yet everywhere especially in rural areas of Uganda (Bannink etal., 2020).

Considering the fact that it is fair and right for all students to have access to education and equal learning opportunity irrespective of their gender, social economic background and special needs, this research seeks to examine the impact of inclusive education strategies like ATL, supportive learning environment and instructional technology on academic achievement like grades, skills and quality completion for learners in NTCs in Uganda (Algolaylat et al., 2023).

1.1.2 Theoretical Background

This study was hinged on three theories that supported one another on the constructs of the study and these are; Universal Design Theory, Social Constructivism and the Ecological Systems Theory

This study was underpinned by Social constructivism theory because all other related theories in this study relay to its principles. The theory had constructs of the study especially on inclusive educational strategies like conducive school environment, teacher support in terms of learner centered methodologies which are relevant for

peer support, content development, and hidden curriculum however not all aspects of the study are included in social constructivism theory. The Universal Design for Learning (UDL) theory then supported to address the constructs of teacher methodology and assessment in the study.

The social constructivism theory was explained by theorists such as Lev Vygotsky who observed the advantages of social interaction and collaboration in the learning process (Kuyini et al., 2020). Social constructivism is a collaborative form of learning based on interaction, discussion and knowledge sharing among students (Olorode, & Jimoh, 2016). The teacher's role was to employ teaching methods that are learner centered and collaborative in nature (Luo, 2020). The underlying factor is that learners work together in groups sharing ideas, finding answers to problems or just creating something new to add to existing knowledge (Kuyini et al., 2020). This learning theory deemphasizes teacher-monotony in the classroom, but encourages active interaction among learners, the teacher and enhances other components of the teaching learning process (Kuyini et al., 2020). It also concretizes learning and knowledge by making students retain the facts that they discover and construct by themselves from the environment other than those they were told by the teacher (Olorode & Jimoh, 2016). In the situation of inclusive education, social constructivism highlights the value of inclusive classrooms, where students with diverse abilities learn together and engage in cooperative learning activities that aid academic achievement (Magumise & Sefotho 2020). Through collaborative interactions, students can learn from each other, develop empathy and understanding, and build inclusive communities within the classroom that aid peer academic excellence (Olorode & Jimoh, 2016). The theory was driven on the premise that social interactions among learners drive professional or actual and social learning (hidden curriculum) (Luo, 2020).

Life long process of development was dependent on social interaction and that social learning actually leads to cognitive development (Luo, 2020). In other words, all learning tasks (irrespective of the level of difficulty), can be performed by learners under adult guidance or with peer collaboration (Luo, 2020). This theory helped to give a backup to the establishment of opportunities for students to collaborate with

the teacher and peers in constructing knowledge and understanding (Kapur, 2018). This theory has widely been used by researchers in the field of education but no concrete results have been discussed concerning inclusive education strategies like learner centered methodology and academic achievements of learners in NTCs in Uganda.

Besides, Universal Design for Learning (UDL) supported this study to enhance the gaps not addressed by social constructivism theory. It is an educational framework that promotes flexible and inclusive teaching practices which support inclusion (Luo, 2020). The theory suggests that instructional materials, methods, and assessments should be designed to accommodate the diverse needs of learners from the outset (Magumise & Sefotho, 2020). UDL notes that educators should provide multiple means of representation, expression, and engagement to cater for individual learning styles, preferences, and abilities. By adopting UDL principles, inclusive education aims to remove barriers to learning and ensure that all students can access and engage with the curriculum.

Ecological Systems Theory, developed by Urie Bronfenbrenner was as well crucial in this study as it emphasizes the influence of environmental contexts on individuals' development (Magumise & Sefotho, 2020). In the context of inclusive education, this theory highlights the importance of creating supportive and inclusive learning environments. It recognizes that a range of factors, including school policies, classroom dynamics, peer relationships, and community attitudes, can impact students' educational experiences. Inclusive education aims to create inclusive ecosystems where students are supported and included within their educational and social environments (Magumise & Sefotho, 2020).

The three theories however did not highlight the relationship between inclusive education strategies and academic achievement of Learners in NTCs in Uganda.

1.1.3 Conceptual Background

The study was set out to examine inclusive education strategies and learners' academic achievement in national teachers' colleges in Uganda. It is important to understand the concepts under the study as explained below.

Inclusive education recognizes that all learners have the right to access quality education, participate fully in the learning process, and achieve their educational potential, regardless of their background, abilities, or characteristics (Majoko, 2019). Inclusive education aims to address systemic barriers and promote equal opportunities for all students. However, systemic and structural barriers within educational systems has posed challenges to inclusive education (Magumise & Sefotho, 2020). These include policies and practices that reinforce segregation or insufficient support services for students with disabilities (Mugambe & Avogo, 2024). Inadequate collaboration between education and other sectors, such as health and social services, can also limit the provision of comprehensive support for students.

Inclusive education strategies refer to the policies, methodologies implored in institutions of learning to aid teaching and learning that support academic achievement of all learners irrespective of their background, and abilities. They include ATL, supportive learning environment and instructional technology (Majoko, 2019).

Supportive Learning environment, this refers to the surroundings in which learners stay at school. Positive School and supportive environment was so key for all learners. Inclusive education emphasizes the creation of a positive school climate and a supportive learning environment. This includes fostering a sense of belonging, promoting positive relationships, and ensuring the emotional well-being of all students, talking compound, accessibility to classrooms, library and dormitories. Inclusive schools prioritize strategies such as positive behavior support, conflict resolution, and anti-bullying initiatives to create safe and supportive spaces for learning (Kuyini et al., 2020).

Academic achievement refers to what learners can attain out of the class activities this can be formal and informal results both on formative assessment and summative assessments. The achievements tantamount to completion of class tasks, learner promotion from one level to another. Development of soft skills are part of the bigger goal of academic achievement (Kuyini et al 2020).

Skills refer to the abilities, competencies, or proficiencies that a person develops through training, practice, or experience to perform specific tasks effectively. They enable individuals to carry out particular functions or solve problems in personal, academic, or professional settings. These skills included Critical thinking, Problem solving, Counselling, Pedagogical, Communication and Listening (Hefiela, 2024).

Grades are **standardized indicators or symbols used to measure and report a student's academic performance** in a subject, test, or overall course. They reflect how well a learner has understood and achieved the set learning competences or outcomes (Jung, 2025).

Education is a multifaceted process of facilitating learning, acquiring knowledge, skills, values, beliefs, and habits (Algolaylat et al., 2023). For this study, education refers to the structured and systematic form of learning that takes place within educational institutions such as schools, colleges, and universities. It is characterized by a well-defined curriculum and is usually led by trained teachers or instructors (Algolaylat et al., 2023).

Government policy refers to a deliberate system of principles, guidelines, and courses of action adopted and enforced by a government or its institutions to achieve specific goals and address public issues. These policies are designed to guide decision-making and ensure a consistent and coherent approach to governance across various sectors, such as healthcare, education, economy, defense, and the environment (Mugo et al., 2015).

Finance in this study refers to the planning, allocation, and management of financial resources to support and enhance the educational system. This encompasses funding for schools, colleges, universities, and other educational institutions, as well as the

financial strategies and policies that ensure the effective utilization of these resources to achieve educational goals.

Disability refers to a physical, mental, intellectual, or sensory impairment that significantly limits one or more major life activities. This includes conditions that affect an individual's ability to perform everyday tasks, participate in social activities, or access services and opportunities that are commonly available to people without such impairments.

Instructional technology strategy, also known as instructional materials, are resources and tools used by educators to facilitate the teaching and learning process. These aids are designed to support instructional objectives, engage learners, and enhance understanding and retention of content. Teaching/learning aids come in various forms, including visual, auditory, kinesthetic, and interactive materials, and they cater to different learning styles and preferences.

Active teaching and learning strategy engage students in the learning process by encouraging them to participate actively rather than passively receiving information. Some of the effective active teaching and learning strategies included: problem based learning, project based learning, learning stations and learning contract.

Assistive technologies mean devices or systems that help learners with disabilities to perform tasks they might otherwise find difficult or impossible, e.g., screen readers, braille machines, or hearing aids.

1.1.4 Contextual Background

As part of the United Nations agenda, Sustainable Development Goal 4 (SDG 4), focuses on ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all, Uganda follows this but no tangible results to celebrate (Mugambe & Avogo, 2024). (Armenia, (2019). Inclusive education has emerged as a cornerstone of global educational reform, aiming to ensure that all learners—regardless of their physical, intellectual, social, emotional, linguistic, or other conditions—are provided with equitable learning opportunities. In Uganda, the government has shown commitment to inclusive education through several policy

initiatives, including the *Persons with Disabilities Act (2006)*, the *Education Sector Strategic Plan*, and the draft *Inclusive Education Policy (2019)*. These frameworks highlight the need to integrate inclusive practices within all education levels, including teacher education. These policies were well laid on paper eliminating disparities in education and ensuring equal access to all levels of education and training for the special needs as a strategy is a subsection of SDG4 (Parther, 2019), (Oketch & Rolleston, 2007a). The importance of Uganda implementing inclusive education is to ensuring that all individuals, are able to excel in academics with good grades, skills and timely completion Matsenjwa,etal (2020). The government of Uganda through Ministry of education and Sports implements inclusive education through improved learning environment to promote diversity, address the needs of various learners, and aims to create an educational environment that accommodates everyone, including those with disabilities and other marginalized groups (UNESCO, (2012). This is majorly implemented by Special needs department of Ministry of education and sports (Oyunga, et al., 2025).

For NTCs, Special needs department of MOES was supported to effect special needs education by Enabel Uganda through Teacher training and Education Project (TTE) UNESCO, (2012). The project supported NTCs with inclusive infrastructure that caters for all learners. There was promotion of safe learning environment through talking compound, better lavatories, dormitories, library (Majoko, 2019). Teachers were trained on inclusive education and special needs education to aid academic achievement through good grades for learners, quality skills and quality completion of courses. An online course on inclusive education was created and NTC lecturers followed it as a continuous professional development course (Kisalama, 2018). Less this support, inclusive education had not been a priority at tertiary level especially NTCs meaning that there were no special tertiary institutions and those in existence were not inclusive (Kisalama, 2018). As secondary schools increased to be more inclusive, there was definitely a high need for tertiary institutions to improve conditions so as to accommodate special needs learners (Oyunga, et al., 2025).

Studies indicated that the structure, policies, and practices of the educational system in Uganda play a significant role in shaping inclusive education and this has worked at universities like Makerere (Kuyini et el., 2020). Strategies such as competence based curriculum developed by NCDC, is for all learners in terms of content and methodology, plus teaching and learning aids is taking shape in O'level schools. Assessment strategy by UNEB intended to cater for all learners in terms of materials, more extra time for some learners during exams and availability of specialists to SN learners during final exams has increased completion rates. Teacher-training programs by MoES geared towards empowering teachers to handle all learners however this has worked more for primary schools than NTCs. Resource allocation strategy by the government impact the implementation of inclusive practices. At primary level schools with SN learners are given extra capitation grant to support such learners but this is not the same at NTCs (kisalama, 2018). The new lower secondary school curriculum which is competence based has been interpreted and implemented with a view of inclusiveness in terms of T/L materials, T/L methodology, teacher competence and inclusive right however at NTCs the curriculum is still being constructed by Uganda National Institute for Teacher Education (UNITE) (Desai & Sharma, 2020). The strategy by the Ugandan government through Universal Primary Education (UPE) was launched in 1997, UPE increased access to education for marginalized children, including children with disabilities (Kuyini et al., 2020). While not fully inclusive, UPE has helped reduce barriers to entry for many children (Majoko, 2019). Teacher training initiatives where Pre-service and in-service training programs (e.g., under Kyambogo University) now include special needs education (SNE) components. Community engagement and sensitization with grassroots programs by NGOs have helped reduce stigma around disability and promoted inclusive practices in schools like NTCS (Ireri et al., 2019). Provision of assistive devices and some accessible infrastructure (e.g., ramps, modified latrines) has helped NTCS, to pilot programs by the government of Uganda (Kuyini, 2020). Inclusive School models where some schools have adopted resource rooms or inclusive classrooms where learners with disabilities are integrated with peers, with added support have helped to promote better learning outcomes in

terms of class work, coursework, project work, exams, better communication, problem solving and technological skills (Kuyini, 2020).

In Uganda learners with special needs at NTCs have varying academic achievement in terms of coursework grades, graduation levels, skills such as critical and pedagogical skills. Researchers have focused more on policies and equipment as factors for academic achievement for SN learners at lower levels of education and institutions like PTC not NTCs and most studies were outside Uganda. Researchers left out the aspect of inclusive education which would be important if Uganda is to achieve the vision and SDG number 4. There were studies about inclusive education and academic achievement in Kenya but not in Uganda where problems and levels of development are not the same. The variations in the achievements of learners at NTCs have been attributed to variations in the strategies employed in teaching but there are no studies in the case of Uganda to show which strategy fit all or is the best.

1.2 Problem statement

Societal transformation requires equitable education. This can only be achieved through inclusive provision of the service like inclusive education. South Africa had a boast of social-economic transformation and this was after implementing inclusive education (Algolaylat et al., 2023). In India and Japan inclusive education was implemented in a style that permit all learners with different abilities to study together in same school environments to develop academic abilities (Jung, 2025). In Uganda children with disabilities have been isolated, socially discriminated, majority not taken to schools. This is partly because the current Teaching and learning environment is not inclusive that it accommodates all learners with different abilities. The government of Uganda realized that it was losing on abilities of these learners' academic achievements hence losing on the national labor force for social economic development. On this basis, through MOES, they attempted to implement and enhance inclusive education specifically in NTCs through; construction of inclusive structures,

introduction of inclusive learning course for NTC lecturers, in addition all teaching staff were to use ATL methodologies, and vocationalisation of education in NTCs.

It is not known whether efforts to implement inclusive education have yielded any tangible results on the academic achievement of learners. For example, out of all 450 learners admitted at NTCs per year, 80 of them drop off, around 100 learners fail a paper or coursework the majority of which are students with disability….,270 complete their coursework and 270 are able to get their transcripts and certificates of completion which also is issued after a year, (NTC report 2023). Knowing the impact of each strategy on academic achievement of learners would help in identifying which strategy is the best for implementation and which ones were weak for enhancement to improve on academic achievement that translates into socio-economic development of Uganda. lack of this information will keep the country and ministry in a blackout of investing in unviable project hence continuous socio-economic loss. As a matter of urgency, if this situation is not attended to, students with disabilities will continue experiencing social exclusion and low and or poor grades, high dropout rates while others will graduate with limited skills and hence unfit for employment yet government will continue investing in such a project that may have unviable sections/strategies. The researcher therefore has been propelled to examine the impact of three of the inclusive education strategies on academic achievement for learners in NTCs in Uganda.

1.3 Purpose of the study

The purpose of the study was to examine the effect of inclusive education strategies on students' academic achievement in NTCs in Uganda.

1.4 Study Objectives

This research was based on the following objectives:

1. To analyse the effect of active teaching and learning strategy on the academic achievement of learners in National Teachers' Colleges in Uganda.
2. To assess the effect of supportive learning environment strategy on learners' academic achievement in NTCs in Uganda.

3. To examine the relationship between instructional technology strategy and academic achievement of learners in NTCs.

1.5 Research Questions

This research was guided by the following questions;

1. What are the effects of active teaching and learning strategy on the academic achievement of learners in National Teachers' Colleges in Uganda?
2. What are the effects of supportive learning environment strategy on learners' academic achievement in NTCs in Uganda?
3. What is the relationship between instructional technology strategy and academic achievement of learners in NTCs?

1.6 Conceptual Framework

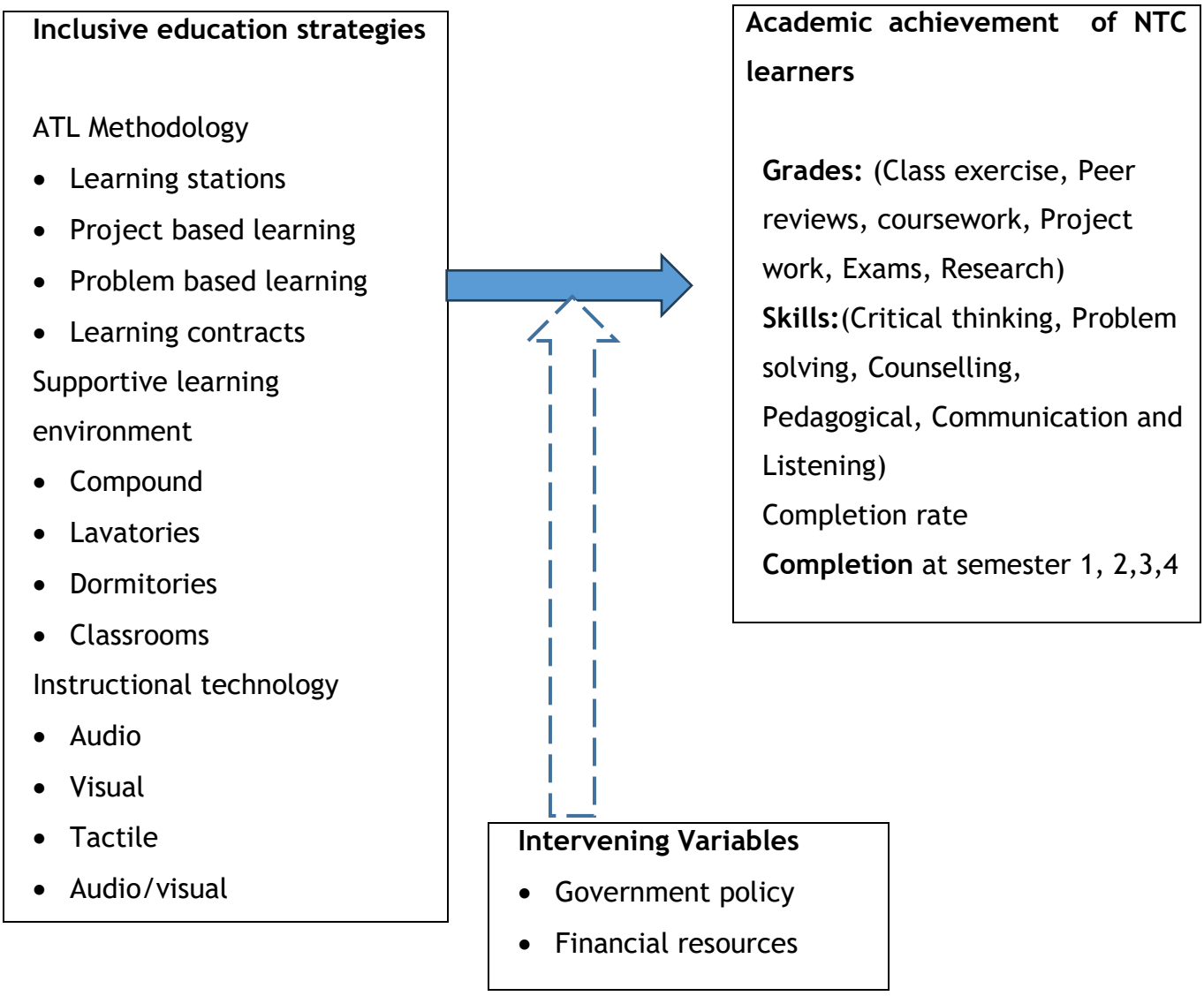


Figure 1.1 Conceptual framework

Adopted from (Vickerman 2020).with modification by the researcher

Inclusive methodology involves learner centered techniques that put learners at the center of learning through the planned activities by the teacher. The teacher is a facilitator and each learner draws a given competence from each activity. Whereas activities are designed for teaching and learning, there is always assessment in

learning and assessment for learning so as to measure the competences achieved. Learning requires a conducive environment for all learners especially in terms of access. If the classrooms, dormitories, library, lavatories and the school compound are accessible to all learners, they then get a psychological feeling of being safe, are able to learn and interact through peer learning and can easily acquire competences, quality classwork and achieve better grades. Varied instructional strategy aid special needs learners to achieve different competences in teaching and learning in terms of good project work, quality classroom exercises, quality research and grades in exams. Government policy, financial resources and learners' ability as well influence learners' grades, quality peer reviews, and good grades in exams. Some Projects require funding for better results. Importantly, not all learners have the same abilities to do the same tasks and achieve the very results at the same time. Each learner is unique with different abilities and capacities. Learners are expected to attain technological skills required for 21st century teaching, good class management for both small and big classes, be affluent in guidance and counselling and have good pedagogical and communication skills.

1.7 Justification

The justification for research on inclusive education is rooted on the principles of equity, diversity, and social justice at national, regional and international levels. Recent trends in educational institutions reveal a concerning rise in failure rates, dropout rates, and poor academic performance among students with varying levels of disabilities. Despite the implementation of inclusive education policies, learners with disabilities continue to face significant challenges in accessing quality education, often resulting in lower grades and premature school exit. At the same time, there has been substantial investment from both the Ugandan government and development partners such as Enabel Uganda in inclusive education strategies—including infrastructure improvements, teacher training, provision of assistive technologies, and supportive learning environments. However, the actual impact of these investments remains unclear, as there is limited data on their effectiveness in improving academic

outcomes for learners with disabilities. This disconnect raises critical questions about the relevance, efficiency, and sustainability of the current interventions.

As a matter of urgency, there is a need to explore and implement effective instructional methods, effective instructional strategy that are accommodative, and interventions that can enhance the learning experience for all students with in NTCs in Ugandan for better academic excellence. This study is intended to bring out these interventions to enhance better teacher training strategies by government of Uganda through UNITE. UNITE should already cater for inclusivity at the level of programme design for subsequent implementation.

As NTCs are a birth of professional teachers for lower secondary schools in Uganda, the study cannot wait to find out the level of quality of teachers and their readiness to support diverse learners both at primary and secondary schools with appropriate methodologies that enhance academic competences that are relevant for the world of work. As NTCs transit to degree awarding under UNITE, the research will help programme designers to design the content for teacher training to be inclusive for better graduates.

This study cannot be missed especially at the moment NTCs are transiting to UNITE, and they transit from diploma teacher training to bachelor's degree teacher training, new programmes are being designed and management of colleges is changing. Currently, NTCs are operating at low capacity, there is a need to establish the baseline as far as inclusive practices are implemented before they transit for degree awarding for better actions by UNITE.

Because NTC that are directly managed by the government of Uganda under MoES, this research is needed so as to help to inform the development of inclusive education policies and practices by examining the legal and policy frameworks that support or hinder inclusive education in NTCs. Understanding the legal and policy landscape is crucial for creating an inclusive education system through right implementation.

If Uganda is to achieve middle-income status through education, the country must implement sustainable development goal four (Quality inclusive education) through

effective inclusive strategies and practices that can support the inclusion of diverse learners, ensuring that they receive quality education alongside their peers in the five national teachers' colleges in Uganda and subsequently to all institutions of higher learning in Uganda. The study will help to identify strategies for inclusivity starting with teacher training so that teachers can get competences to promote equal educational opportunities for all students, regardless of their abilities, disabilities, or other characteristics. This research on inclusive education is required to help government of Uganda through MoES and UNITE to identify and implement effective continuous professional development strategies and training programs for teachers to enhance their capacity for inclusive teaching and learning.

This research on inclusive education is so handy because of the great need to foster positive social interactions and relationships among students with and without disabilities in NTCs. Research in this area will help to explore the impact of inclusive practices on the social and emotional development of all students, promoting a sense of belonging, acceptance, and empathy while at NTCs for academic excellence and subsequent world of work. If this research is not carried out, there are chances that there will always be poor learning environment, teacher centered methodologies will continue to be implemented so learning will be for a few, then NTC graduates will transfer the same to secondary schools hence creating a poor syndrome in education system for low academic achievement.

1.8 Significance of the study

The study will be of importance to:

The Ministry of Education and Sports, specifically special needs department to draw mechanisms for setting up and implementing policies for supporting inclusive education in higher institutions of learning and increase academic achievement of diverse learners.

Development partners in Uganda to practically allocate resources and define appropriate activities of inclusive education for teacher training institutions so as to ensure sustainability of improved pedagogical practices for diverse learners.

The research may help lecturers in NTCs to embrace inclusive education for quality pedagogical practices that promote quality learning and grades for all learners

It will help the managers of institutions especially the governing councils to strengthen systems and practices that yield results to inclusive education and diverse students' academic achievement.

The research findings may be of great importance in adding to the body of knowledge in the field of inclusive education , provide baseline information and a springboard for further research in the area of inclusive education especially in areas that may be suggested in this study for further studies

The research may lead to the award of PhD in educational management and administration of Uganda Christian University.

The research findings may support the researcher in her current job position to design strategies for inclusive school management and building teacher competences under **"WE TEACH PROJECT."**

Sustainable Development Goal 4 (SDG 4) calls for inclusive and equitable quality education and the promotion of lifelong learning opportunities for all, placing a strong emphasis on ensuring that no learner is left behind, including those with disabilities. Similarly, Uganda's National Development Plan and Education Sector Strategic Plan prioritize inclusive education as a key pillar for national development. However, achieving true inclusivity hinges not just on policy commitments but on the efficiency and effectiveness of the strategies implemented to support learners with special needs. This efficiency cannot be assumed—it must be backed by evidence. Research like this is therefore critical, as it provides data-driven insights into what works, what doesn't, and how resources can be better aligned to improve academic outcomes for learners with disabilities. Without such research, efforts risk being misdirected, and the vision of inclusive education under both SDG 4 and Uganda's national agenda remains out of reach.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter presents related literature review on theoretical review, conceptual review, summary of review. The related literature is reviewed from different sources including journals, textbooks, articles of different authors in regard to the examining inclusive education strategies and academic achievement of learners in National Teachers' Colleges in Uganda**.** Literature is to establish what scholars have written in relation to the topic, which gaps still exist and what the major findings of the studies were that can enhance this research. Review of literature was from the related studies that other studies have not missed.

2.1 Active Teaching and Learning strategy and learners' academic achievement

World over, discussion that concern learner centered techniques that promote active learning and teaching, critical thinking and learners' grades often trigger heated conversations (Pho et al., 2021). Many scholars present ATL strategies as modern methods to replace the traditional methods like lecture method in promotion of learner grades and quality class work which could be a wrong perception (Cherono et al., 2016). Whereas learner centered methodologies are inclusive and can aid teaching and learning , it was not clear whether they would promote learners, academic achievement in terms of better critical thinking, problem solving skills for better grades (Education et al., n.d.).

Governments in developed countries like the USA, UK, Canada, and Australia allocated resources for innovation in teaching and learning, to promote ATL strategy for the promotion of better pedagogical skills, critical analysis, good grades hence better education system (Algolaylat et al., 2023). In USA, there are national policies and frameworks that promote active learning, such as the Next Generation Science Standards (NGSS) (Abugre & Kpinpuo, 2017). The University of Edinburgh's "ABC

Learning Design" approach integrates active learning principles into curriculum development across its courses to promote learners' grades and quality soft skills like critical thinking (Otaala, 2013). According to Hoffer (2010), global citizenship demands careful training and preparation of students for a life of active engagement in an increasingly diverse, interconnected worldwide that promotes job market skills. Literature did not spell the specific techniques that are used in teaching and learning to improve performance in teacher training colleges.

In Africa, 16% of special needs learners are not able to go to school (Hoffer, 2010). Among those who go to school, many fail to transit from one level of education to another (Hoffer, 2010). This justifies why there are few special needs learners at institutions of higher learning in Africa (Otaala,2013). The few learners who struggle to reach higher levels score less marks, some fail completely and others drop off from courses due to exclusive methodologies used by teachers like lecture method. In fact to some people, there are no special needs students at institutions of higher learning (Antil, 2014). In Africa, children with disability are always excluded from the mainstream schools due to lack or low teacher competences (Luo, 2020). This means that motivated teachers should be provided with appropriate training, resources and support for inclusive education for all stages to enhance students' academic achievement through good grades (VanWinkle et al., 2005)

Today in Uganda, about 5% of disabled can acquire education through inclusive Schools whereas about 10% go to special schools (UNICEF, 2014). However, of 1,370,583 students enrolled in a secondary school in Uganda, 8,945 students (0.6%) have special learning needs. Importantly to note, visually impaired students have the largest numbers among special needs children hence a need for more visual aids to aid their skills and better attendance of class for them (Andrews, et al 2005). Among the fewest is multiple handicaps and autism (Bryges & Mkandawire, 2020). The government of Uganda through Enabel a Belguim development agency, project called TTE (Teacher Training Education project) were at the forefront to promote inclusive education especially in the five National Teachers colleges since 2017 (Uturu,.et al 2019).

The MoES through special needs department supported NTC using funding from Enabel and government of Uganda through the provision of the necessary human resource and special equipment and materials like projectors, computers to support SNE (Evans, & Acosta, 2020). Even though, there are still immense challenges in NTCs as far as inclusive education and academic achievement of learners are concerned even as the institutions transit to UNITE (Konopka et al., 2015).

Teaching and learning according to competence based curriculum focus on differentiated instruction and organizing activities for Ugandan students of lower secondary to help them to discover new knowledge, practice right competences and then apply knowledge to reality, this is still wanting (Apollo & Mbah, 2021). Therefore using active teaching methods such as learning stations, in which enhancing experiences in learning is the significant trend of modern education is a requirement for quality peer support (Sasaoka & Nishimura, 2010). Darling-Hammond, (2019) through analyzing his cross-cultural teaching experiences throughout education, he concludes that active learning is essential to promote cross-cultural understanding. However there was no evidence of how ATL promotes academic achievement of learners in the 21st century hence a knowledge gap.
ATL strategy was studied under four constraints on learning station, project based learning, problem-based learning and learning contracts.

2.1.1 Learning stations and academic achievement of learners

Learning stations are points of physical locations in or outside the classroom where learners are asked to create activities or take a task for learning using the resources available (Pho et al., 2021). Learners can work individually, in pairs or in smaller groups, support one another, answer questions and solve problems, critically think and enhance learning through peer reviews (Mugo et al., 2015). At each station, there is a problem or a task for students to do, activities are straight forward, there are important concepts to learn but also class exercise to be done for learning (Knight & Sabot, 1990a).

In countries like Germany, Learning stations are used to reduce the time to set up learners activities and the amount of resources required for teaching and learning to enhance students grades, skills and completion rate (Navas et al., 2025). Self study, self learning plus critical thinking help to cater for inclusive learning for all students in the same environment (Apollo et al., 2021). Learning stations create opportunities for a diverse learners group to have some responsibility for their learning environment, free the instructor to help students with more difficult concepts, and help students see the underlying principles that govern our understanding of today and tomorrow (Stambach, 2009a).

Further more, the effectiveness of using Learning station method to improve students' competencies at elementary schools in Vietnam was well proven with high retention of all learners and better grades at completion (Kim et al,. 2025) In Nigerian schools, the method was used to develop self-study and autonomy competencies among learners for better completion of classroom exercises and project work (Sasaoka & Nishimura, 2010). Where used appropriately like in South Africa, competences such as communication, cooperation, problem-solving and creativity has helped to produce 21st century learners who have better grades and skills needed in the market (Stambach, 2009a).

Even in developing economies of East Africa, Learning stations can be used for all subjects and students of all levels as long as the teacher is well trained and competent enough to do effective planning of content, class exercises, that aid student quality content (J. Mugo et al., n.d.). In Uganda, the competence lower secondary school curriculum is designed to support learning stations that ensure student interaction, flexible peer review and guided research for learning. (Sasaoka & Nishimura, 2010). Using learning stations, the teacher can create different materials and work activities for all learners using different formats to promote critical thinking and problem solving skills (Oketch & Rolleston, 2007b). The inclusivity is evidenced by students' ability to move to different stations independently, solve problems, complete

classwork by themselves; or collaborate with their peers/group members to create, discuss, or solve a problems at a stations (Mugo et al., 2015).

Importantly, Learning stations method emerges from social constructivist theory, which encourages students to face real-world problems that occur in their daily lives, provide them opportunities for developing new knowledge based on their experiences and what they have learned before and think critically on the way forward (Pho et al., 2021).

This is the new goal to teach students who are familiar with how and where to implement knowledge and skills like communication, pedagogical with better grades (Otaala, 2013). In modern education system, Learning station method is used as a teaching tool that addresses individual differences (Pho et al., 2021). The differentiation in teaching by learning station method is flexible and diverse for all learners hence inclusivity (Pho et al., 2021).

In addition to the characteristics of learning stations strategy, learning station method requires more advance planning by teachers, materials and numerous possibilities for the implementation of activities like peer reviews, research and project work which may not be available in all schools (Pho et al., 2021). However, if the classroom materials are limited in quantity in which it is possible for students to work in small groups roaming through the stations, may lead to loss of content and low grades for learners. (Moran et al., 2012).

At implementation, exploratory station, reading station, visual station, audio/visual station, electronic station, advisory station, acting/dramatic play station, or stations that represent for different subjects such as math station, art station, sciences station, and communication station can be used to cater for all learners needs (Pho et al., 2021). It is worth mentioning that the design of these stations depends on each lesson where it can combine these different types of a model design consisting of learners, concepts, and necessary problem solving skills for students (Oketch & Rolleston, 2007b). Learning stations allow teachers to differentiate instruction by

grouping students based on pretests and this allows them to remediate certain students while accelerating others (Evans & Acosta, 2020). Students are not required to remain at a task for too long (Pho et al., 2021). By rotating students through stations that vary between quiet, mental tasks to active, verbal ones, they are kept interested and off-task behaviors are reduced for quality class work, good scores in project work plus quality completion at graduation (Wyatt, 2002).

Students are better to stay quiet and focused when necessary knowing that they would move soon to a more active station (Krain et al., 2015). For some students, the transitions between stations give them a short break between stations, and by moving around the room, students could refresh and renew their energy for better problem solving and critical thinking that enhance grades (Evans & Acosta, 2020). Students develop independent work habits since this is very important for students because they must solve different issues without teachers' explanation in detail (Pho et al., 2021). They only receive teacher's instruction in general and students themselves will be active in dealing with tasks at different stations, and develop their own speed of working (Krain et al., 2015). Students can move from a station to another station after finishing a task; they do not need to sit at their seats too long to feel bored because elementary students love movement and they are more excited if they can move around stations to accomplish course work, develop good communication and listening skills. (Pho et al., 2021). The movement among stations not only brings students the excitement but also give them new challenges that they need to conquer (Krain et al., 2015).

Literature revealed that learning stations method is more effective at the primary education level than higher institutions of learning because of the developmental characteristics of this age group and helps students to develop more intimate relations with their peers by creating a comfortable atmosphere during lessons, better

completion of classroom exercises. This creates acknowledge gap to investigate the effectiveness of the method at institutions of higher learning like NTCs.

2.1.2 Problem based learning (PrBL) and academic achievement of learners

Problem-Based Learning (PrBL) is an instructional method in which students learn through solving complex and real-world problems (Nick et al., 2012). Students are presented with problems that are relevant and applicable to real-life situations, which helps them to see the practical application of their knowledge, think critically and find possible solution. PBL shifts the focus from teacher-led instruction to student-centered learning through research and peer support (Nick et al., 2012).

In Belgium students take responsibility for their learning, working in groups to explore and solve problems and gain skills for the bigger world (Nick et al., 2012). Collaborative learning is a core component of PrBL to aid teamwork and better communication skills (Ydesen & Andersen, 2020). Students engage in self-directed research and inquiry to gather information, analyze data, and develop solutions to the problem (Krain et al., 2015). PrBL emphasizes the development of critical thinking and problem-solving skills as students analyze complex problems and identify solutions (Evans & Acosta, 2020. Problems often require knowledge from various disciplines, encouraging students to integrate and apply information from different subject areas.

Australian schools use PrBL to engage students in active learning, often through projects that address community issues or global challenges (James-Cook-University, 2016). This approach helps students develop a range of skills, produce good project work and pedagogical skills.(VanWinkle et al., 2005). However implementing PBL require additional resources, such as access to research materials, technology, and collaborative workspaces (Ydesen & Andersen, 2020). Schools and universities need to invest in technological resources to support PBL (Ydesen & Andersen, 2020).

In institutions of higher learning like in Ethiopia, teachers act as facilitators or guides rather than traditional instructors to support students in their learning process, providing guidance and resources as needed (Krain et al., 2015). Students retain information and score good grades because they have apply their knowledge to solve real problems (Jane, Okou & Okou, 2002). PrBL supports students develop critical thinking skills as they analyze and evaluate information to solve complex issues, review their own progress and with quality completion of tasks (Malunda, 2017). Students gain skills that are transferable to various contexts, such as collaboration, research, and communication (Jane, Okou & Okou, 2002).

Many schools and universities in Africa face resource limitations, including inadequate funding, lack of access to learning materials, and insufficient technology infrastructure, which hinders the effective implementation of PrBL (Pho et al., 2021). Effective PrBL requires teachers to shift from traditional teaching methods to a more facilitative role. This shift necessitates comprehensive teacher training, which is often lacking in many African countries. Some educational systems in Africa have rigid curricula that do not easily accommodate the flexible and interdisciplinary nature of PrBL (Evans & Acosta,2020). In some regions, there is a strong preference for traditional lecture-based instruction (Krain et al., 2015). Changing these cultural attitudes towards more student-centered learning approaches like PrBL can be challenging and so learners end with rot learning and poor classroom performance (Pho et al., 2021). Therefore governments and educational institutions need to invest in the necessary resources, including infrastructure, learning materials, and technology, to support PrBL yield more to critical thinking skills, communication and problem solving skills (Abugre & Kpinpuo, 2017).

Problem-Based Learning in Africa has the potential to transform education by making it more relevant and engaging for students (Abugre & Kpinpuo, 2017). Despite the challenges, there are promising developments and success stories that illustrate the impact of PrBL on enhancing critical thinking, problem-solving, and practical skills among learners (Abugre & Kpinpuo, 2017).

In East African education systems, students are trying to work on real-world problems with more engagement and motivation, as they see the relevance and importance of what they are learning (Pho et al., 2021). PrBL prepares students for the complexities of real-world professional and personal challenges by simulating these environments in the classroom (Pho et al., 2021). (Algolaylat et al., 2023). Problem-Based Learning is widely used in various educational settings, including K-12 schools, universities, and professional training programs, due to its effectiveness in fostering deep learning and practical skill development like communication, problem solving and technology (Algolaylat et al., 2023).

In the competence based curriculum for lower secondary education in Uganda, using problem based learning (PrBL) students use “triggers” from the problem case or scenario to define their own learning objectives and quality classwork (Abugre & Kpinpuo, 2017). Subsequently they do independent, critical thinking self directed study before returning to the group to discuss and refine their acquired knowledge (Abugre & Kpinpuo, 2017). Thus, PrBL is not about problem solving , but rather it uses appropriate problems to increase problem solving, communication and pedagogical skills.(Algolaylat et al., 2023).

Some progressive secondary schools in Uganda are beginning to adopt PrBL methodologies, often as part of project-based learning initiatives (Abugre & Kpinpuo, 2017). These schools focus on engaging students with real-world problems that require collaborative and critical thinking skills to solve (Abugre & Kpinpuo, 2017). PrBL has helped students understand and retain information better than traditional lecture-based methods (Abugre & Kpinpuo, 2017). By working on real-world problems, students develop essential skills in critical thinking, problem-solving, and decision-making (Buluma, 2019). PrBL fosters teamwork and communication skills as students work in groups to solve problems (Buluma, 2019). Students take more responsibility for their learning, developing skills in research, self-assessment, and life long learning (Buluma, 2019). Many educational institutions in Uganda face significant resource constraints, including limited access to learning materials, technology, and funding

(Buluma, 2019). There is a need for comprehensive teacher training programs to equip educators with the skills and knowledge required to facilitate PrBL effectively (Buluma, 2019).

The previous curriculum in many Ugandan secondary schools was rigid and exam-oriented, making it challenging to integrate flexible and interdisciplinary approaches like PrBL that aim at enhancing critical thinking, better communication and quality classwork (Vincent & Sophia,2024). Traditional teaching methods are deeply ingrained, and shifting to a more student-centered approach like PrBL requires a cultural change among educators, students, for better learners' grades, and pedagogical skills for the world of work (Mugo et al., 2015). The implementation of PrBL in the College of Health Sciences at Makerere University showed positive outcomes in training competent and resourceful health professionals that have goods technological, guidance, counselling and communication skills (Mugo et al., 2015). The program's success is encouraging other faculties and institutions to consider adopting PrB for student' successful projects (Mugo et al., 2015). Some secondary schools and universities have initiated innovative projects that use PrBL to address local community issues, such as health campaigns, environmental conservation projects, and entrepreneurial ventures and learners were able to solve problems, produce quality classwork and better grades (Vincent&Sophia, 2024).

2.1.3 Project based learning and learners' academic achievement of learners

Project Based Learning (PBL) is a teaching strategy in which students learn by actively engaging in real-world and personally meaningful projects for quality content development and timely graduation (Konopka et al., 2015). Project-based learning (PBL) or project-based instruction is an instructional approach designed to give students the opportunity to develop knowledge and skills through engaging projects set around challenges and problems they may face in the real world (Konopka et al., 2015). Project-based learning is more than just "doing a project," (Konopka et al., 2015).

In China, education is to prepare students for success in life, and the focus is on project-based world with better pedagogies (Wang,2024). This reinforce students skills and critical thinking that they can break down future problems into their component parts, assemble and lead a diverse team of stakeholders to process the problem, and implement a solution (Pho et al., 2021).Too often, traditional learning never ventures beyond the realm of the purely academic (Pho et al., 2021). Project-based learning connects students to the world beyond the classroom and prepares them to accept and meet challenges in the real world in a way that mirrors what professionals do every day (Abugre & Kpinpuo, 2017). Instead of short-term memorization and summative regurgitation, project-based learning provides an opportunity for students to engage deeply with the target content, bringing about a focus on long-term retention and better grades (Abugre & Kpinpuo, 2017).

Because of its focus on 21st-century skills, the PBL model in African schools is used to enhance students' technology abilities (Abomeh &Yusuf, 2019). Project-based learning helps students develop teamwork and problem-solving skills along with the ability to communicate effectively with others (Abomeh & Yusuf, 2019). The collaborative nature of projects also reinforces the social and emotional learning (SEL) programs being implemented at progressive schools around the world (Abomeh & Yusuf, 2019).These interpersonal aspects of PBL dovetail perfectly with the use of technology in the classroom (Algolaylat et al., 2023). Technology-based projects are interdisciplinary, collaborative, inquiry-based, self-directed, motivating, and address the full range of student needs and learning styles (Algolaylat et al., 2023). Additionally, digital literacies and digital citizenship objectives become ingrained in tech-based projects, especially when the PBL opportunity is conducted seamlessly within the friendly confines of the school's learning management system (Algolaylat et al., 2023).

In Ugandan education system especially in secondary schools, project based learning requires one to coach more and instruct less, to embrace interdisciplinary learning instead of remaining locked in single-subject silos, and to be more comfortable with

uncertainty and discovery during the learning process for quality class work (Algolaylat et al., 2023). For many teachers, PBL is a stark contrast to the traditional education they experienced (Krain et al., 2015). Critical thinking change takes time and is seldom without apprehension and challenges (Krain et al., 2015) . However, when we consider the types of educational experiences we value for our modern learners, it becomes apparent the traditional "sage on the stage" instructional model falls significantly short due to limited critical thinking (Pho et al., 2021). Good problems or ideas can come from students, parents, or community members as evidence of better communication skills (Krain et al., 2015). Teachers can think through the steps required to solve a problem and use those steps as project-learning activities (Wood, 2003). Instead of planning a massive project, the learning process can be made more manageable by chunking the project into smaller parts, with frequent checkpoints built into the timeline for better skills development for learners (Machů & Lukeš, 2023)

Shifting from traditional teacher-centered methods to student-centered approaches like PBL requires a change in mindset among educators, students, and parents. Governments and educational institutions need to invest in the necessary resources, including infrastructure, learning materials, and technology, to support PBL (James-Cook-University, 2016). Project-Based Learning in Ugandan schools is showing promising results, particularly in lower secondary schools with evidences of critical thinking and collaboration(James-Cook-University, 2016). Despite challenges such as resource limitations and the need for teacher training, the adoption of PBL is enhancing student engagement, critical thinking, and practical skills. With continued investment and support, PBL has the potential to transform education in Uganda, preparing students for future success in an increasingly complex world (VanWinkle et al., 2005). With continued investment and support, PBL has the potential to significantly improve educational outcomes in Uganda, preparing students for future success in an increasingly complex world (Machů & Lukeš, 2023). Literature did not show how project based learning enhances the academic achievement of learners of NTCs in Uganda

2.1.4 Learning contract and learners' academic achievement of learners

Learning contracts are agreements between learners and educators that outline the responsibilities, goals, and processes involved in the learning journey (Ydesen & Andersen, 2020). These contracts can play a significant role in enhancing learners' academic achievement through self-reflection and critical thinking (Ydesen & Andersen, 2020).

In developed economies like Singapore, learning contract, also called a goals contract, is used by one to set transparent expectations for students (Kim, 2023). Learning contracts specify behaviors and habits for success and can promote student reflection on how they learn and apply skills from learning (Yeo, 2024). A learning contract is an agreement, written collaboratively between a learner and a teacher that details what is to be learned, how it will be learnt, and how that learning will be verified to ensure academic achievement in terms of skills and better grades (Pho et al., 2021). It sometimes involves the learner's parents (Otaala, 2013).

Learning contracts allow learners to decide what they wish to strive for, which activities they will engage in, and how they will demonstrate that they have satisfactorily completed their studies (Yeo, 2024). Learning contracts are personalized agreements that define the expectations and responsibilities of both the learner and the educator (Pho et al., 2021). Learning contracts usually include the following; Learning Objectives that are clear, measurable goals that the learner aims to achieve, resources and strategies such as materials, tools, and methods the learner will use to reach the objectives, timeline with specific deadlines and milestones to track progress, assessment criteria especially on how the learner's progress and performance will be evaluated, and responsibilities, roles and duties of both the learner and the educator in the learning process (Kim, 2023).

In Africa where there are large classes, the contract holds learners accountable for their progress, encouraging consistent effort and engagement for better class work (Boaduo et al., 2011) . Learners develop important skills such as time management, goal setting, and self-assessment (Boaduo et al., 2011).Learning contracts can

increase motivation by making learning more relevant and personalized. Engaged learners are more likely to put in the effort required to achieve their goals and have better grades (Boaduo et al., 2011). Clear goals and structured plans help learners stay focused and organized, leading to better skills and academic performance (Boaduo et al., 2011). Learners who are actively involved in their learning process are more likely to retain information and concepts (Boaduo et al., 2011). Successfully meeting the goals outlined in a learning contract can boost learners' confidence in their abilities, leading to increased self-efficacy and willingness to tackle challenging task (Pho et al., 2021).

The process of working with learning contracts teaches learners valuable skills that are applicable beyond the classroom, such as self-assessment and adaptability (Vincent & Sophie, 2024) . University students might create learning contracts for independent study courses, outlining the topics they will research, the resources they will use, and the criteria for evaluation (Mugo et al., n.d.). In primary and secondary schools, learning contracts can be used for projects or units of study (Mugo et al., n.d.). For example, a student might agree to complete a science project on a specific topic, with outlined steps and deadlines (Vincent & Sophie, 2024).

Learning contracts are also common in adult education and professional development programs, where learners set goals for acquiring new skills or knowledge relevant to their careers (Vincent & Sophie, 2024). Creating effective learning contracts requires careful planning and collaboration between learners and educators (Mugo et al.,). Contracts need to be flexible enough to accommodate changes in learners' circumstances or interests (Mugo et al.,). Continuous support and monitoring are essential to ensure learners stay on track and adjust their plans as needed for better grades (Mugo et al.,). Educators must ensure that learning contracts are tailored to accommodate different learning styles and needs (Krain et al., 2015). Learning contracts are a powerful tool in the educational process, offering a structured yet flexible approach to personalized learning (Krain et al., 2015). Literature did not

reveal whether learning contracts at NTCs promoted better academic achievement of learners at NTCs in Uganda.

2.2 Supportive learning environment strategy and learners' academic achievement of learners

Inclusive infrastructure refers to the design, development, and maintenance of physical and digital environments that ensure equitable access and usability for all individuals, regardless of their abilities, socio-economic status, or background (Algolaylat et al., 2023). This encompasses a range of elements that facilitate inclusion in various settings, such as schools, workplaces, public spaces, and online platforms for better learner engagement (Navas et al., 2024). Buildings, facilities, and public spaces are designed to be accessible to people with disabilities which improves class attendance (Algolaylat et al., 2023). In the school setting, they includes ramps, elevators, wide doorways, accessible restrooms, tactile paving, and clear signage for good accessibility. Infrastructure in schools should be designed with the principles of universal design, ensuring that it can be used by everyone to the greatest extent possible without the need for adaptation (Algolaylat et al., 2023) . The inclusion should include considerations for people of different ages, sizes, and abilities to foster learning through easy access and quality class achievement (Kumar, 2018). Availability of technologies that support individuals with disabilities in accessing and using infrastructure is so crucial to aid skills for learners (Antil, 2014). They includes screen readers, hearing loops, adaptive keyboards, and mobility aids. Online platforms, websites, and digital content are designed to be accessible to all users, including those with visual, auditory, cognitive, and motor impairments (Kumar, 2018).

Transportation systems in schools should be designed to be accessible and affordable, with features such as low-floor buses, audible and visual announcements, and accessible transit stations for all educational facilities for quality access to learning, attendance and knowledge acquisition (James-Cook-University, 2016). In some countries of Africa today, schools and universities are designed to be inclusive, with accessible classrooms, laboratories, libraries, and sports facilities (VanWinkle et al., 2005). This includes having assistive technologies and accessible learning materials

that support quality of learning and better grades for the graduates (Vickerman, 2020).It was revealed that collaboration with special educators is generally insufficient, as these are scarcely available and they are very few to support quality learning for all learners (Bannink et al., 2016)

Classroom setup and infrastructure challenges are additional barriers to teaching in general and Inclusive education (IE) in particular, as was the case of two classes being taught in the same room due to scarce availability of classrooms in some Ugandan secondary schools (Armenia., etal 2019). Across Uganda secondary schools, there are no suitable facilities' for children with intellectual disabilities to support them have good grades like others (Baluma, 2019). Mainstream schools appear poorly equipped with financial, material and training resources to implement effective quality learning and better grades for learners. There is general lack of teaching equipment especially for special needs learners. In some instances, teachers and learners buy materials at their expense (Abomech & Yusuf 2019).

Through Teacher Training and Education (TTE) project, Teachers were equipped with vital knowledge and skills important for inclusion, particularly the identification of disorders and needs, curriculum and task adaptations and behaviour management (Armenia., etal 2019). In NTCs, it is very unusual for lecturers to reflect on considering inclusion achieved whenever learners with special needs attended mainstream schools, regardless of how well their needs were met (Ireni, & Mbawayo, 2019). Addressing the diverse range of abilities within inclusive classrooms can be challenging, requiring flexible and differentiated teaching strategies to promote critical thinking and problem solving skills (Ireni, & Mbawayo, 2019). Students with diverse linguistic and communication needs for example may require specialized support that is not always readily available (Baluma, 2019). There may be challenges in effectively measuring and evaluating the outcomes and impact of inclusive education programs, making it difficult to assess their success and areas for improvement (Krain et al., 2015).

2.3 Instructional technology strategy and learners' academic achievement

The European Parliament underpins that the amount of resources, as well as the flexibility to use available resources, differs a lot in Europe, however, for a successful inclusive education adequate resources are needed to aid skills development, critical thinking and quality classwork(Ragins & Kram, 2007). In Germany, schools have the possibility to reject students with special needs with the justification of lack of resources available to aid their academic achievement through quality learning and assessment (Firman & Said, 2016). In the context of attitudes towards inclusive schooling, a link between resources and attitudes has been shown (liang, 2004). Improving the quality of education is one of the main issues related to inclusion (Bjørndal, 2020). Building the capacity of the education system, and the stakeholders within it, to effectively respond to diversity is a key issue in improving quality grades (Bjørndal, 2020). A number of countries now have teacher training programmes on teaching approaches for children with disabilities but curriculum and assessment frameworks remain inflexible and methods such as multi-level instruction and peer support are still poor (Bjørndal, 2020)

Teachers are great facilitators of knowledge and skills in the 21st century teaching and learning profession (Joseph, 2015). Teachers use teaching aids to enhance classroom instruction, extract learners' attention and create a motivation to learn for and quality completion of tasks by learners (Buluma, 2019). These teaching aids are devices (computer, DVD), instructional aids (book, chalk board, picture), or objects (specimen, map, globe) that help the teacher to effortlessly carry out the teaching-learning process to enhance learners' skills (Okech, 2017). However, a lot depends on the creative abilities of the teacher (Wyatt, 2002). The use of teaching aids can facilitate the learning process by making it interesting and less time consuming (Machů & Lukeš, 2023). The use of teaching aids enables learners to use their hearing or seeing abilities and actively perform something while learning to gain better pedagogical skills (Algolaylat et al., 2023).

The use of non-conventional teaching aids play an important role in the teaching and learning process today for students to complete their classwork and gain quality

grades (Konopka et al., 2015). Projected aids like power point, slides, film-strips, overhead projectors, TV/VCR as they can be projected on screen to give an enlarged image of the material arouse learners' interest in learning and aid better understanding of content by learners (Moses etal., 2016).

The large, bright and colorful images make them more effective than a non-projected aid. Non-projected aids do not require projection screens (Buluma, 2019). Such materials are simply shown, hung or touched, for example. chalkboard, whiteboard, charts, posters, pictorial materials and models they support learners to critically think (Profession, 2009). They provide first hand experiences, make the learners actively participate, stimulate students' interest, ensure better results and longer retention (Kirsti Lonka, n.d.). Furthermore, it is the responsibility of teachers to be sufficiently trained on the use of teaching aids, and have full understanding of their subject in order to pass on the right knowledge to students for their better perceptions and grades (Kirsti Lonka, n.d.).

The use of pictures, video clips, objects, internet facilities help the students to have a real-life imagination of the context of what is being taught so as to produce quality classwork (Darling-Hammond, 2019). Instructional material, also known as teaching/learning materials, are any collection of materials including animate and inanimate objects and human and non-human resources that a teacher may use in teaching and learning situations to help achieve quality class work (Kisalama, 2018). Teaching aids are the most important tools of teaching process which provide students a natural learning environment for problem solving skills. (Cherono, 2016). Teaching materials are not a complete way of teaching but an aid to learning and critical thinking and problem solving (Boaduo et al., 2011). Traditional teaching aids, as the name suggests, have been used for teaching for a long time in Africa. These teaching aids were so important when no technology came into existence especially in promoting problem solving skills (Otaala, 2013). Still, some of them are used by schools now days to better the quality of classwork, and they include blackboards, books, flashcards, maps, globes, etc (Moran et al., 2012). For example, subjects such as Chemistry and Physics still involve the use of blackboards, as teachers would find

it easier to teach derivations and chemical equations on board to enhance learners' quality work (Boaduo et al., 2011). Using maps in Geography classes will help students to spot the different places of the world accurately rather than just assuming their location to better learners' analytical skills, communication skills and better grades (Otaala, 2013).

Instructional technology strategy and learners' academic achievement was studied under the constraints of visual aids, audio aids, audio-visual aids

2.3.1 Visual aids

World over visual aids for teaching and use materials like graphs, charts, projectors, models, and diagrams are so supportive to students' academic achievement (Wyatt, 2002). Visual aids include teaching by means of visuals to develop critical thinking (Wyatt, 2002). For instance, teachers can demonstrate the different kinds of shapes by using large blocks of shapes in their hands to students of smaller groups to enhance their critical thinking, problem solving and quality classwork through peer support (Canals, 2017).

Visual teaching aids are tools used to enhance learning by appealing to the visual senses (Taherdoost, 2018)(James-Cook-University, 2016). These aids can take many forms and are used to illustrate concepts, provide examples, and engage students in the learning process for quality class work for better grades (VanWinkle et al., 2005). Whereas charts and graphs are used to present data and relationships visually, they are critical in promoting communication skills, peer to peer support and this can culminate into quality completion of such learners (Konopka et al., 2015). Students understand complex information quickly and clearly to solve problems, critically thing and complete their coursework and project work with quality grades (Moses et al., 2016). For example, a pie chart can show the distribution of different categories within a whole, while a line graph can depict changes over time, this helps to promote quality coursework for learners through critical thinking. Diagrams and Infographics help to simplify complex information into visual formats that are easier to understand hence self study and completion of quality work to aid quality completion of tasks

(Firman & Said, 2016). Diagrams can illustrate processes, systems, or hierarchies, while infographics combine text and visuals to convey information efficiently (Firman & Said, 2016). Maps used in subjects like geography and history, maps help students understand spatial relationships and the geographical context of events or concepts (Buluma, 2019). In the classroom set up, photographs and illustrations provide concrete examples and can bring abstract concepts to life and aid learners classwork, quality project work, coursework results, better grades and graduation (Darling-Hammond, 2019).

For instance, in biology, photographs of plants and animals can help students identify species and understand ecosystems (Kisalama, 2018). Videos and Animations are powerful tools for demonstrating concepts that are difficult to convey through static images (Otaala, 2013). For example, a video can show the process of mitosis in a cell, or an animation can illustrate the workings of a complex machine (Malunda, 2017). Flashcards are often used for memorization and quick recall of facts, vocabulary, or concepts (Bjørndal, 2020). They are particularly useful in language learning and early education (Kisalama, 2018). Interactive Whiteboards and Smartboards allow teachers to display and manipulate visual content interactively (Kirsti Lonka, n.d.).

Visual aids help clarify complex concepts and make abstract ideas more concrete to support critical thinking and better classwork (Buluma, 2019). They provide students with visual representations that are easier to comprehend than verbal explanations alone hence better grades can be attained by learners (Cherono et al., 2016). Information presented visually is often better retained and recalled by students through critical thinking and academic excellence (Buluma, 2019). Visual aids create lasting impressions and help reinforce learning through repetition and association that aid peer reviews and critical thinking (Fountain, 2018). Visual aids can make lessons more interesting and engaging to learners (Cherono et al., 2016). They capture students' attention and sustain their interest, which can lead to increased motivation to learn and better grades (Buluma, 2019). Not all students learn the same way, visual aids support visual learners who understand and remember information better when

it is presented visually so they can gain quality skills for the competitive world (Deborah et al., 2005).

Visual aids provide additional context and support understanding regardless of language proficiency hence enhancing communication skills (Konopka et al., 2015). Visual aids can promote critical thinking and problem-solving skills among all learners (Karlsen, 2010). Analyzing graphs, interpreting diagrams, and creating visual representations encourage students to think critically about the information (Konopka et al., 2015). Interactive visual aids, like smartboards and collaborative charts, foster student interaction and teamwork (Marais, 2015). Group activities involving visual aids can enhance cooperative learning and communication skills (Victor & Babatunde, 2014). Visual aids can be used across various subjects and educational levels (Abugre & Kpinpuo, 2017). They are versatile tools that can adapt to different teaching methods and curricular goals (Luo, 2020).

Visual aids often incorporate real-world data and examples, helping students see the relevance of what they are learning (Abugre & Kpinpuo, 2017). This connection to the real world can enhance the applicability and importance of the content (Cedofop, 2011).Visual aids help clarify complex concepts and make abstract ideas more concrete (Skutil et al., 2018). They provide students with visual representations that are easier to comprehend than verbal explanations alone (Marais, 2015). Information presented visually is often better retained and recalled by students. Visual aids create lasting impressions and help reinforce learning through repetition and association(Konopka et al., 2015). Visual aids can make lessons more interesting and engaging (Moses et al., 2016). They capture students' attention and sustain their interest, which can lead to increased motivation to learn (liang, 2004). Literature did not clarify the kind of visual aids used to improve teaching and learners' academic excellence in NTCs in Uganda.

2.3.2 Audio aids

Audio aids involve the usage of audio to help students learn (Bae, 2006). They support in learning languages where communication and listening are important. Auditory learning makes the students develop their listening skills (Vickerman, 2020). Audio aids help a lot in learning languages where communication and listening are important (VanWinkle et al., 2005). Auditory learning makes the students develop their listening skills (Wyatt, 2002). It may involve playing a paragraph in audio, making students listen to it and answer questions, or playing some calm music in classroom to make students feel relieved (Wyatt, 2002). By listening to the radio, students can improve their listening and understanding skills (Algolaylat et al., 2023). Since audio has a positive effect on brain development, it is greatly helpful for students to learn attentively (James-Cook-University, 2016).

Radio Programs that are educational broadcasts that cover a wide range of topics were used in most developing countries especially during Corona (Wyatt, 2002). Language Labs are interactive audio resources for language learning, including pronunciation guides and conversation practice are used in countries like south Africa(Pho et al., 2021) . Interactive Audio Software Educational software that uses audio prompts and responses to engage students are common used in classrooms (Krain et al., 2015). Voice Assistants using tools like Siri or Alexa that can provide information, answer questions, and support learning are mostly used in south Africa (Wyatt, 2002). Enhanced engagement Audio aids can make lessons more engaging by adding variety and breaking the monotony of traditional teaching methods especially in Ugandan schools (Pho et al., 2021). Audio aids cater to these learners by providing information in a format they can easily process (Machů & Lukeš, 2023). Audio aids can make learning materials accessible to students with visual impairments or reading difficulties, ensuring inclusivity in education (Wood, 2003). Audio aids support with memorization and recall (klinge, 2015). Music and rhymes, for instance, can make information more memorable to all learners of all levels foster retention and completion of classroom exercises (Krain et al., 2015).

Audio aids are crucial in language learning especially in developing schools with many learners (Pho et al., 2021). They help with pronunciation, listening skills, and understanding the nuances of spoken language (Pho et al., 2021). Audio aids, like podcasts and audiobooks, can be used anytime and anywhere, providing flexibility for students to learn at their own pace and be able to acquire quality skills (Machů & Lukeš, 2023).The human voice can convey emotions and emphasize points in ways that written text cannot, helping to create a more impactful learning experience for all learners (Wyatt, 2002). Audio aids can supplement traditional learning materials, providing different perspectives and reinforcing concepts taught in class.(Pho et al., 2021) Listening to real-world audio examples, like news reports or interviews, helps students connect classroom learning to real-life situations (Machů & Lukeš, 2023). Literature did not reveal how audio aids support academic achievement of learners in NTC hence a study gap.

2.3.3. Audio-Visual aids

Audio-visual aids involve the usage of audio-visual materials such as videos, films, documentaries, etc., to enhance the process of teaching (Stambach, 2009a). Audio-visual aids involve the usage of videos, films, documentaries, etc., to enhance the process of teaching. Sometimes students may find it difficult if one demonstrate everything by using words or images(Mugo et al., 2015) . They would find it easier when they watch it live (Sasaoka & Nishimura, 2010) . For example, if one teaches the germination of the seed process through words, they won't find it very interesting (Sasaoka & Nishimura, 2010). Instead, if they are showed an animated video of how the seeds germinate and how a plant grows from seed by demonstrating it step by step, they will be more interested to learn with better skills (Krain et al., 2015). Usage of audio-visuals provides them with a live experience of learning and makes them understand everything better (Machů & Lukeš, 2023). Audio-visual aids also involve the usage of computers to teach. In India almost every school nowadays has computers, and they help a lot for the students to learn using technologies at a very

young age (Stambach, 2009a). However, literature did not reveal the influence of audio-visual aids in promoting learners' academic achievement in NTCs.

2.4 Summary of Review

Research concentrated on elaborating the inclusive education strategies and how important the strategies are in ensuring that all learners attain equal learning space with no discrimination, literature however could not show the measure and quantification of learners academic achievement in NTCs in Uganda hence information gap. Scholars elaborated the arrangement and organization of teaching and learning method / strategies to enhance academic achievement, many existing techniques for teaching and learning were presented however, there was little literature to show how the outcomes of the methods were measured. Literature presented inclusive strategies in developed country like Germany, France, Canada where systems are different especially in quality and showed that developing countries had not achieved much however there was no specific study on inclusive strategies and learners' academic achievement in NTCs in Uganda where policies, systems and context are unique to only Uganda.

There was evidence that inclusive strategies are more efficient at pre-primary, primary and secondary levels but little was known about the influence of the strategies on learners' academic achievement in NTCs hence knowledge gap.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

The following areas are described under this chapter; philosophical underpinning, the research design, instruments, study area, population, sample size, selection procedure, ethical considerations, methods of data analysis. Data for the study was collected from both primary and secondary data sources.

3.1 Philosophical underpinning

The philosophical underpinning in this study was pragmatism. It provided the framework that guided research questions, methodology, data interpretation, and the implications of the findings. It also guided on the choice of the methods that informed the study (Guba & Lincoln, 2005).

It was appropriate for the mixed methods since the researcher had freedom of choice for methods, techniques, procedures that best meet the research need and purpose. This world view focused on the research problem and all approaches to address the problem. Pragmatism is not committed to any one system of philosophy and reality; this fitted mixed methods research in that they drew from both quantitative and qualitative assumptions. Pragmatists do not see the world as an absolute, in the same way mixed methods researchers use many approaches of collecting data. This philosophy arises out of actions, situations, consequences and understanding of human experience in research (Creswell, 2014).

3.2 Research Design

The study adopted a cross sectional mixed methodology to suit the pragmatism philosophy (Bogdan, 1975), in which both quantitative and qualitative data were collected to guide the study (Guest, 2013). In this study, the quantitative and qualitative data were collected sequentially.

The explanatory sequential mixed method approach was adopted, whereby, the quantitative data was collected first, then followed by qualitative data (Gogo & Musonda, 2022). The choice of such an approach was informed by the fact that there was need to first objectively analyze the quantitative data from the questionnaire and then used the obtained evidence in the effective moderation of the qualitative interviews (Schoonenboom & Johnson, 2017). With that approach, the in-depth and key informant interviews were most likely to generate more dependable, credible and reliable data, that could be used to complement each of the key quantitative findings obtained from each objective (Schoonenboom &Johnson, 2017).

3.3 Study Area

The study was carried out in the five Government-aided NTCs by then of Uganda where the TTE project that supported inclusive strategies was implemented. These included NTC Unyama in Northern Uganda in Gulu district in Aswa County, Unyama village, GPS 2.772657,32.288159. NTC Muni in West Nile sub region, Arua district, in Ayivu County, on 170 acres of land about 7 kilometres from Arua town, GPS 2.99511. NTC Mubende in Mubende district on the Kampala- Fortportal high was and 4km to Mubende town in the central region of Uganda, GPS 0.347770,32.582561. NTC Kaliro in Eastern Uganda in Kaliro district, GPS 0.338557,32.625872 and NTC Kabale in Kabale district, and it seats on 68.4acres of land, GPS -1.2544992,29.980919. The five NTCs were selected because they are the centers of training lower secondary teachers. For the last 10 years, the five NTCs through TTE project and MoES provided them the interventions to promote inclusivity for better academic achievement. As all NTCs transit to degree awarding, it is important to establish their readiness in terms of inclusion for better academic achievement.

3.4 Study Population

The study targeted a population of respondents who include MoES officials from special needs department, Enabel staff who supported inclusive education in NTCs, NTCs' principals as accounting officers, heads of departments, registrars, principal lecturers, lecturers, and students. These categories were believed to have information on inclusive education strategies and others were beneficiaries of inclusivity by TTE

project through MoES. The different categories provided wide range of information and prevented research bias due to limited data.

3.5 Sample, Sampling techniques

A sample is a collection of some (a subset) elements of population for the research (Amin 2005). Sampling techniques in this study were critical for selecting a representative subset from a population (Kothari, 2007).

3.5.1 Sample Size determination

Sample size was determined using a sample size calculator as shown in Equation 1

Sample size = $1+ \left(\frac{\frac{zxp(1-P)}{e^2}}{\frac{z^2 x_{p,(p-1)}}{e^2 N}} \right)$.....*Equation 1*

Where N is the population = 5349

E is the margin of error= 0.95

Z is the z-score= 1.96

P value is 0.0157

= 681 respondents

Adapted from Adam (2020)

3.5.2 Sampling techniques

Purposive sampling technique was used so as to collect valid data from respondents who are well informed on inclusive strategies and academic achievement in NTCs (Victor & Babatunde 2014). The technique was used to select institution heads (principals) who implemented inclusive education and were still serving in the institution, MoES from Special needs department who had expertise in inclusive strategies.

Stratified simple random sampling involved sampling the students and lecturers from each institutions since each institution had its own population (Taherdoost, 2018).

From each strata, simple random sampling was used to sample lecturers and students from the existing staff and students' lists.

Table 3.1 shows anticipated sample size estimates as 681 out of which was selected from the target population of 5340 participants using sample size calculator.

Table 3.1

Study population, sample size and sampling technique

Category of respondents	**Target population**	**Sample size**	**Sampling technique**	**Method**
MoES	20 officials of special needs	7	Purposive	Interview
Enabel staff	10 from TTE project	6	Purposive	Interview
Registrar	5 registrar	5	Purposive	Documentary analysis
Institution heads	5principals	04	Purposive	Interview
Lecturers	200	100	Simple random	Questionnaire
Students	5105	561	Simple random	Questionnaire
Total	5340	681		

Adapted from Maxwel (2020) with modification by the researcher (2024)

3.6 Variables and indicators

Variables were key concepts or phenomena that were studied, while indicators were the tools used to measure those variables in a concrete and observable way.

Variables were what this research measured, manipulated, or observed in order to understand relationships, patterns, or effects in a study.

The independent variables for this study were ATL methodology or strategy, these were indicated by sub constructs including: learning stations, Project-based learning, problem-based learning and learning contracts.

Supportive learning environment indicated by sub constructs of the availability and quality of NTC compound, lavatories, dormitories, classrooms.

Instructional technology strategy which involved sub constructs of studying Audio, Visual, Tactile, Audio/visual aids.

The dependent variables in this study referred to the outcome that was measured or observed in response to changes in the independent variable. For this study, these included constructs of learners' academic achievement which were learners' grades from Class exercise, Peer reviews, Coursework, Project work, Exams, Research. Skills like critical thinking, pedagogical skills, problem solving skills and communication skills and completion rates for semester 1, 2, 3.

There were aspects of control variables which were to be kept constant or controlled to prevent them from influencing the outcome. For this study, they included government policy, finance, the type and extent of learners' ability.

Indicators in this study were the **observable measures** that provided evidence of a variable's presence or change good narrative, In this study, they include students' grades in terms of Class exercise, Peer reviews, coursework, Project work, Exams. The skills for learners in terms of Technological, class management, pedagogical and communication. The other indicator is the completion rates of learners in terms of semester 1,2 and 3.

3.7 Data Collection Methods

Data was collected using interview, questionnaire method and documentary review methods.

3.7.1 Interview

Open ended questions were administered during the interview for institution heads, (principals) HoDs, Academic registrar, MoES using interview guide (Taherdoost 2018). Interviews were used to collect valid and diverse qualitative information about inclusive education strategies and academic achievement of learners with in a shortest period of time with in depth information. In addition, interviews helped the researcher to collect first-hand information especially from college leaders and MoES officials for reliable data.

3.7.2 Questionnaire method

Questionnaire method was used to collect data for both qualitative and quantitative information. While using a questionnaire for lecturers and students, open ended questions were used (Appendix A) Close ended questions were used to collect qualitative data from staff and student leaders (Appendix A) . In quantitative research while using a questionnaire, close ended questions were used, it was easy to use and get first-hand information from lecturers and learners whereas, open ended questions were used during data collection for qualitative research (Canals ,2017). The method was used because it was easy and also cheap to collect large amount of data in a short period of time. The questionnaire was constructed using Kobo collect tool (Skutil et el., 2018).The link was sent to the IT managers who as well shared it with students and learners per college. Printed copies of the questionnaires were as well used for some respondents who had no internet data.

3.7.3 Documentary Review

This involved review of NTC documents especially meeting minutes for award, graduation books, Quarterly review reports, enrolment data to get quantities about students, grades, completion rates and quality of class work. This information was in the office of the academic registrar per college (Appendix C)

3.8 Data Collection Instruments.

The study used different instruments to collect data from the respondents

3.8.1 Questionnaire

The questionnaire included introduction, demographic questions, main content questions, skip or filter questions, and a conclusion (Appendix A)

The questionnaire with constructs of ATL strategy, supportive environment and instructional technology in regard to learners' academic achievement was designed. The questionnaire was digitalized to make data collection easier, faster but also save the environment.

The researcher used questionnaires designed on kobo collect tool, the link was sent to IT managers for sharing with staff and learners. The aim was to collect both qualitative and quantitative data with in a shortest period of time but as well save the environment through e -questionnaire. Multiple and alternative choice questionnaires was used for collecting large amount of data within a short period of time through kobo collect forms and a few printed copies.

3.8.2 Interview guide

The interview guide was an essential tool for maintaining consistency, ensuring focus, and allowing flexibility in qualitative research. It enhanced the reliability, validity, and depth of data collection while providing structure for the interviewer. This tool helped improve both the quality of the interviews and the efficiency of data analysis, ultimately leading to more insightful and valuable research outcomes (Canals, 2017).

Interview guide (Appendix B) was used for qualitative data in various ways like engaging the participants over the phone and scheduled zoom meetings was also used especially for the MoES, Enabel staff, Principals, who were always very busy and off station for official duty but also to reduce on the cost of research and save environment. For some Principals, interviews were conducted through podcasts. Face to face interviews were conducted especially for Enabel staff, and MoES staff.

3.8.3 Documentary Review Guide

Documentary analysis for inclusive education involved reviewing and interpreting documents to understand policies, practices, and frameworks that promoted or hindered inclusive education (Corbin & Strauss, 2008).

Different documents to track the impact of inclusive education strategies were reviewed using the document analysis checklist to establish students' academic achievements. The documents included college quarterly reports, for qualitative data, students' performance reports for quantitative data and award meetings for both quantitative and qualitative data., graduation list. Students' projects, research reports and lecturers' portfolios were as well analyzed to track students' grades and skills.

The documents were obtained from the institution heads (principals) and academic registrar through a written request and then the principal mobilised the documents from different departments.

3.9 Data Collection Procedure

The researcher sought for the approval of the research proposal. After approval of the data collection instruments, questionnaires, interview guides and documentary review check list were digitalized in preparation to collect cross sectional data from the five NTCs. The respondents (lecturers and students) were given the link to the questionnaire shared through the IT managers of NTCs. Interviews for principals and MoES were conducted both face to face and online through zoom sessions for those who could not be reached easily.

The researcher had as well to seek approval from Uganda National Council for Science and Technology (UNCST).

For data collection to be easy with maximum returns and authentic, the researcher sought for an authentication letter from UCU through Research and Ethics Committee allowing the researcher to collect data.

Another letter from MoES specifically Special needs department and Teacher training and education department was got to allow NTCs staff and students participate in providing data for the study. The researcher also collected the lists of staff and students from institutions academic management system with details of email addresses so as to help the researcher send the kobo collect forms to those who had access to internet, this helped to quicken data collection.

The researcher informed institutions' management about the research, and request for the staff and students to provide data. The researcher also had physical field travels to meet some respondents who could not be reached online. On agreed schedules with respondents and support from ICT departments in the institutions which helped in administering online questionnaires.

Printed copies to academic staff were administered physically by the researcher after scheduling a meeting with the participants. The researcher as well carried out field visits to pre-test the instruments for data collection to ensure reliability and validity. After establishing the validity and reliability of instruments, the tools were administered to the rest of the anticipated respondents.

3.10 Data Analysis.

Data analysis helped the researcher to come up with an explanation together with an understanding of the topic under study (Fischer et al., 2014). It was through the analysis of data that concepts and theories were arrived at or developed.

3.10.1 Quantitative data analysis

The researcher used an interpretive strategy to analyze data derived from, questionnaires for lecturers and students. For this research, therefore, the process of data analysis involved coding, tabulation and interpretation. Coding involved segmentation and labeling a text to form descriptions and broad themes in the data. The data was further analyzed, tabulated and represented graphically using statistical computer package called SPSS version 29 and excel with pivot tables. These packages helped to generates faster and accurate results during data analysis especially on correlating variables of inclusive education strategy like ATL and academic

achievement of learners. Statistics generated included percentages, median and mode from the tables, pie charts and Spearman rank Correlation for the study variables (Canals, 2017).

Inferential statistics involving hypothesis testing, correlations, regression, multiple linear regression, were generated during the analysis (Cohen et al.,2007).

For purposes of this research multiple linear regressions was considered. Multiple linear regression analysis where two or more independent variables like learning stations, problem based learning, project based learning predict a dependent variable like learners technological skills were used (Cohen et al.,2007).

The independent variables were ATL strategies, supportive learning environment and instructional strategy to the dependent variable which was learners' academic achievement like grades, skills and completion rates formed equation 2.

$Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + B_6 x_6 +$ e……Equation 2

Y is outcome variable (learners' academic achievement)

X is independent variables

x_1 ATL strategies

x_2 Supportive learning environment

x_3 Instructional strategy

β_0 Is the constant

x_1, x_2, x_3 are inclusive education strategies

To ensure that the results of the multiple linear regression analysis were reliable, several diagnostic tests on the basic assumptions about the population from where the data was derived was conducted. These were normality test, linearity tests, multicollinearity test, and homoscedasticity tests.

Nonetheless, in quantitative empirical research studies it was imperative to control Type I and Type II errors that could undermine interpretations during the testing of hypotheses. According to Muraga (2015), in statistical sense, a Type I error was the incorrect rejection of a true null hypothesis, while a Type II error was the failure to reject a false null hypothesis. Type 1 error was considered to be more serious than a Type II error and that reducing the probability of a Type II error increased the probability of a Type I error (Cooper & Schindler, 2006). In this research study, controlling Type 1 error necessitated the researcher to agree on the level of statistical significance when testing the hypothesis. Traditionally, three levels of statistical significance were considered appropriate to deal with Type 1 error and these are $p<0.001$, $p<0.01$ and $p<0.05$ (Nachmias & Nachmias, 2004). This study tested the research within the threshold of the traditional and conventional significance levels that ensured that the probability of committing this Type I error was very low and that practical decisions made out of the recommendations of the tested hypotheses stood a relative low chance of being misleading (Muraga, 2015). The solution to Type 11 error lies in having a large sample size (Zikmund, 2003).

Multicollinearity tests also helped to ensure that independent variables were not highly correlated with each other. Finally the researcher ensured that the residuals (errors) were approximately normally distributed on a histogram and a Normal P-P Plot; or (b) a Normal Q-Q Plot of the students' residuals.

3.10.2 Qualitative data analysis

Qualitative data analysis was a rich and flexible process that provided deep insights into human experiences and social phenomena. It helped to capture complexity, context, and meaning, making it an essential approach in this field of research.

Golafshani (2015) recommended that for qualitative data, it should be organized in ways that facilitate identification of patterns of relationships among the categories in the process of data analysis. Interpretational analysis in which data was classified and examined in terms of themes or patterns that explain a phenomenon was used to generate meaning out of data and draw conclusions.

The first step in the analysis of the qualitative data was reviewing and categorizing the textual data under different themes that are of interest to the study objectives. To facilitate the codification, the researcher used thematic analysis for the preliminary data coding. Coding started immediately after the interviews had been transcribed. This early coding helped in categorizing data and understanding the collected information. A de-identification process was conducted during data analysis to ensure the anonymity of respondents. Finally, direct quotations of individual responses that explained the respondent's views and brought out their voices was identified and presented in the respondent's own words to give more insight into the issues under consideration.

In the study, evocative words and/or brief phrases were used as codes to symbolically attribute some descriptive meanings to certain pieces of data in the interview transcripts or extracts and documents (Saldana, 2009).

Afterwards, themes were created from the developing categories. Themes were groups of categories that have a commonality, such as a reference to a single subject, according to Westbrook (1994). Within the interview data content, the categories and themes made it easier to identify stakeholders' shared experiences with understandings of specific policy implementation realities and challenges.

Further cross-case comparison analyses were conducted under each theme in the presentation of findings utilizing some noteworthy quotes from participants. These quotes were helpful in interpreting the findings and helping the reader understand the researcher's arguments on a certain topic or proposition. Participants' quotes or excerpts were used in this study for data analysis and interpretation in order to preserve their voices, reflections, and subjective viewpoints as proof of the emerging similarities and differences in their answers to particular questions, as well as to confirm and show the interpretive rigor and the credibility of such emerging research findings and the conclusions made. Mapping to establish relationship was as well done. (Fereday, et al., 2006; Creswell, 2013).

3.11 Data Quality Control

Validity and reliability were important areas to measure for data quality control. Testing instruments were applied and used to ensure that the collected data was valid and reliable to the research under study.

3.11.1 Validity

Validity of data referred to how well data measured what it intended to measure. It referred to the degree to which one can confidently attribute the results of the study to the variables being tested, rather than to other factors or confounders. In this research, validity was a key criterion for evaluating the quality of data and the conclusions drawn from it. The researcher ensured data validity so as to ensure that the findings and interpretations of the study were accurate, credible, and relevant to the research objectives. Validity was to measure how well a test or tool measured the theoretical concept or construct it intended to measure. A test designed to measure supportive learning environment should actually reflect the characteristics of it and not something else, like stress. The study ensured that the results of the study were attributed to the variables being tested but not other factors. The researcher used experimental controls to ensure that the independent variable was the one influencing the dependent variable. The researcher ensured that the sample was representative of the population to improve both internal and external validity. Cross-validation that involved the use of multiple methods to measure the same concept, and compare the results was be implored.

For this research, Content Validity Index (CVI) was as well used. Amin (2005) observed that a CVI of more than 0.7 implies the tool is valid. Index (CVI) was computed using the formula in equation 3:

CVI=$\left[\frac{n}{N}\right]$ x 10 ……equation3

Where; n = Number of items rated as relevant. N= Total number of items in an instrument.

3.11.2 Reliability

Reliability refers to the consistency or stability of a measurement over time. A reliable measure yielded the same results under consistent conditions. In this research, reliability was crucial because it ensured that the results are reproducible, to add credibility and trustworthiness to the study.

A pilot test study was conducted to establish the reliability of the data collection instruments to ensure they are dependable and reliable to generate data for the study. The results of the findings were subjected to a reliability analysis using Cronbach's Alpha Coefficient. Values that were 0.7 and above were regarded reliable after performing the test. The result that fell within the range of 0.7 and above were considered as reliable in the case of psychometric tests, (Creswell, 2003). In this research measuring academic achievement of learners, Cronbach's Alpha tested whether questions on ATL strategies, supportive learning strategies, instructional technology satisfaction all consistently measured the overall academic achievement construct.

The formula below was used to calculate Cronbach Alpha Coefficience

$$\alpha = \frac{N * \overline{c}}{\overline{v} + (N-1) * \overline{c}}$$ .....Equation 4

Where:

N = number of items

$\overline{c}$ = mean covariance between items.

$\overline{v}$ = mean item variance.

Values range from 0 to 1, with higher values indicating greater reliability.

A common rule of thumb is; an alpha of 0.70 or higher indicates acceptable internal consistency.

3.12 Measurement of variables

The variables of the study were measured using a Five-Likert scale. Different variables were measured at different levels, that is, using nominal, ordinal, interval and ratio scales. The five-point Likert scale ranged from 5 to 1, where 5 indicated 'strongly agree' 4 agree, 3 neutral, 2 disagree and, 1 strongly disagree. Different research instruments that were proven valid and reliable were used.

3.13 Ethical considerations

To Ssonko (2007), authors in every study were required to report on ethical considerations since research requires coordination and interaction between different institutions and disciplines. Standards like accountability, trust, fairness and mutual respect, support the values that were important for collaborative work (Ssonko, 2007).

For honesty, the work was subjected to anti-plagiarism test using the anti-plagiarism software turnitin. The researcher sought for approval from Research and Ethics committee before collecting data from the field.

Consent: The researcher obtained the letter of authorization from Uganda Christian University to be allowed to collect the primary data for the research. The letter helped the researcher in getting authority from MoES, Institution heads to gain the relevant authority for collecting information from them and other respondents from the college.

Confidentiality: The study was purely academic and the information obtained from the field and participants was held with a lot of confidentiality. Information obtained from the respondents was to enrich the study to achieve its objectives. The information from each respondent or group of respondents was not to be known to others through the researcher.

Anonymity: Information from individuals was not used with individuals' names or Institution name unless it is authorized by the individual or the college.

Voluntary participation: Participation in providing information was purely voluntary to individuals who were selected to participate in the research.

3.14 Limitations

This study was limited by the transition of NTCs from diploma awarding to degree awarding institutions from Kyambogo to UNITE. There was a lot of anxiety among staff and students on what the future would be in terms of teaching and learning and learning outcome for students. Some were not ready to provide information.

The research was very expensive considering the fact that the 5 NTC are spread in five regions of Uganda. The highest cost was from transport and printing costs. However part of the data was collected by the research assistant.

Huge amount of data was collected both qualitative and quantitative and this made the researcher to take longer analyzing the data to make meaning than the expected time.

The programme for data analysis was not readily available for the research much as a license was later purchased and data was analysed.

3.15 Delimitations

Data was collected from staff and students that were for diploma in education primary and colleges were operational.

Resources were saved by the researcher to have funds to foot research expenses.

Data was managed using SPSS programme and themes analysis.

The SPSS version 29 programme was procured to analyse the data.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION OF RESULTS

4.0 Introduction

This chapter includes data presentation, analysis and interpretation in relation to inclusive education strategies and academic performance of learners in National teachers' colleges in Uganda. This chapter was guided by the order of the following objectives: To analyse the effect of active teaching and learning strategy on the academic achievement of learners in National Teachers' Colleges in Uganda, to assess the effect of supportive learning environment strategy on learners' academic achievement in NTCs in Uganda, to examine the relationship between instructional technology strategy and academic achievement of learners in NTCs.

4.1 Questionnaire Return Rate

According to Mugenda and Mugenda (2003) response rate of above 50% is adequate for a descriptive study but 70% is very good. For this study 681 questionnaires were distributed to different categories of respondents and 403 were returned completed and properly filled, 102 were returned but incomplete. The response rate therefore was 74.2% .The questionnaires that were not returned were 176 as illustrated in table 4.1.

Table 4.1

Questionnaire response rate

Response	Frequency	Percent
Returned	505	74.2%
Un returned	176	25.8%
Total	**681**	**100%**

Source: Primary data 2024

The response rate of 74.2% was good enough to provide reliable and valid data to the study. Despite the fact that NTCs were in transition to degree awarding institutions but still there were learners and staff to respond to the questionnaires.

4.2 Reliability test

Sampled questions of the study was tested to establish how reliable the data was.

This was to test whether the data for this study was reliable. Score of 0.7 and above indicated that the data was reliable as shown in the table 4.2

Table 4.2

Reliability statistics

Cronbach's Alpha	N of Items
.719	7

The test scored 0.719 with the sample of 7 items meaning that the data was reliable.

4.3 Demographic Information

To better present results of the objectives aforementioned in the preceding paragraph, preliminary describers of the socio-demographic characteristics from where the data came were presented. These included; gender for participants in terms of males and females, years one had been at a given college, the position of the respondent, special needs category and the specific NTC the respondent was from. The information was summarized in the table 4.3.

Table 4.3

Demographic characteristics

Gender	**Frequency**	**Percentage**
Male	209	51.9%
Female	194	48.1%
Total	403	100%
Years at college		
Above 20	38	9.4%
11-20	21	5.2%
6-10	19	4.7%
2-5	233	57.8%
Below 2 years	92	22.8%
Total	**403**	**100%**
Current position		
Principal	5	1.2%
Principal lecturer	6	1.5%
Lecturer	101	24.9%
Student leader	21	5.2%
Student	271	67.2%
Total	**403**	**100%**
Special needs	406	
Yes	24	6%
No	379	94%
Total	**403**	**100%**

Source: Primary data 2024

Data revealed that there were 209 (51.9%) males and 194 (48.1%) females meaning for this study, more males responded than female. Generally, the population of males in NTCs was found to be more than for females.

Most of the respondents were students 271(67.2%) who had been at NTC between 2-5 years, this was because some students were pursuing a diploma course in primary education which lasted for 3years. Lecturers were 101 (24.9%), representing the second largest number of respondents. Much as the principals were only 5 (1.2%) each college has only one principal and they all responded.

There were only 24 (6%) of the respondent who had special needs and this indicates the need for inclusivity, whereas 379 (94%) of the respondents had no special needs.

4.4 Effect of ATL strategy on academic achievement of learners in NTCs in Uganda

Data about how ATL strategy affects learners' academic achievement in NTCs in Uganda was obtained using a 5-level Likert - based questionnaire (appendix. A) The information was sectioned in 4 sections including; learning station, project-based learning, problem based learning and learning stations as summarized in table 4.4.

Table 4.4

Effect of ATL strategy on academic achievement of learners in NTCs in Uganda.

Inclusive Learning strategies	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree	Mean	S,D
Learning stations							
Content supports all learners	42.9% (173)	49.6% (200)	4.5% (18)	2.7% (11)	0.3%(1)	4.32	0.70
Learners provide feedback to one another	37% (157)	55.8% (225)	2.0% (8)	3.0% (12)	0.2% (1)	4.19	0.68
Learners seek for support from peers	27.8% (112)	54.8% (221)	10.0% (44)	5.5% (22)	1.0% (4)	4.14	0.60
Project based learning							

Learners take record of project work	39.5% (159)	47.9% (193)	7.7%(31)	2.7% (11)	2.2%(9)	4.14	0.59
Learners participate in project work	34.2% (138)	47.1% (190)	10.7%(43)	6.0% (24)	2.0% (8)	4.03	0.73
Teachers provide support on evaluation of projects	39.0%	55.8%	2.0%	3.0%	0.2%		
Learners document project trajectory	27.6% (103)	54.3% (219)	13.4% (54)	5.2% (22)	1.2% (5)	3.97	0.60
Record of scores from projects	24.3% (98)	57.8% (233)	11.9% (48)	3.5% (14)	2.5% (10)	3.98	0.54
Problem based learning							
Learners identify problems and think critically	30.8% (124)	54.1% (218)	8.9% (36)	3.2% (13)	3.0% (12)	4.06	0.78
Learners are able to develop quality content	34.2% (138)	47.1% (190)	10.7% (43)	6.0% (24)	2.0% (8)	4.05	0.78
Learners solve problems for learning and for world of work	32.3% (130)	51.6% (208)	9.9% (40)	3.5% (14)	2.7% (11)	4.07	0.79
Learners perform tasks and complete course work	32.8% (132)	51.1% (206)	10.9% (44)	2.5% (10)	2.7% (11)	4.08	0.79
Reflection on scores and problem solving	30.8% (124)	54.1% (218)	8.9 %(36)	3.2% (13)	3.0% (12)	4.06	0.77
Learning contracts							
I have ever signed a contact	25.1% (101)	52.6% (212)	11.2% (45)	7.4% (30)	3.7% (15)	3.88	0.93

Contracts had clear objectives	22.1% (89)	56.8% (229)	13.9% (56)	4.0% (16)	3.2% (13)	3.91	0.75
Contract had activities to aid improved learning	25.3% (102)	53.8 % (217)	13.2% (53)	4.5% (18)	3.2% (13)	3.93	0.77
Signing contract and graduation	18.1% (73)	39.2% (158)	17.1% (69)	16.1% (65)	9.4 (38)	3.41	0.97
Contracts and good grades	18.4% (74)	43.9% (177)	17.6 % (71)	12.4 % (50)	7.7 % (31)	3.53	1.11

Source; Primary data 2024

4.4.1 Learning stations and academic achievement of learners in NTCs in Uganda.

Data from table 4.4 revealed that the majority of respondents agreed that the content at learning stations supported all learners to learn irrespective of their special needs hence it was inclusive. The majority of the respondents 173 (42.9 %) strongly agreed and 200 (49.6%) agreed that the content at learning stations supported learning for all learners. Whereas 18 (4.5%) respondents were uncertain and 12 (2.9%) minority of the learners disagreed. This implied that the quality of content contributed to academic performance of learners in NTCs in terms of grades from classwork, coursework, and exams. From students' portfolio it showed that different content was as well developed at different stations by different learners much as most of the work was done as group work compared to individualized content. This was evident of teamwork and peer support to one another for better learning outcomes in terms of communication skills, pedagogical, counseling skills.

Through interviews;

" *…Some learners still ask for notes from their teachers even after working on stations. They still need mind shift support."* Principal of NTC 1

This means that in some instances, learning was more or less of teacher centered than learner centered since learners wanted notes from teachers. This indicated that not all learners learnt while at a learning station and so affecting their grades from coursework, project work and exams.

The percentages of learners who were uncertain, disagreed, and those who strongly disagreed could be an indication that the content at stations does not fully support all learners as an indication of exclusion.

A total majority of respondents 382 (94.8%) agreed and strongly agreed 225 (55.8%) 157 (39%) respectively that learners provided feedback to each other at learning stations. Only 8 (2%) of the respondents were uncertain whereas only 12 (3%) of the respondents disagreed and 1 (0.2%) strongly disagreed. This indicated that learners provided feedback to each other to enhance their skills like critical thinking, problem solving, and pedagogical skills that aided academic performance. The feedback of learners was evident of development of better pedagogical skills, creative thinking and improvement on the quality of content. This was indicative of the fact that the more learners provide feedback to one another, the more they do their classwork better and hence good grades from coursework, project work and exams.

From open ended question in the questionnaire, feedback promoted learners' self-confidence among teacher trainees which enhanced their communication, pedagogical, critical thinking and problem solving skills.

From documentary reviews, learners' portfolios also indicated that the feedback learners received from their peers in terms of marks, compliments promoted creative thinking and pedagogical skills. Only a few respondents 26 (7.5%) disagreed that learners sought for support from their teachers. Whereas 44(17.4%) were uncertain. The majority 333 (72.2%) respondents agreed that learners sought for support from their teachers and peers while at learning stations.

From interviews,

> "…*learning stations were able to improve learning outcomes for many learners though there should be a combination of techniques and resources for learning to take place effectively*". *MOES 1*

This meant that learners were able to solve problems, think critically and hence forth attain better grades in projects, classwork and even final grades.

From the portfolios of lecturers reviewed under documentary analysis, qualitative data revealed that teachers set up different learning stations for learning in a given class for a given lesson. At each station, there were different activities to enhance individualized learning and peer learning for better research and exam marks. Whereas there were different stations, they were logically arranged with logical instructions to learners by the teacher. Learners followed instructions and performed the tasks either individually or as a team depending on the instructions, completed classwork, coursework and attained good skills in terms of critical thinking and problem solving.

Documents revealed further that learning stations, as one of the ATL strategy emphasized activities undertaken by learners at various stations in relation to the learning outcomes. The construct was to examine the quality of content produced by learners, assess the feedback provided at different stations, and evaluate the learners' ability to complete their exercises. This method was primarily implemented using group techniques, and most participants were familiar with it. Additionally, content supported all learners by focusing on the material prepared by the teacher, enhancing their learning and allowing them to develop their own contributions at each station to develop skills such as problem solving, critical thinking and pedagogical skills. All learners, regardless of their differences, should have been able to create and access quality content for effective learning and attained good grades at completion. Developing content at learning stations is still wanting and so learners still needed more support from their teachers.

In an interview with one of the principals, he commented that;

> *"..Whereas there were activities at each station set by the teachers, learners were expected to interpret the activities and perform the tasks as per the instructions. They were then expected to reflect and provide comments to one another and reach a consensus, refine the work for quality results per station". Principal B from NTC 2.*

This meant that reflective practice was core for learning to promote continuous learning and un learning hence forth quality classwork, project , and research

reports and good grades for learners, as well as critical thinking and problem solving.

4.4.2 Project based learning and academic achievement of learners in NTCs in Uganda.

Majority of respondents (86.8%) agreed and strongly agreed that learners received proper guidelines for carrying out their project timely from their lecturers. This implied that quality project work aided learners' academic performance. However, only 8.9% of the respondent were not certain and this could be attributed to the fact that some students and lecturers do not participate directly in project work in their academic work. The minority, 4.2% of the respondents disagreed that there were proper guidelines provided to learners by lecturer in a timely manner to aid performance.

From interviews, it was confirmed that

> "Not every student did project work while at NTCs. " *projects are majorly done in science department and agriculture. To the rest of the arts subjects, projects are optional" MOES 4*

This meant that some learners could have missed conducting meaningful projects for learning of skills like pedagogical, problem solving, critical thinking and other.

Many of the respondents 159 (39.5%) strongly agreed that learners take record of their project progress that aid their improvement and better academic performance. The majority 47.9% of respondents agreed that learners take records of their project progress that support them to march their progress with improved learning outcomes and pedagogical skills for teaching and learning.

Only 7.7% of respondents were not certain but the minority 4.9% disagreed that learners take record of their project progress and scored better grades progressively.

From analysis of the documents, learners for agriculture had record of their project work properly and systematically recorded. According to the interviews, the learners

exhibited high level commitment to project work and performed better. Learners taking physics and fine art had good record of project work well files.

From interviews,

> "…very *many learners do projects practically but do not take good documents as it is not a requirement for examination". MOES 3*

This meant that lecturers did not guide learners appropriately on how to effectively document project work which affected the scores. The majority of respondents 81.3% agreed 138 (34.2%), 190 (47.1%) strongly agreed and agreed respectively that learners participate in group and individual projects, Only 43(10.7%) of respondents were uncertain and a small percentage of 8 (2%) disagreed From documentary analysis, reports of learners' progress in registry indicated qualitatively that there were specific subjects that had project work compulsory and to those subjects where projects were not compulsory, there was no evidence of project work.

From interviews,

> *"..some project work is expensive for some learners much as they could be willing to participate in several project work".* Principal 4

This meant that learners required support so as to participate in meaningful and fruitful work that could aid good grades and quality completion.

On whole, 321 (79.6%) of the respondents agreed that teachers support evaluation of the projects for learners to improve pedagogical skills, 27.5%, 52.1% strongly agreed, agreed respectively. Few (13.9%) were not certain whereas the minority 6.5% disagreed. This means that when projects are evaluated by teachers, learners are able to learn and unlearn some pedagogical practices.

Document analysis showed record of project work marks per year from students of physics, agriculture and fine art was with high grades and quality completion of their semester work.

From interviews,

"*Students from NTCs had very good pedagogical skills and that they exhibited better teaching skills during school practice and in the world of work*". MOES 1

This meant that learners were able to learn from project work acquire good grades in coursework and final exams and graduate timely.

Data on Learners documenting the project trajectory and offer peer timely support to each other revealed that the majority 79.9% of the respondents agreed that learners are able to document project work and document project trajectory, offer timely peer to peer support. 13.4% of the respondents were not certain whereas 6.7% of the respondents disagreed. There was evidence of marked learners' project work for different stages and the final mark was as well recorded in the mark sheets. This implied that project work was taken so serious by those who undertook it and aided academic achievement of learners through project work.

82.1% of the respondents agreed that there was proper recording of the learners' project work 98(24.3%), 233(57.7%) strongly agreed and agreed respectively.. Only 11.9% were not certain whereas 6% of the respondents disagreed. From the awards sheets and record of marks for students from the NTC, there were right, well aligned reads for project work. There was evidence of higher scores that were above 60% in terms of percentage. These were in subjects like physics and agriculture.

In an interview;

"..at NTC every subject area had it' own projects as per the syllabus and so there were different guidelines set by each subject to support learners in doing their project work much as most principles cut across. Each department therefore sets their own guidelines from the universal standard one to guide students in project preparation, implementation up to evaluation by the teacher in the timely manner" H.O.D NTC 1.

This also emphasized that Projects were set per subject area, and some were individual whereas others were for groups depending on the nature of the project. Not

all learners were able to participate in projects so missing out on grades from projects and research.

According to coursework records, evaluation of projects ranged from course work but also provided pedagogical skills for learners to apply in the real world of work. Teachers supported learners to develop skills of project initiation, implementation and evaluation that promoted critical thinking, problem solving and communication skills. These skills would be transferred to learners of secondary schools by teacher trainees in terms of pedagogy, research skills.

From the inception of the project, learners took record of all the steps and processes of the project and documented achievements, challenges and solutions. These records also had marks attached to them. Students were expected to clearly and smartly take record of the projects through a project report to aid quality completion of their course of study at the college.

Learners documented the progress of their projects, identified challenges and sought support from their peers or teachers. This indicated that project work was for learning other than achieving results. Whereas some projects took a year, others were shorter and so easy to document and learners could easily support one another with little or no support from the teacher. The projects were accessed at every stage to establish the progress of each project activity and aided completion of one level of study to another in terms of semester 1, 2, to 3.

4.4.3 Problem-based learning and academic achievement of learners in NTCs in Uganda.

Many of respondents 124 (30.8%) strongly agreed that learners were able to identify problems and think critically. The majority 215 (53.3%) of respondents agreed that learners are able to identify problems and think critically. Some respondents 44 (10.9%) were uncertain but the minority of the respondents 5% disagreed and strongly disagreed. These expressed that problem based learning did not encourage critical thinking.

From interviews;

> *".Students are very good at identifying problems but not at finding the possible solutions to the problems. There are no practical solutions that could exhibit innovations from education sector directly especially from students". Enabel staff 6*

This meant that students still required to be supported with techniques for ideation, prototyping and critical thinking if they were to acquire better skills and good grades.

The total majority 84.9% of respondents agreed that learners were able to develop quality content 130(32.3%, 208(51.6%) strongly agreed and agreed respectively. Where areas a few 40 (9.9%)± were uncertain and few total of 27 (6.2%) disagreed and strongly disagreed. Using problem-based learning, learners can develop quality content.

Open ended questions reveled that *some learners develop very quality content with the support of the teacher through problem-based learning*.

The majority total of 308 (76.4%) of the respondents agreed and strongly agreed that learners solve problems for learning and world of work, 59 (14.6%) were not certain and 36 (8.9%) disagreed and strongly disagreed. Results from interviews indicated that whereas the method is called problem-based learning, not all learners and teachers understand the concept of problem solving concretely. From open ended questions in the questionnaire, it was reported that "Problem *solving was common in mathematics.*

The total majority 338 (83.9%) of the respondents strongly agreed and agreed that learners were able to perform their classroom tasks and complete their tasks and course works. Also 44 (10.9%) were uncertain and total 21(5.2%) disagreed and strongly disagreed. Through interviews, it was revealed that this was the biggest task that learners and teachers focused on during problem based learning. Most of the course work was done through problem based learning method.

The total majority 341 (84.9%) of the respondents agreed that learners are able to reflect on their scores and be able to learn and solve problems. Only 36 (8.9%) were uncertain whereas total 25 (6.2%) strong disagreed and disagreed.

From interviews :

> *"…Problem based learning focused more on problem identification, problem solving, critical thinking for better results. In each lesson, there are different problems to solve and get a solution. The lessons were hinged on the problems, learners found solution with the guidance of the teacher. From solving problems, learners were able to create content for their learning. As learners solved problems, they progressively learnt through the solutions. This led to better academic achievement in terms of good grades from coursework, project work, classwork, exams. Skills in terms of communication, problem solving, critical thinking and pedagogical skills were enhanced". Principal 2*

This meant that Learners in NTCs gained skills and values to enhance their ability to teach and learn in lower secondary schools (pedagogical skills). In problem solving method, learners performed tasks of solving problems as part of their classwork but also for assessment purposes to measure the progress of their learning with grades attained each semester. Problem based learning improved learning by learners reflecting on their scores and improved learning content quality. Learners scored during classwork, end of term exams, and end of year course work. The scores were both formative and summative.

4.3.4 Learning contract and academic achievement of learners at NTCs in Uganda

The total majority of the respondents 313 (77.7%) agreed that learners have ever signed a learning contract. 45 (11.2%) were not certain and total 45 (11.1%) of the respondents disagreed and strongly disagreed meaning they have never signed a learning contract. From interviews, it was revealed that much as many respondents

agreed to had signed a learning contract, it was not a formal one. There were no evidences of signed contracts in colleges. Even those who could have signed contracts at one time, they were not documented.

From open ended question in the questionnaire, it was reported that contracts were always oral between teachers and learners and nothing much was documented.

The total majority 318 (79.7 %) of respondents agreed that contracts had clear objectives whereas 56 (13.9%) were not certain whereas total 29 (7.2%) of the respondents disagreed and strongly disagreed. Documentary analysis did not show evidence of any learning contract and the objectives set. From open ended questions in the questionnaire it was revealed that *Some* learners had never seen a learning contract

The majority of the respondents 350 (84.4%) agreed that learners' results from assessment had greatly improved, 32 (7.9%) were not certain, whereas the total minority percentage of 7.9% disagreed and strongly disagreed. This could have been due to the fact that not all learners can achieve the same results in a given assessment but also due to the fact that the contracts were not formalized.

The total majority of the respondents 319 (79.1%) agreed and strongly agreed that contracts had activities that aided improved learning. Whereas 53 (13.2%) of the respondents were uncertain and this could have been by the fact that they have never signed the contract whereas the few 31 (7.9%) of the respondents disagreed and strongly disagreed. Interviews also revealed that no one was sure of activities in the contracts since it was very difficult to get the evidence of a contract. Documentary analysis did not as well show evidence of any contract and so the activities.

The total majority of the respondents 231 (57.3%) agreed and strongly agreed that they have ever signed a contract and they graduated whereas 103 (25.5%) of the respondents disagreed and strongly disagreed while 69 (17.2%) were not certain. This could be indicative of the fact that there was no great relationship between learning contracts signed and graduation of students. From interviews some respondents were referring to admission forms they signed as the learning contracts.

Interviews also indicated that

> *"..learning contracts were not a common method used for teaching and learning in NTCs in Uganda" Enabel 2*

This meant that there was a need for lecturers to draft a learning contract for drawing an example and specify the skills to attain such as problem solving, critical thinking or communication skills.

The total majority of the respondents 248 (62.3%) agreed and strongly agreed that there was a relationship between learning contracts and good grades. A total of 81(20.1%) of the respondents disagreed whereas 71 (17.6%) of the respondents were not certain. There was evidence of good grades for students in NTCs from the graduation lists but it could not be attribute to the performance or implementation of the contracts.

The respondents generally agreed that they had signed a learning contract, with a mean score of 3.88 suggesting a positive inclination towards participation. However, the standard deviation of 0.93 indicated a moderate variation in responses, suggesting that while many had signed contracts, a notable portion were uncertain or disagreed. Contracts had clear objectives 3.91±0.75 (Mean: 3.91, SD: 0.75) with a mean of 3.91, most respondents perceive that the learning contracts had clear objectives. The relatively low standard deviation (0.75) suggests consistency in this perception, indicating that respondents are largely in agreement that the goals of the contracts were well-defined.

Contract had activities to aid improved learning (Mean: 3.93, SD: 0.77), Here too, the mean score of 3.93 indicates that respondents feel positively about the inclusion of learning activities in their contracts. The slightly low standard deviation (0.77) reflected a strong consensus that these activities were beneficial for enhancing learning outcomes.

Signing contract and graduation (Mean: 3.41, SD: 0.97). The mean score of 3.41 suggests a lower level of agreement regarding the relationship between signing a contract and graduation. This item received the lowest mean score among the group,

which could imply that respondents are less convinced that learning contracts directly influence graduation rates. The higher standard deviation (0.97) indicates significant disagreement or uncertainty among respondents regarding this relationship.

Contracts and good grades (Mean: 3.53, SD: 1.11) With a mean score of 3.53, respondents show a moderate level of agreement that learning contracts are associated with achieving good grades. The highest standard deviation (1.11) suggests significant variance in opinions, indicating that some respondents strongly believe in the positive impact of contracts on grades, while others were skeptical or neutral about this assertion.

Overall, the data reflected a generally positive reception of learning contracts among respondents, with means above the neutral midpoint (3.0) for most items.

The lower mean scores for items related to graduation and grades signaled potential concerns or misconceptions regarding the tangible benefits of learning contracts on academic performance in terms of skills and grades .

The relatively lower standard deviations in several items reflected a general consensus among respondents regarding the clarity and effectiveness of learning contracts, indicating alignment in the perceptions of their roles in educational practice.

From open ended question in the questionnaire, Learning contracts were used as agreements between the learner and teacher geared to improving skills and grades for learners. Learning contracts were signed between the teacher and individual student or a group of students.

From interviews;

> "*..The intention of learning contracts was to better students' grades from different assessment modalities. These grades were to be documented before any contract was closed. Incase for those who signed a learning contract, there was intention to establish whether the contracts signed had activities well stipulated to aid learners' improved learning outcomes in terms of good grades from classwork, coursework, project wok and exams. Skills such*

as pedagogical, communication, problem solving, critical thinking were evaluated in the contract. The contract had timelines that helped to track contract activities but also measure the completion rate of the learner as the contract was at termination."

Enabel staff 3.

Learners who signed learning contracts scored better grades either through formative or summative assessments as evidence of improved learning.

To better understand the magnitude of the ATL strategy had on academic achievement of learners. A Pearson correlation was ran between the two on a binary basis. In this case, ATL strategy aspect was correlated against academic achievement and results were summarized in respective tables 4.5, 4.6.

First a sample Pearson correlation analysis was run to establish the extent to which feedback learners receive at a learning station and how they are able to do the exercises are related table 4.5. This sample correlation was to link further explain and clarify the results of table 4.5.

Table 4.5

Correlation between learners' feedback to each other and ability of learners to do their exercises.

Correlations

		learners provide feedback to each other	All learners are able to do assessment exercises
learners provide feedback to each other	Pearson Correlation	1	.394**
	Sig. (2-tailed)		<.001
	N	390	384
All learners are able to do assessment exercises	Pearson Correlation	.394**	1
	Sig. (2-tailed)	<.001	
	N	384	387

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

There is a weak positive relationship of 0.394 between leaners' feedback and their ability to do exercises, The level of significance is 0.01 with two tailed significance level. This implied that feedback learners provide to each other are of limited importance to support them do the assessment exercises. Other factors then could influence ability of learners to do exercises other than feedback to each other especially at learning stations.

The results called for more probing into understanding the extent of other relationships between ATL variables and academic achievement that could have affected each other more or less so as to cause the research conclusion. This helped to establish which variables could be of greater influence on academic achievement of learners in NTC in Uganda as presented in the table 4.6

Table 4.6

Correlation coefficient of Inclusive education strategies and academic achievement of learners.

Inclusive education strategies	**Pearson correlation**	**Academic achievement**	
ATL strategy	**Grades**	**Skills**	**Completion rates**
Learning stations	0.43	0.75	0.35
Project based learning	0.57	0.83	0.41
Problem based learning	0.53	0.35	0.63
Learning contract	0.62	0.41	0.71

N=390 tailed significance at P< 0.01

From table 4.6 there is a weak positive relationship of 0.43 between learning stations and students' grades. There is a strong positive correlation between learning stations and skills learners acquire whereas there is a weak positive relationship between learning station and completion rates of learners. This implied that learners acquire

a lot of skills like communication, pedagogical, counselling and class management skills.

There is a moderate relationship between project based learning and grade acquired by learners. There is a strong positive relationship of 0.83 between project based learning and skills acquired by learners, such skills like technological skills are acquired through projects. The relationship between project based learning and completion rates is low and positive at only 0.41

The relationship between problem based learning and learners grades is a positive moderate one at 0.53. whereas with learners skills is low at o.35 and with completion rates is a strong moderate one at 0.63.

There was a moderate positive relationship between learning contract and learners' grades, a weak positive relationship of 0.35 with skills for learners and a strong positive correlation of 0.71 with learners' completion rates.

The most significant ATL methodology on learners' academic achievement was project based learning with correlation of 0.83 on learners skills with a $p<0.001$. This meant that a unit change in project based learning method causes 0.83 or 83% of learners' skills.

4.5 Conducive learning environment and academic achievement of learners in NTCs in Uganda.

Data about conducive learning environment was from the 5 likert scale questionnaire that presented quantitative data. The questionnaire had open ended questions at the end. Interviews and document analysis provided qualitative data. The quantitative data was presented in table 4.7

Table 4.7

Conducive learning environment strategy and academic achievement of learners in NTCs in Uganda.

Conducive learning environment strategy	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree	Mean	S,D
Availability of assistive gear	31.55%	40.71%	11.20%	8.4% (11)	8.14% (1)	3.39	1.408
Supportive environment to learners with disability	42.01%	27.84%	13.40%	8.51%	8.25%	3.48	2.948
Lighting and Learners' safety	39.5% (159)	47.9% (193)	7.7% (31)	7% (11)	2.2%(9)	4.14	0.59
Talking compound and learners' support	34.2% (138)	47.1% (190)	10.7% (43)	6.0% (24)	2.0% (8)	4.03	0.73

4.5.1 Effect of availability of assistive gears on academic achievement of learners in NTCs in Uganda.

Majority of the respondents 40.17% agreed that there were availability of assistive gears, 31.55% strongly agreed whereas 11.2 % were uncertain, 8.4% disagreed and 8.14 strongly disagreed. The mean score was 3.39 with standard deviation of 1.408. This

meant that the equipment available in NTCs supported special needs learners. Such equipment was computers, reading materials, projectors of which the majority were IT equipment. From the open ended response from the questionnaire, it was reported that the equipment (assistive gears) available in NTCs was to cater for all learners.

From interviews;

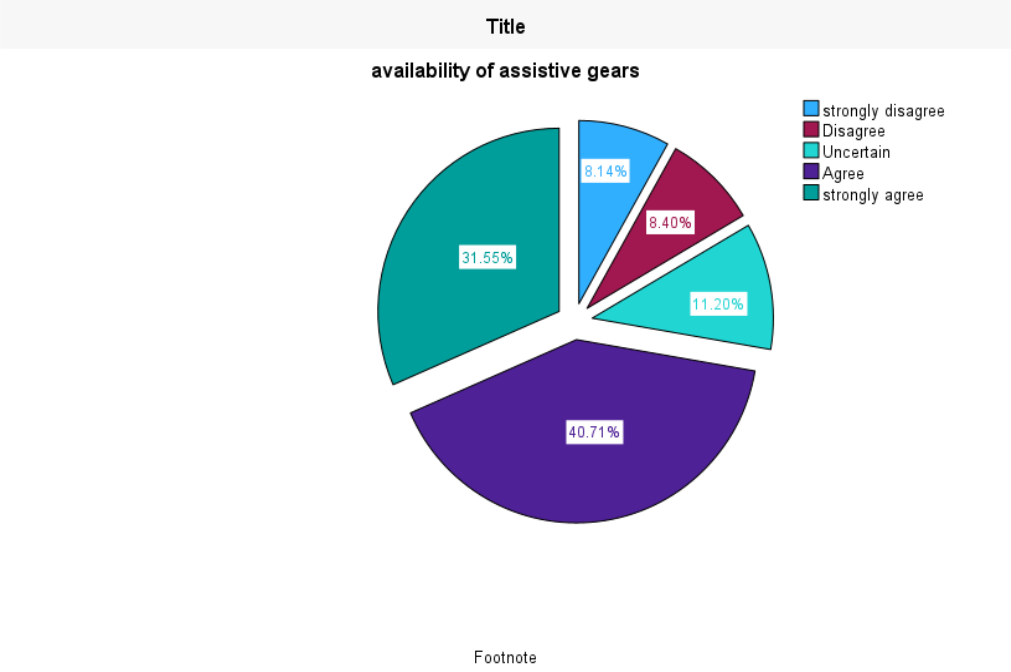
"…Learners with special needs were able to learn with the rest of the learners for example there are sufficient laboratory equipment, library materials, classroom furniture for all learners. If there were special cases of learners like the blind, the deaf, then they would have to come with their special gadgets designed by specialists". Principal 4

This meant that conducive learning environment was intended to make learning interesting for students to attain good grades in classwork, coursework, project work, exams, attain good skills in terms of communication, problem solving, critical thinking, and pedagogical.

From the asset registers reviewed during document analysis, qualitative data revealed that, there was evidence of many assets for colleges to support teaching and learning of all learners however there was no specific gears for other special needs learners like the brails. This meant that all learners can be supported to learn with the available assets in NTCs so as to attain good grades from the class work, project work, research work and exams.

Availability of assistive gears and academic achievement of learners in NTCs in Uganda was further presented with the illustration in figure 4.1

Figure 4.1 Availability of assistive gears on academic achievement of learners in NTCs in Uganda



The total majority 72.26% of the respondents agreed and strongly agreed that there were assistive gears that support learners at NTCs, 16.54% disagreed whereas 11.2% of the respondents were uncertain.

From interview,

"…it was revealed that NTCs did not have specific assistive gears for different special needs learners but what was available was being utilized properly to cater for all learners and the examples were computers and projectors." What is available is sufficient for the learners we have" Principal 1.

Whereas there were different needs for different special needs learners for example brails, sight magnifiers, wheel chairs and others, NTCs had basic equipment for all learners like computers and projectors.

4.5.2 Effect of supportive learning environment on academic achievement of learners in NTCs in Uganda.

The majority of the respondents 42.01% strongly agreed that there was supportive learning environment to learners with disability in NTCs, 27.84% agreed whereas 14.4% were uncertain, 8.51 disagree and 8.25% strongly disagreed and mean was 3.48 with standard deviation of 2.489. From open ended questions in the questionnaire, respondents revealed that NTCs had been designed with infrastructure that supports all learners to learn in terms of access to infrastructure like classrooms, dormitories, lavatories, play grounds, dining halls, library, laboratories and walkways.

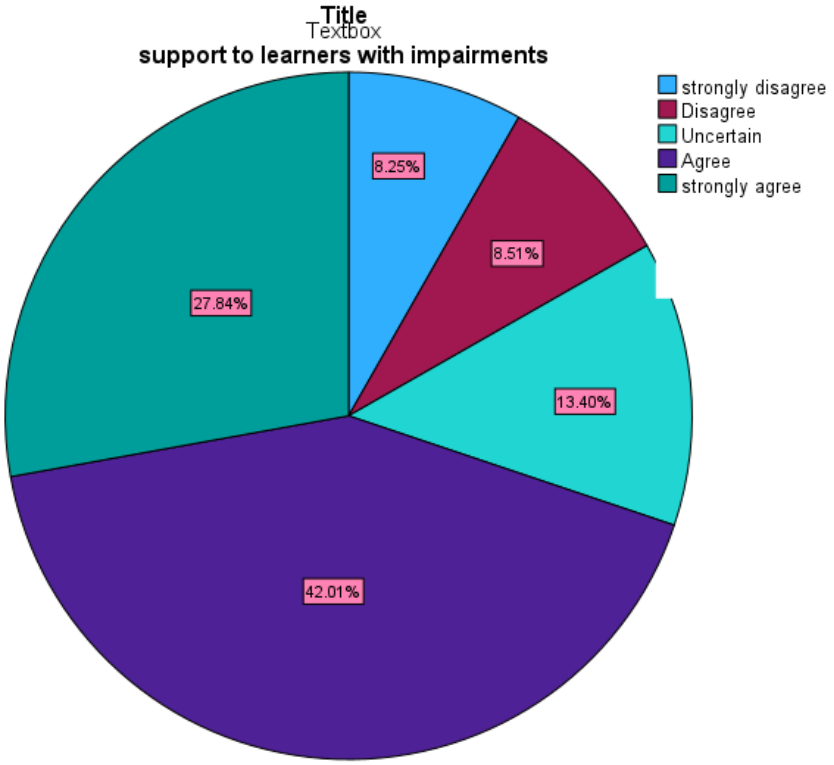
From interviews;

"… whereas NTC Unyama was renovated by the Islamic development bank and Enabel renovated NTC Kaliro, Unyama, Mubende and Kabale, all NTCs were designed inclusively to the MOES standards in terms of infrastructure". MOES 3

This meant that the environment was conducive for teaching and learning of all learners in terms of infrastructure.

The information about conducive learning environment was further presented with a pie chart for visual expression in figure 4.2

Figure 4.2 Showing supportive environment to learners with impairments



Total majority of the respondents 55.41% agreed and strongly agreed that there was support to learners with impairments in terms of assistive gears, 27.84% were not certain whereas 16.76% disagreed. From the physical visit to NTCs there was generally a good environment in terms of buildings that supports all learners to learn. However there was no specific action to learners with impairments.

With interviews;

"…there was a gap in terms of conducive environment especially due to congested dormitories, and some inaccessible buildings".

This meant that NTCs had sufficient infrastructure in terms of assistive gears to support all learners realize their potential communication, pedagogical, problem solving, and critical thinking skills.

4.5.3 Effect of Lighting on academic achievement of learners in NTCs in Uganda

On Lighting and learners' safety; only 47.9% of the respondents agreed that it was sufficient whereas 39.5% strongly agreed, 7,7% were uncertain, 2.7% disagreed while 2.2% strongly disagreed. The mean score was 4.14 at a standard deviation of 0.59.

From open ended questions in the questionnaire, it was noted that lights were sufficient only when electricity from the main grid was available. The generator powered some places of the reading areas and other parts remained dark for learners to present their projects, do course works and practice pedagogical skills.

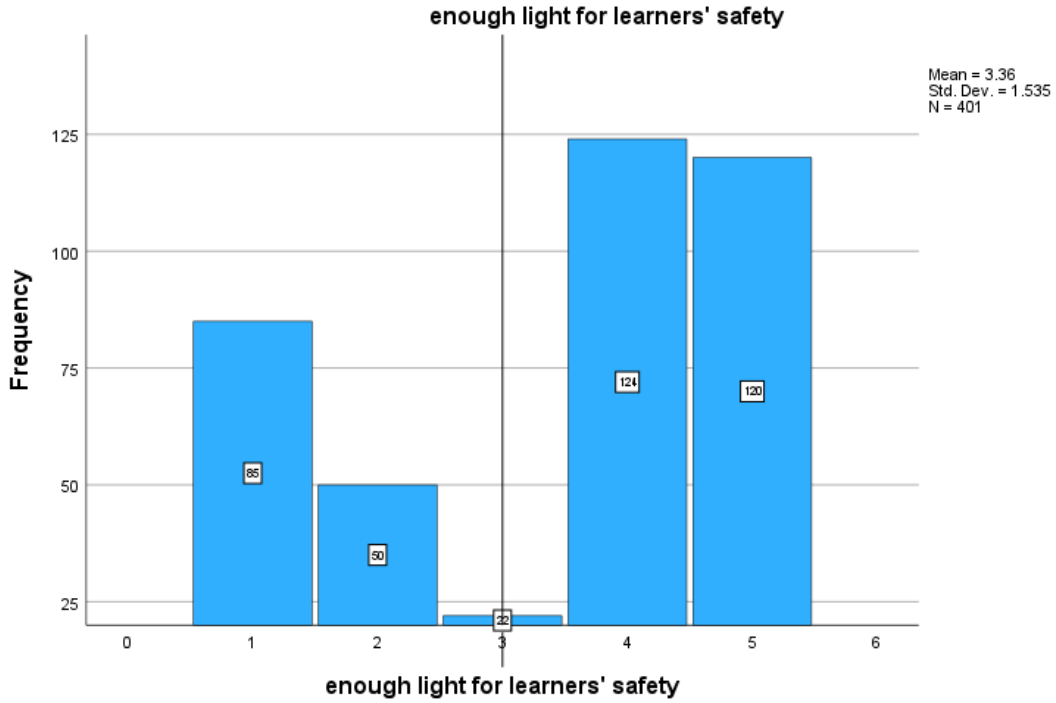
From Interviews,

" The lighting could have been sufficient but maintenance in terms of electric wiring, bulb replacement was still wanting. Some corners have solar light security lights especially the side of the girls' dormitories but these were not sufficient to all the dark corners in the college. "Principal 5

This indicated that some areas of the college were not safe for learners and a threat to special needs learners. This also meant that whenever the main power went off, there was no more effective classwork, project work research for learners during evening hours or at night. It also meant that learners lost on the time for acquiring and practicing on pedagogical, problem solving and critical thinking skills.

To further explain the effect of lighting on learners' academic achievement, information on the mean score was presented in figure 4.3

Figure 4.3 Showing lighting and learners' safety



From the mean of 3.36, there is enough light for learners safety in colleges with standard deviation of 1.35. This implies that there is a near consensus among respondents that the lighting system in colleges promote learners' safety which consequently promotes teaching and learning and better performance of learners. From interview, it came out that the lighting system is sufficient when electricity power is available. The solar and generator powered lights were limited to a few places.

4.5.4 Effect of talking compound and academic achievement of learners in NTCs in Uganda.

The majority of the respondents 34.2% strongly agreed that NTCs had talking compound that supports all learners, 47.1% agreed, as 10.7% were uncertain, 6% disagreed and 2% strongly disagreed with a mean score of 4.03 and 0.73 standard deviation. Through observations, NTCs had posters that had messages for all learners however they were not sufficient and others had faded. The messages varied and were

cutting across all disciplines to promote pedagogical, counseling, problem solving skills among learners.

From open ended questions in the questionnaire, data showed that there was need for more posters and updating the existing ones so as to promote learners' proactiveness in critical thinking, problem solving and pedagogical skills.

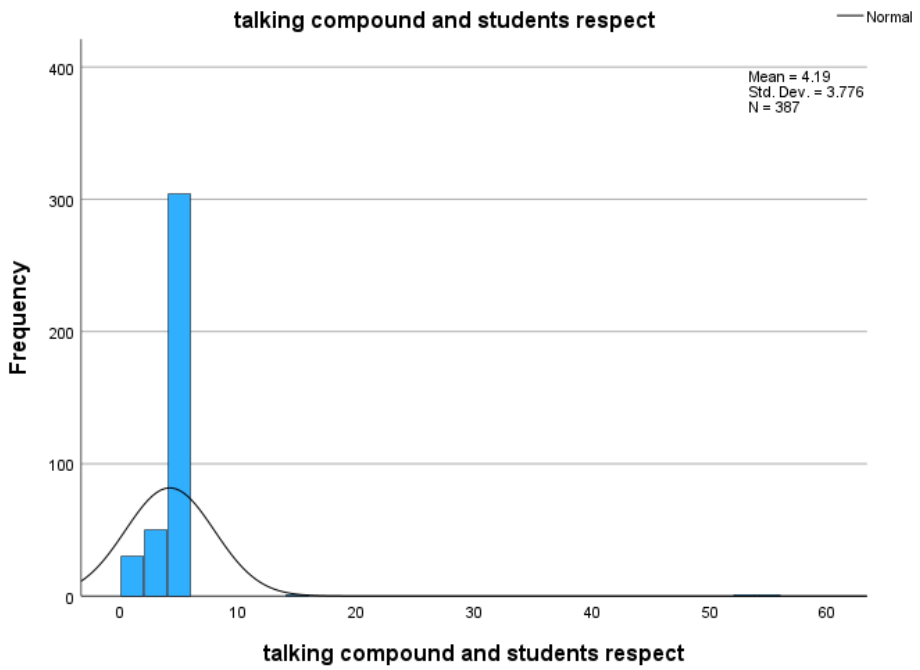
From Interviews;

"… Posters were installed by safe learning environment committee with the support from Enabel, colleges should maintain the posters , add more and improve the existing ones." MOES 1

This meant that NTCs had talking compound to support accessibility by all learners, promote learners skills in counseling, pedagogy, problem solving as they do their research, project, class work for better grades.

To further explain the effect of talking compound on academic achievement of learners in terms of good grades, coursework, exams, quality completion, expression of mean score and standard deviation were presented in figure 4.4

Figure 4.4 Talking compound and students' respect on promotion of conducive learning environment



Majority of the respondents agreed that talking compound promoted respect among students. The respect is an indication that learners acquired soft skills in terms of counselling, critical thinking, problem solving. The curve is positively distributed with 3.776 as standard deviation with the mean of 4.19. This indicated that talking compound promoted students' respect. There was however a slightly higher standard deviation of 3.8 which indicated a great variation in variables from the mean. The respondents who agreed were far much different in numbers from those who disagreed.

There was evidence of polite messages, gender related messages in NTCs. The environment was intended to improve learners' grades in terms of project work, classwork, coursework and exams. Such learners were expected to successfully acquire skills like problem solving, communication, and pedagogical skills with quality completion.

Further, selected constructs of conducive learning environment were correlated so as to establish the extent of relationship with selected constructs of academic performance. The results were presented in table 4.8

Table 4.8

Correlation between constructs of conducive learning environment and academic achievement constructs.

		talking compound and students respect	lighting and learners' safety	Communication skills
talking compound and students respect	Pearson Correlation	1	.685	.687
	Sig. (2-tailed)		.022	.022
	Sum of Squares and Cross-products	5560.665	-71.048	72.063
	Covariance	15.708	-.203	.208
	N	355	351	347
lighting and learners' safety	Pearson Correlation	-.022.685	1	.483
	Sig. (2-tailed)	.022		.038
	Sum of Squares and Cross-products	-71.048	1931.955	73.600
	Covariance	-.203	5.427	.211
	N	351	357	350
Communication skills	Pearson Correlation	.671	.483	1
	Sig. (2-tailed)	.022	.038	
	Sum of Squares and Cross-products	72.063	73.600	1991.832
	Covariance	.208	.211	5.595
	N	347	350	357

There is a strong positive relationship of 0.685 at P value of 0.022 between talking compound and lighting for learners' safety. There is a strong positive relationship of 0.87 at P value 0.22 between talking compound and communication skills in colleges. There is a positive strong relationship of 0.671 at p value of 0.022 between talking

compound and communication skills. There is a weak positive relationship of 0.483 at p value of 0.38 between communication skills and lighting for learners' safety at the college.

4.6 The relationship between instructional technology and academic achievement of learners in NTCs.

This relationship was studied with data from the questionnaire with a 5 likert scale, interview that had open ended questions and documentary analysis. The objective was studied under constraints of visual aids, IT equipment support, and teaching learning aids which considered audio-visuals and tactile. The quantitative results were presented in the table 4.9

Table 4.9

Relationship between instructional technology and academic achievement of learners in NTCs in Uganda.

Instructional technology strategy	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree	Mean	S,D
Visual aids support quality classwork	20.16%	39.53%	16.23%	11.26%	12.83%	3.47	1.30
IT equipment supports quality of learning	18.37%	37.80%	17.85%	12.60%	13.39%	3.39	1.47
Teaching and learning aids support quality classwork	24.32%	40.69%	16.87%	11.41%	6.70%	3.65	1.17

Source: **primary data 2024**

4.6.1 Relationship between Visual aids support and quality classwork

The total majority of respondents 59.69% agreed and strongly agreed that visual aids support quality class work for learners. Some 16.23% were not certain whereas 25.07% disagreed. Teachers were reluctant to make no cost or low cost visual aid to enhance learners' quality classwork.

The visual aids that were available were not effectively utilized for teaching and learning according to the response from interviews. There was still a capacity gap coupled with other conditions like power black outs especially with the use of IT equipment like projectors.

From interviews,

> "…computers *are for the young generation but not for us seniors who are about to retire*" H.O.D from NTC 4

Total majority of respondents 56.17% agreed and strongly agreed that visual aids like IT equipment supported quality learning in NTC in terms of good project work, research, coursework and final exams. 17.85% were not certain whereas 25.99% of the respondents disagreed. Majority 65.01% agreed and strongly agreed that teaching and learning aids supported quality classwork. 16.67% were not certain whereas 18.11% of respondents disagreed and strongly disagreed.

From interviews;

> "*…the equipment were not sufficient to support quality teaching and learning for the over whelming number of students. The few gadgets were left for a few departments that had IT as the compulsory part of the course for example business and physics students". HOD NTC 3*

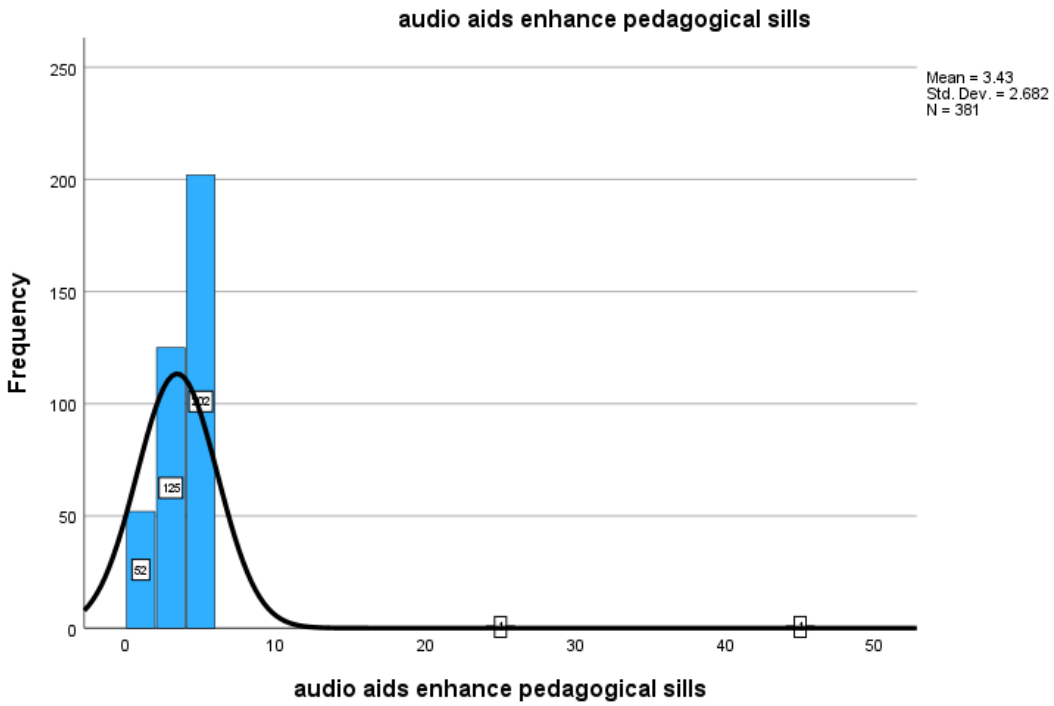
This meant that not all students had access to IT gadgets for learning and improve on their classwork, project work, research work and gain better skills in problem solving, critical thinking, counselling and pedagogical skills.

From review of documents specifically portfolios for lecturers, it was revealed that most lessons were presented with insufficient or no teaching and learning aids especially in arts subjects like history.

There were teaching/learning aids that were both for seeing and hearing (audio-visual). They included gadgets like a computer connected to the screen to play a video.

To understand the relationship between visual aids and academic achievement of learners, data was presented in figure 4.5

Figure 4.5 Effect of Audio Visual aids and enhancement of pedagogical skills



The distribution curve with a mean of 3.43 at a standard deviation of 2.682 show the effect of audio-visual aids on learners academic achievement in terms of course work ,project, research and exam grades. The curve is positively distributed. This implied that audio/visual aids enhanced pedagogical skills. The difference from the mean is

quite high at 2.682 meaning the responses varied. The frequency for those who agreed are as high as 202 and those who disagreed were as low as 52 which is a higher deviation from the mean.

4.6.2 IT equipment supports quality of learning

Visual aids and IT equipment had equal mean scores (3.47), indicating a general agreement, though with more variability in opinions (S.D. = 1.30). The instructional technology strategy enhanced the grades of learners' classwork, coursework, and exams.

A higher percentage of disagreement and uncertainty was recorded for IT equipment, with a lower mean of 3.39 and standard deviation of 1.47 possibly reflecting challenges like limited access or insufficient trainings on the use of IT in teaching and learning to enhancing students grades in quality coursework, classwork, assignments and exams

Documentary analysis revealed that NTCs had received many IT equipment from government and other development partners ad revealed from NTC asset tiger software.

From Interviews,

> "*the equipment in NTC could aid learners' grades in classwork, coursework and even exams. Computer skills are urgently needed for the 21st century teaching and learning however IT equipment is not well maintained*". Principal 5

This meant that there were equipment in NTCs but some were dilapidated to aid teaching and learning. All colleges had a functional IT laboratory with internet connectivity. Most of the teachers had smart phones. Each NTC had more than 4 functional projectors. In multipurpose halls there were public address systems and in some administrative blocks, there were CCTV camera as seen by the researcher and from documentary analysis.

Any classroom set up should have teaching and learning aids to support quality classwork, project, research work for better grades. Teaching learning aids were

prepared for each lesson depending on the intended competences, learners, content, time and the competence of the teacher.

The use of technology was analyzed to determine whether different types of IT equipment had an impact on students' performance in classwork, coursework, and exams. The analysis also explored how IT influenced the development of key skills such as communication, pedagogy, problem-solving, and critical thinking. Visual aids are teaching /learning materials that aid the teaching/learning process through seeing. The process involves visualizing or seeing and with this, learners can perceive what they see to enhance critical thinking, good classwork and better learning outcomes.

4.6.3 Teaching and learning aids and academic achievement of learners in NTCs in Uganda.

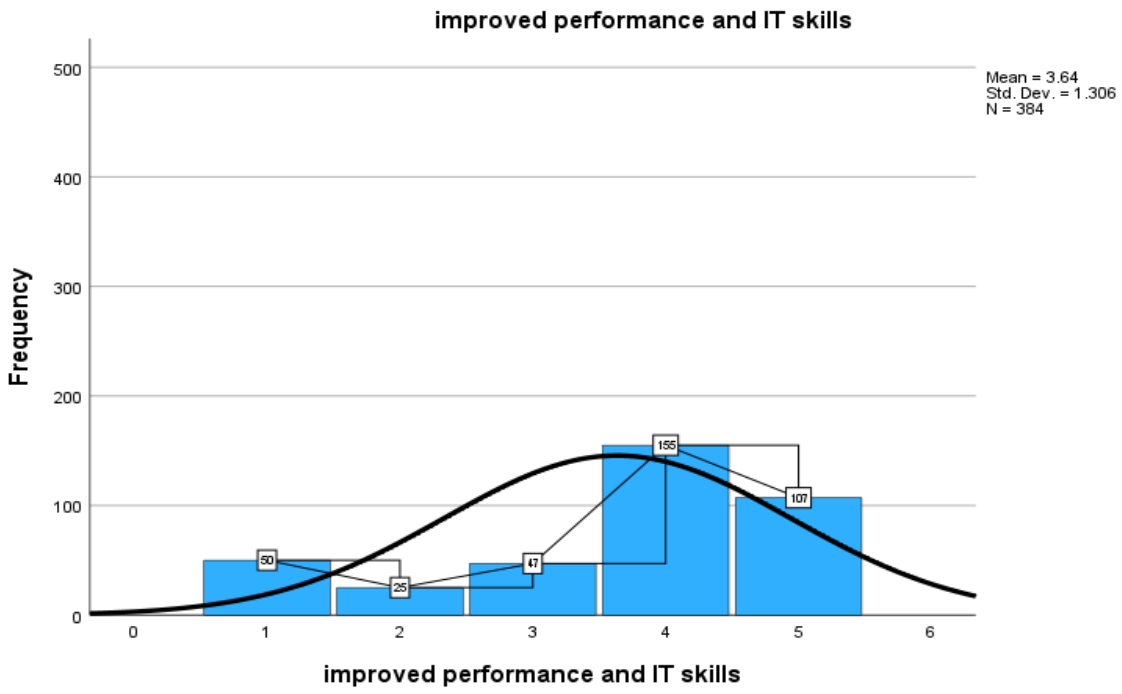
Teaching and learning aids had the highest mean score (3.65), with standard deviation of 1.17 suggesting that respondents agreed that teaching and learning aids supported quality classwork and hence promoted good grades from project work, research work ,course work and final exams. This result revealed that the better the teaching aids, the better the classwork had improved by 3.65%. This meant that teaching and learning aids as an instructional strategy increased the quality of learners' coursework, and even exams grades by 3.65%. Skills such as communication, problem solving and critical thinking are well enhanced with effective teaching and learning aids.

Teaching and learning aids also had the lowest standard deviation (1.17) against the mean of 3.65, indicating strong consensus that teaching and learning aids contributed to quality completion and graduation of leaners with better grades and skills in terms of pedagogy, communication, problem solving.

Further an investigation was carried out to establish the relationship of instructional technology and the academic achievement of learners in NTCs in Uganda. Instructional technology skills were intended to enhance other skills like communication, problem solving, better classwork and coursework grades among learners.

The focus was to establish whether Instructional technology enhanced the academic performance of learners in NTCs in Uganda and the figure 4.6 below explains the details.

Figure 4.6 effect of IT skills on academic achievement of learners in NTCs in Uganda.



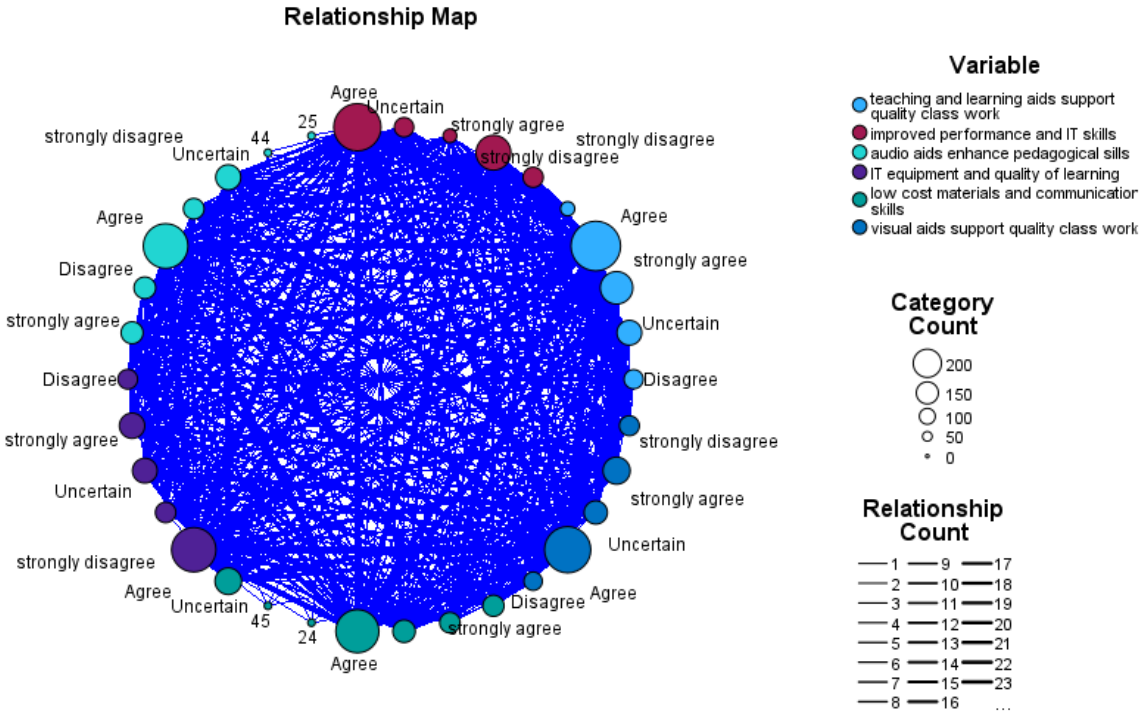
The curve for improved performance and IT skills is a normal one with standard deviation of 1.306 at a mean number of 3.64. There is a slightly lower deviation of 1.306 from the mean.

There is therefore a relationship between improved performance and the improvement in IT skills. Respondents from interviews said that there is a very big difference in IT skills of NTC staff which are transferred to learners for better learning outcomes.

There was further data analysis to establish the effect of instructional technology strategy on the academic performance of learners in terms of grades of classwork, coursework, project work and exams.

The relationship between instructional technology strategy and academic achievement of learners at NTC in Uganda was further presented in a relationship map to compare the results of the Likert scale of those who strongly agreed, those who agreed, those who were uncertain, those who disagreed and then strongly disagreed as showed in figure 4.7.

Figure 4.7 showing a relationship map for instructional technology



From the relationship map, over 200 respondents agreed that teaching and learning aids support quality class work, 200 agreed that improved performance was promoted by improvement in IT skills. The same number of 200 agreed that IT equipment support quality learning.

150 respondents strongly agreed that teaching and learning aids support quality class work, the same number strongly agreed that IT equipment support quality learning.

Only 100 respondents disagreed with the variables. 50 respondents strongly disagreed with the variables.

The figure shows the relationship between variables of instructional technology. Majority of respondents agreed that learners had attained improved performance and IT skills likewise there was a strong agreement that teaching and learning aids support quality classwork. Also data indicated that availability IT equipment improved quality of learning. Many respondents also agreed that low cost materials and communication skills had enhanced students' performance.

Strong agreement also indicate that visual aids supported quality class work among learners in NTCs (category 200).

In a final analysis, to achieve the general objective of this study, the researcher deemed it important to compare the effect of the three strategies so as to show the magnitude of their contribution towards the academic achievement of learners in NTCs in Uganda. This was done by comparing the strategies correlations with their magnitudes of association with the selected academic achievements as already calculated in this chapter earlier. The results were summarized in table 4.9 for easy interpretation.

Table 4.9

The summary correlation between inclusive educational strategies and academic achievement of learners in NTCs in Uganda.

Inclusive education strategy	**Correlation coefficient**	**achievement**		**Academic**	**Average per strategy**	**Coefficient of determination**
		Grades	Skills	Completion rates		
ATL strategy		0.538	0.585	0.525	0.549	30%

Conducive learning environment	0.426	0.81	0.373	0.536	29%
Instructional technology	0.721	0.724	0.523	0.656	43%
Average per academic achievement	0.562	0.706	0.4713		

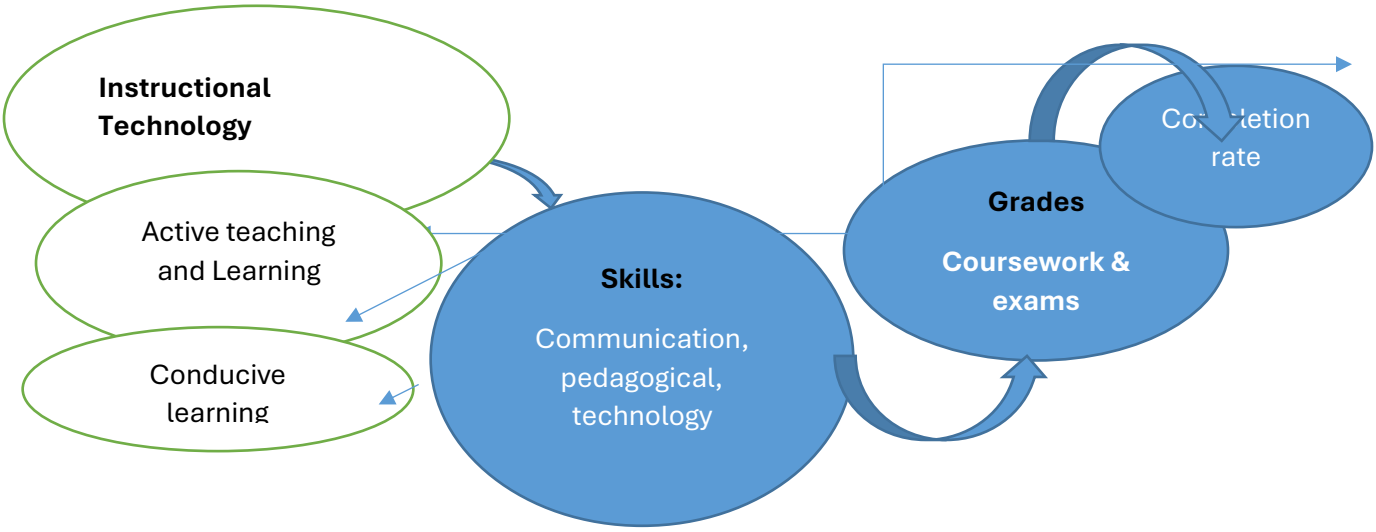
Primary data 2024

From table 4.9, data revealed that there was a moderate positive relationship of 0.549 between ATL strategy and academic achievement of learners. There was a moderate positive relationship of 0.536 between conducive environment and academic achievement of learners whereas there is a strong positive relationship between instructional technology and academic achievement of learners in NTCs in Uganda. Therefore instructional technology strategy had the highest influence on academic achievement of learners in NTCs in Uganda. The highest relationship between inclusive education strategies and academic achievement was 0.706 which was on skills at 43% coefficience of determination There was a weak positive relationship of 0.4713 between inclusive education strategies and the learners' completion rate. There was a moderate positive relationship between inclusive education strategy and learners grades at an average of 0.562.

The highest relationship for inclusive education strategies was on skills. The strongest strategy that influences academic achievement in NTCs in Uganda was instructional technology.

Basing on the results, the research came up with a model called ISGA (Inclusive strategies and Academic achievement Model 2025 illustrated in figure 4.8

Figure 4.8 Model for Inclusive strategies and academic achievement.



ISGA Model assumes the following:

Learning is a process, which requires time.

One strategy has to be considered at ago to measure learning outcomes

Technology enhances different learning stages.

Academic achievement is not measured at the end but it is a continuous process.

Learning outcomes are not through a straight route

The bigger the circle, the more influential is the inclusive education strategy

From figure 4.8, Instructional technology can influence learner's skills in terms of communication, pedagogy, technology, counselling which in turn affect the ability to do coursework and exams that affect the completion rate. At completion time, graduates contribute to instructional technology through skills that enhance grades of other learners and themselves. The model acknowledges the fact that the three instructional strategies are all important but more investment should be on ATL and conducive learning environment so as to aid academic achievement in NTCs

CHAPTER FIVE

DISCUSSION OF THE FINDINGS

5.0 Introduction

This chapter focuses on the discussion of the findings based on the objectives of the study and possible causes of the similarities and differences with the study findings.

As NTCs transit to degree awarding from diploma awarding, this study sought to find out the readiness in terms of inclusive education and academic achievement of learners in these institutions on the basis that best practices could be carried on and challenging practices be improved.

5.1 Effect of active teaching and learning strategy on the academic achievement of learners in National Teachers' Colleges in Uganda.

ATL strategies had improved on the quality of NTC graduates who were able to get enough share of the teaching market and other professions. To Sasoak &Nishimura, (2010) graduates who weretrained with ATL can implement competence-based curriculum better due to better pedagogical skills. This is in agreement with what Yeo, (2024) eluded that using active teaching methods such as learning stations, in which enhancing experiences in learning is the significant trend of modern education is a requirement for quality peer support, better pedagogical, research and good grades.

ATL exposed and skilled NTC learners with modern teaching technology and pedagogies, promoted their research work and project skills. Learners were able to learn continuously through reflective practices and share ideas through peer review and support. This agrees with what Antil, (2014) indicated that modern teaching strategies promoted happy learning in institutions of higher levels. Further Antil, (2014) had indicated that in institutions of higher learning like in Ethiopia, teachers act as facilitators or guides rather than traditional instructors to support students in

their learning process, providing guidance and resources as needed. But Yeo, (2024) argues that there were other factors that promoted skills in school other than the methodology, whereas this was pointed out, this research was in other countries not Uganda but it should be due to the fact that not all learners can excel with the same results at the same level at the same time irrespective of the methodology. Even in NTCs some still struggle to achieve academic success. Not all learners graduated on time, some teacher trainees found preparation of lesson content for teaching very challenging. Some teachers at NTCs still wanted to teach the way they were taught (with lecture methods) whereas some learners still trusted the teachers as the source of knowledge while loosing out on creativity and critical thinking.

In this study, learning stations aided learners to create quality class work, this is supported by Oketch & Rolleston, (2007b) who as well emphasized the fact that through using learning stations, the teacher can create different materials and work activities for all learners using different formats to promote critical thinking and problem-solving skills and have quality classwork. Also Stamback, (2009a) indicated that quality classwork produced better competences such as communication, cooperation, problem-solving and creativity helped to produce 21st century learners who have better grades and skills needed in the market. This is because the time learners took doing tasks at each learning station helped to support openness in knowledge creation to promote learning, critical thinking and problem solving. Whereas the learning stations were appreciated for promoting peer support, they consumed time, and they required a lot of technical support from the teacher to learners. For very large classes, learners sometimes became so confused and commotion developed at different stations. Teachers for large classes where the classrooms spaces were small could not use learning stations as the method was not effective which was a different case with small classes that found the method very effective.

Problem-based learning increased learner engagement and aided them to score better grades. To Abugre & Kpinpuo, (2017) Problem-Based Learning in Africa had the potential to transform education by engaging learners to achieve higher. Ydesen &

Andersen, (2020) agrees with the findings of the study when he stated that collaborative learning was a core component of PrBL to aid better grades.

Findings revealed that Learners were able to document the project trajectory and offer peer timely support to each other. The majority 79.9% of the respondents agreed that learners were able to document project work and document project trajectory, offer timely peer to peer support. This also agrees with Apollo & Mbah,(2021) that project –based learning was a strong tool in promoting learner's competences and subsequent academic achievement.

In this study project-based learning improved hands on skills. This means that project-based method promoted lifelong learning. This is in agreement with what Pho et al., (2021) noted that Project-based learning promote skills that connects students to the world beyond the classroom and prepares them to accept and meet challenges in the real world in a way that mirrors what professionals do every day. This is because the more learners get involved in project work, the more they develop practical solutions for problems, gain confidence in the typical content concepts and are able to thrive in the competitive world.

Results revealed that learners scored highly in project work, much as they were not able to implement desired concepts for projects due to time and financial constraints. Some projects required more that 2 years and yet the courses lasted for only two years. This is in line with what Wood (2003), eluded that instead of planning a massive project, the learning process can be made more manageable by chunking the project into smaller parts, with frequent checkpoints built into the timeline for better skills development for learners and this is what NTC students are using.

Much as project-based learning improved learners' academic achievement in NTCs according to the study findings there was a smaller number of learners in specific subject areas like agriculture, fine art who did project work and to others, they did not do projects because of resource constraint and nature of the curriculum in NTCs. This contradicts with Krain et al., (2015) who stated that all learners ought to do a project while at school, document it and share the results of the project.

To teachers, project-based learning kept learners busy, promoted creativity and pedagogical skills to NTC learners. To Machů & Lukeš, (2023) project-based learning promoted teacher trainees' competences and attainment of better skills. To Krain et al., (2015) continued investment and support, PBL has the potential to significantly improve educational outcomes preparing students for future success in an increasingly complex world.

In this study, Learning contracts motivated learners in NTCs to do their coursework, project work , and research. This is in line with Boaduo et al., (2011) who emphasized that learning contracts can increase motivation by making learning more relevant and personalized. Engaged learners are more likely to put in the effort required to achieve their goals and have better grades

5.2 Supportive learning environment and academic achievement of learners in NTCs

All the five NTCs had a supportive inclusive learning environment. The infrastructure had been designed in an inclusive way with most places accessible to all categories of learners. This indicated that the environment supported teaching and learning to promote academic achievement in terms of pedagogical skills, technology, problem solving , critical thinking hence quality class work, project work, research work and quality completion. Sasoka &Nishimura 2010 had indicated that supportive environment in the school setting should include ramps, elevators, wide doorways, accessible restrooms, tactile paving, and clear signage for good accessibility. Since all NTCs had these facilities, then the environment was supportive. There was evidence of ramps accessing places like dormitories, library, lavatories, classes and some offices. The environment in NTCs had improved far much better than what was there before construction by Enabel. Students with diverse linguistic and communication needs for example may require specialized support that is not always readily available in African schools including NTCs. Much as the environment was so inclusive the facilities were not sufficient for all learners hence evidences of struggle and exclusion.

In this study, talking compound promoted better communication skill among learners at NTCs. This agrees with Bannink et al., (2020) where it was indicated that inclusive

learning environment should include conducive compound that enhance inclusive and non biased communication. Learners should attend l schools where they can be supported by a conducive environment so as to achieve better competences through school activities that are learner centered.

5.3 Instructional technology and academic achievement of learners in NTCs

Most lecturers had limited skills to utilize the existing instructional technology especially IT equipment so as to promote technological skills and learning grades. They were highly constrained by limited skills to utilize the existing technology and innovate more. (Kirsti Lonka, n.d.) emphasized that it was the responsibility of teachers to be sufficiently trained on the use of teaching aids, and have full understanding of their subject in order to pass on the right knowledge to students for their better perceptions and grades .

In this study, IT equipment available to support teaching and learning were not sufficient for all learners in all colleges. To Mugo et al., (2015) had indicated that in some institutions, the IT equipment learner ratio was so wanting, poorly maintained and so less efficient. According to Firman & Said, (2016) schools lack sufficient resources to aid their academic achievement through quality learning and assessment. On this note, it indicated that there was limited use of audio-visual aids to promote research, problem solving skills and critical thinking.

Instructional technology was the most influential factor among all inclusive strategies in promotion of academic achievements for learners in NTCs. This was because instructional technology was required to be integrated in every strategy to promote academic achievement in terms of problem solving, communication, good grades from coursework, research work, project work, exams and hence quality completion. This agrees with what Al Schweitzer, (1995) had indicated that usage of audio-visuals provides learners with a live experience of learning makes learners understand everything better. However IT could not achieve 100% results in terms of academic achievement of learners in NTCs because there were still traces of IT phobia among students and teachers which was evidenced by much of the work being handwritten.

To Okech, (2017), IT usage in teaching and learning depends a lot on the creativity and abilities of the teacher. Further, Wyatt, (2002) agrees that the use of teaching aids can facilitate the learning process by making it interesting and less time consuming only and only if the teachers break the IT phobia.

Skills was the most outstanding academic achievement because a learner who is skilled can acquire good grades with evidences of good coursework, classwork and subsequently graduate on time. This means that motivated teachers should be provided with appropriate training, resources and support for inclusive education for all stages to enhance students' academic achievement through good skills that enhance life long learning for better academic outcome. This agrees with what (VanWinkle et al., 2005) eluded that teacher trainees who acquired pedagogical, problem solving, technological, communication and listening skills were better in the world of work to accomplish tasks required by employers in education and education related fields.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the summary of the study findings, conclusions and recommendations based on the study objectives which included: To analyse the effect of active teaching and learning strategy on the academic achievement of learners in National Teachers' Colleges in Uganda. To assess the effect of supportive learning environment strategy on learners' academic achievement in NTCs in Uganda. To examine the relationship between instructional technology strategy and academic achievement of learners in NTCs.

Among the ATL methods of learning stations, problem based learning, project- based learning and learning contracts, all the methods promoted critical thinking, pedagogical skills, problem solving skills among learners however this depended on the extent to which they were efficiently used in terms of preparation, implementation and follow up activities. Problem based learning was the most applied method by the majority of lecturers in NTCs.

Project-based learning was the most impactful method on promoting skills among learners for academic achievement. Lecturers and students least applied formal learning contracts to enhance academic achievement in terms of grades, skills and completion rates.

Since in this study ATL promoted quality content, better pedagogical skills, problem solving and communication skills, teachers in NTCs should be aware that children are not born on Tabularrassa. They can contribute to their own learning content, skills and values to shape teaching profession and prepare them for the world of work.

NTCs started implementing active teaching and learning methodologies which were aligned to the competence based curriculum implemented in lower secondary schools in Uganda. These methodologies should be strengthened and be transferred to the new teachers who might have not gotten the knowledge and skills so that the

transition to Uganda National Institute of Teacher Education (UNITE) to award degree programmes secondary education find a strong foundation methodology for teacher trainees. This may earn UNITE programmes of teacher training better values compared to teacher training programmes in other institutions in Uganda.

All NTCs had conducive learning environment in terms of space, light, accessibility by all learners however the infrastructure was not sufficient for all learners due to high population of learners.

The environment in terms of talking compound stood out to be sufficient to promote academic achievement of learners in NTCs. In all NTCs, learners were able to access resources and study objectively to achieve the relevant pedagogical, communication, problem solving, complete classwork henceforth graduation.

Assistive gears were important in achieving soft skills specifically pedagogical, communication and listening skills and learners graduated timely.

Lighting solely depended on the main power supply grids for learners to take classes at night.

The study also revealed that the environment in all NTCs was sufficient for teaching and learning however some of the facilities were never sufficient for all learners and so there were such tendencies of congestion especially for professional classes, dormitories for both girls and boys were not sufficient hence causing some learners to rent places outside college which poses their lives to high level risk. Government therefore needs to invest more in infrastructure for NTCs if in future NTCs have to continue admitting big number of students for teacher training programme.

Majority of lecturers were using visual aids that were of low or no cost to support teaching and learning. This aided quality teaching and learning and supported students to complete coursework, research, project work, excel in exams and consequently graduate on time.

Utilisation of IT across all NTCs had improved to boost learning outcomes. Much as there were other factors impending the achievement of best use of technology like limited number of IT equipment, lecturers and students were using their smart phones to access information and utilization of IT for audio-visual support to all learners. There should be deliberate efforts by the government to support NTCs with subsidized high speed internet, recruit substantive IT managers to support maintenance of equipment and continuously train NTC staff and students on ICT.

Instructional technology strategy stood out as the most effective strategy in promotion of academic achievement of learners in NTCs in Uganda. This means that lecturers integrated at least audios, visuals, audio-visuals, in their teaching to support learners complete their research, classwork, project work, research work, prepare for exams attain good grades and graduate timely.

It was evident that instructional technology was the highest in influencing academic achievement of learners in NTCs but was not sufficient to cause a desired drastic change in teaching and learning. There was more need in capacity building for lecturers so that there would be impact in technological skills among learners from NTCs. If well embraced, instructional technology can be a game changer in NTCs to produce competent, competitive 21st century teachers.

This study aimed at investigating inclusive learning strategies and academic performance of learners in NTCs. Indeed, the academic performance of learners in NTCs had improved due to inclusive education strategies but these were not the only factors for improved academic performance. There were some learners who as well had not performed well and they had retakes as others scored poor grades of their diplomas. Some learners still dropped off from the course due to poor performance, financial constraints, family burdens and other. The government therefore needed to continue investing in teacher continuous professional development (CPDs) especially in instructional technology for teachers at NTC for quality teacher training programmes.

ATL strategy promoted skills among learners in NTCs so there is a need to invest in continuous professional development for NTC teachers/ lecturers, align the constructs of ATL methodologies with the methods in the competence based curriculum plus the instructional technologies so that there is harmony between what learners or teacher trainees are trained on and it' relevance at the world of work especially for secondary school level. Prioritizing CPDs for teacher trainers in Uganda to enable them train competent teachers for the 21st century by the government of Uganda through MOES and UNITE is as well urgent.

Supportive learning environment in terms of assistive gears promoted learning for all learners meaning there is a need to maintain the available assistive gears to promote teaching and learning, purchase of more assistive gears for NTC students by the head of institutions with support of government and development partners. The government of Uganda should increase the grant for maintenance and plan for infrastructure expansion if NTCs have to maintain the high enrolment and good quality of teaching and learning and produce quality teachers under UNITE.

Instructional technology was the most influential strategy in promotion of academic achievement among NTC students in Uganda, therefore more equipment to support teaching and learning should be procured and trainings be provided to the users to ensure efficiency in the use of resources by Institutional heads, UNITE, public service and institutional heads.

Skills was the most influential academic achievement among the NTC learners in Uganda so more emphasis on skills development for learners at NTC by lecturers at NTCs, H.O.Ds and academic registrars should be done.

Further research about inclusive education strategies should be carried out when NTCs have started operating as UNITE campuses, awarding degrees not diplomas and teacher training institutions are many more including the core PTCs.

The students involved in this research were pursuing diploma in education primary and the government had already halted diploma in education secondary. There is a need for further research when the colleges (UNITE campuses) start awarding degrees

in education to both primary and secondary school teachers under the management of Uganda National Institute of Teacher Education.

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APPENDICES

Appendix A: QUESTIONNAIRE FOR LECTURERS AND STUDENTS

Dear respondent,

I am a student of Uganda Christian University undertaking a research entitled "Inclusive education strategies and learners' academic achievement in **National Teachers' Colleges in Uganda** as a partial fulfillment for the award of doctor of philosophy in education Administration and management. You have been chosen as one of those respondents who has very important information that will lead to its success. This study is purely for academic purpose and the information you will give will be treated with the confidentiality it deserves. I therefore request you to fill in this questionnaire to enable me accomplish this task. Your honest and sincere contribution is highly appreciated.

Thank you.

ATUHIRE CLARE **REG:** RJ23P02/009

Uganda Christian University Mukono

SECTION A. Background information on respondents

Please tick the appropriate box

Category of respondent

1. Sex

☐ Male

☐ Female

2. NTC Name

☐ Unyama

☐ Kabale

☐ Mubende

☐ Kaliro

☐ Muni

3. Current position

☐ Principal lecturer

☐ Lecturer

☐ Student leader

☐ Student

4. Other responsibilities

☐ Warden

☐ Head of department

☐ Any other... Mention……..

5. Years at the college

☐ Above 20

☐ 11-20

☐ 6-10

☐ 2-5

☐ Below 2 years

6. Do you have a special need?

☐ Yes

☐ No

7. If yes, Explain…….

8. if yes, for how long

☐ Less than a year

☐ 1-2 year

☐ 3-5 years

☐ Over 5 years

9. Write specific areas you have been supported on inclusive strategies.

……

……

ATL strategy and academic achievement of learners in NTCs.

KEY: Strongly agree=5 Agree=4 Uncertain=3 Disagree=2 Strongly disagree=1

S/N	**Learning stations**	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
1	Lessons are prepared to support all learners using LS method					
2	Learners are encouraged to perform tasks for class content on learning station					
3	My class, content is developed at different learning stations					
4	At each learning station all learners are able to do all activities with peer support					
5	Learners are allocated sufficient time to do station activities					

6	Learners provide feedback to each other at every station					
7	All learners are able to do assessment exercises for learning at learning station					
8	Teacher is so supportive to all learners at Learning station to achieve the set competencies					
9	All learners are able to seek for support from the teacher or peers at every station					

Any other comment on learning station method in teaching and learning……

S/N	**Project- based learning**	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
1	There are clear guidelines provided to learners to carry out projects					
2	Learners take record of project progress step by step.					
3	All learners participate in group and individual projects					
4	Teacher supports evaluation of the projects for learners to improve					
5	Learners are able to document the project trajectory and offer peer support to each other					
6	There is a record of progressing scores for					

	learners from the project work					

Any other feedback on project-based learning…….....

S/N	**Problem- based learning**	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
1	Learners are guided to identify problems during teaching and learning.					
2	Learners are able to develop content during the lesson for continuous learning					
3	Learners are able to solve problems for learning					
4	Learners are able to perform tasks with the guidance of the teacher					
5	Learners are able to reflect on their scores from class work for learning					

Any comment on Problem based learning…….

S/N	**Learning contract**	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
1	I have ever signed a learning contract for my class					
2	My contract had clear objectives for learning					

3	I was able to realise better results from assessment after my contract					
4	The contract had activities to aid improved learning					
5	Learner and teacher signed the contract					

Any comment on the learning contract……

Instructional technology and learner' academic achievement.

S/N	**Instructional technology**	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
1	In my class, there are a variety of teaching and learning aids.					
2	There are visual aids to use in teaching and learning.					
3	There are audio aids for teaching and learning aids in my classroom					
4	There are low cost materials to aid teaching and learning					
5	There is use of IT equipment to enhance teaching and learning in my class					
6	I can easily complete my assignments using IT equipment provided in my class					

7	I have access to enough teaching and learning aids.					
8	There is improvement on performance of learners due to the use of relevant teaching/ learning aids					

Any comment on teaching/ learning aids……

Supportive learning environment and learners' academic achievement.

S/N	Description	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
1	All Learners have access to almost all buildings in the college					
2	The dormitories can be accessed by all learners					
3	Learners can access food serving points in the college					
4	The compound for the college has messages that encourage learners to respect one another					
5	There is enough light in the classroom and outside shades for the safety of learners					
6	Learners with impairments are well supported by lecturers and college management to pursue their dreams					

7	There are mechanisms for reporting cases of misconduct and abuse on learners with special needs to college management					
8	All learners can access and utilize materials in the library.					
9	There are assistive gears to aid teaching and learning for learners with special needs.					
10	The college has a medical facility to provide medical support to all learners.					

Any comment of on inclusive learning environment in your college……

Academic achievement of learners

S/N	Description	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
1	In my class learners complete their tasks timely and they get quality feedback					
2	Students provide feedback to each other' work					
3	Project work is done with clear instructions until the final product					

4	Course work is done and support is provided to those who have gaps					
5	Students attain good pedagogical skills from their teacher					
6	Students communicate freely with their teachers while at college					
7	Students are encouraged to think critically in the teaching learning process					
8	Learners are encouraged to solve problems as part of their experience					
10	By the end of every semester, 0ver 90% of the learners would have finalized their coursework					
11	All learners who start the course are able to graduate after their 2 years of study					

Any other information on learner completion……..

Appendix B:

INTERVIEW GUIDE FOR MoES, ENABEL and PRINCIPALS

I appreciate Inclusive education strategies in NTCs and for my research, the focus is on inclusive education strategies and academic achievement of learners in National teachers colleges in Uganda, our interaction and your responses are highly appreciated.

1. What are the strategies that have been put in place since 2017 to improve leaners' academic performances?
2. What could be the measures that have been employed to improve learners" enrolment, retention and quality completion?
3. How has the college been able to cater for learners with special needs since 2017 todate?
4. What are the teaching/ learning aids provided by MoES to support teaching and learning for all learners?
5. What are the factors that have aided learners' academic performance since 2017 todate?
6. What are the assistive technologies provided for teaching and learning for learners with special needs?
7. What are the CPDs that teachers have undertaken since 2017 todate so as to support all learners in an inclusive environment?
8. What are the strategies employed to ensure quality completion of learners" academics since 2017?
9. What are learners activities organized by colleges to support the teaching and learning of students with special needs?
10. What information is the college having concerning learners that can help to give attention to those with special needs?

Thank you for participating

Appendix C

Documentary Review Checklist

1. Review the students' grades and performance since 2017 to date
2. Review academic staff appraisal documents from 2017 to date so as to check the inclusive strategies by lecturers
3. Review the student data on promotions per semester from 2017 to date
4. Review evidence of preparatory documents and their compliancy with the use of ATL from 2017 to date
5. Review the evidence of students' assessment with use of ATL and ICT
6. Review work plans and reports by HODs and academic registrar on inclusive strategies and learners' academic achievement
7. Review staff recommendations and staff minutes of the awards meetings.
8. Review tracer study reports for candidates of 2017 to date
9. Review action points recommended and actions taken on learners performance at different levels of department, college and awards meeting.

Appendix D

Documentary request form for NTC Principal

Dear Principal,

RE: **REQUEST FOR DOCUMENTS FROM YOUR COLLEGE FOR REVIEW**

I am a student of Uganda Christian University undertaking a research entitled " Inclusive education strategies and learners' academic achievement in **National Teachers' Colleges in Uganda** as a partial fulfillment for the award of doctor of philosophy in education Administration and management. I request for the following documents to enhance my research information that will lead to its success. This study is purely for academic purpose and the information that I will review will be treated with the confidentiality it deserves. I therefore request you to provide to me the following documents; college quarterly reports, students' performance reports and award meetings minutes, Students' projects results, research reports, Admission lists for learners and lecturers' portfolios.

Your efforts in mobilizing the documents are highly appreciated.

Thanks

ATUHIRE CLARE **REG:** RJ23P02/009

Uganda Christian University

Appendix E: BUDGET ESTIMATES

S/N	Item	Quantity	Rate	Total cost(shillings)
1	Internet	Lumpsum		1,000,000
2	Papers	3 reams	20,000	60,000
3	Pen	1 box	25000	25,000
4	Consultations	5 people	25,000	125,000
5	Transport			2,000,000
6	Perdiem	15 nights	60000	900,000
7	Typing & Printing	200 pages	1500	300,000
8	Photocopying	20 copies	5000	100,000
9	Binding	4 copies	25,000	300,000
	Total			4,6100,000

Appendix F: TIME FRAME

Activity	Period 2024-2025					
	May 2024	**April-Sept 2024**	**Oct 2024**	**Nov-Dec 2024**	**Jan-Feb 2025**	**March-April 2025**
Identification and approval of the research topic						
Proposal writing and submission						
Pretesting the research tools						
Data Collection						
Data analysis and interpretation						
Report writing and submission						

Appendix G: The correlation coefficient of selected variables.

Control Variables			Quality performance of learners on station	Content supports all learners	Teacher supports learners to think critically	Lecturers are using learning station skills in their teaching and learning	Learners take record of project progress and score better grades	Teachers support evaluation of the projects for learners to improve pedagogical skills	Learners provide feedback to each other	All learners are able to do assessment exercises
none-[a]	quality performance of learners on station	Correlation	1.000	.437	.009	.215	.022	.110	-.057	-.023
		Significance (2-tailed)	.	<.001	.935	.044	.840	.309	.598	.830
		Df	0	86	86	86	86	86	86	86
	content supports all learners	Correlation	.437	1.000	.196	.122	.185	.140	.286	.223
		Significance (2-tailed)	<.001	.	.067	.258	.085	.193	.007	.037
		Df	86	0	86	86	86	86	86	86
	teacher supports learners to think critically	Correlation	.009	.196	1.000	.273	.213	-.088	.176	.343
		Significance (2-tailed)	.935	.067	.	.010	.046	.417	.101	.001
		Df	86	86	0	86	86	86	86	86
	learners are learning station skills in their teaching and learning	Correlation	.215	.122	.273	1.000	.212	.052	.211	.191
		Significance (2-tailed)	.044	.258	.010	.	.048	.633	.048	.075
		Df	86	86	86	0	86	86	86	86
	learners take record of	Correlation	.022	.185	.213	.212	1.000	-.155	.279	.255
		Significance (2-tailed)	.840	.085	.046	.048	.	.150	.008	.017

	project progress and score better grades	Df	86	86	86	86	0	86	86	86
	Teachers support evaluation of the projects for learners to improve pedagogical skills	Correlation	.110	.140	-.088	.052	-.155	1.000	-.088	-.055
		Significance (2-tailed)	.309	.193	.417	.633	.150	.	.417	.611
		Df	86	86	86	86	86	0	86	86
	learners provide feedback to each other	Correlation	-.057	.286	.176	.211	.279	-.088	1.000	.372
		Significance (2-tailed)	.598	.007	.101	.048	.008	.417	.	<.001
		Df	86	86	86	86	86	86	0	86
	All learners are able to do assessment exercises	Correlation	-.023	.223	.343	.191	.255	-.055	.372	1.000
		Significance (2-tailed)	.830	.037	.001	.075	.017	.611	<.001	.
		Df	86	86	86	86	86	86	86	0
	Learners seek support from the teacher and peers	Correlation	-.184	-.016	.361	.281	.208	-.108	.209	.500
		Significance (2-tailed)	.086	.883	<.001	.008	.051	.316	.051	<.001
		Df	86	86	86	86	86	86	86	86
		Correlation	.095	.138	.363	.337	.173	.000	.138	.172

	Proper guidelines for carrying out projects timely	Significance (2-tailed)	.379	.199	<.001	.001	.107	1.000	.201	.109
		Df	86	86	86	86	86	86	86	86
	learners' participate in groups and individual projects	Correlation	-.045	.027	.243	.132	.091	.111	.070	.317
		Significance (2-tailed)	.680	.806	.023	.222	.400	.303	.516	.003
		Df	86	86	86	86	86	86	86	86
	Learners are able to document the project trajectory and offer peer timely support to each other	Correlation	-.090	.082	.064	-.151	.016	.044	-.130	.151
		Significance (2-tailed)	.405	.449	.551	.160	.879	.682	.226	.161

Appendix H: REC Approval Letter

UGANDA CHRISTIAN UNIVERSITY

A Centre of Excellence in the Heart of Africa

18/12/2024

To:

Atuhira Clare

Type: Initial Review

Re: UCUREC-2024-1125: Inclusive education strategies and learners' academic achievement in National Teachers' Colleges in Uganda

I am pleased to inform you that the Uganda Christian University REC, through expedited review held on
09/12/2024 approved the above referenced study.

Approval of the research is for the period of **18/12/2024** to **18/12/2025.**

As Principal Investigator of the research, you are responsible for fulfilling the following requirements of approval:

1. All co-investigators must be kept informed of the status of the research.
2. Changes, amendments, and addenda to the protocol or the consent form must be submitted to the REC for re- review and approval **prior** to the activation of the changes.
3. Reports of unanticipated problems involving risks to participants or any new information which could change the risk benefit: ratio must be submitted to the REC.
4. Only approved consent forms are to be used in the enrollment of participants. All consent forms signed by participants and/or witnesses should be retained on file. The REC may conduct audits of all study records, and consent documentation may be part of such audits.
5. Continuing review application must be submitted to the REC **eight weeks** prior to

the expiration date of **18/12/2025** in order to continue the study beyond the approved period. Failure to submit a continuing review application in a timely fashion may result in suspension or termination of the study.

6. The REC application number assigned to the research should be cited in any correspondence with the REC of record.
7. You are required to register the research protocol with the Uganda National Council for Science and Technology (UNCST) for final clearance to undertake the study in Uganda.

The following is the list of all documents approved in this application by Uganda Christian University REC:

No.	Document Title	Language	Version Number	Version Date
1	Protocol	English	Uganda	2023-11-15
2	Data collection tools	Academic	Uganda	2024--

Yours Sincerely
Prof. Peter Waiswa
For: Uganda Christian University REC

Appendix I: Plagiarism Check Report for the Thesis

turnitin

Digital Receipt

This receipt acknowledges that Turnitin received your paper. Below you will find the receipt information regarding your submission.

The first page of your submissions is displayed below.

Submission author:	Clare Atuhire
Assignment title:	Quick Submit
Submission title:	Exam_2
File name:	Atuhire-Clare.docx
File size:	548.52K
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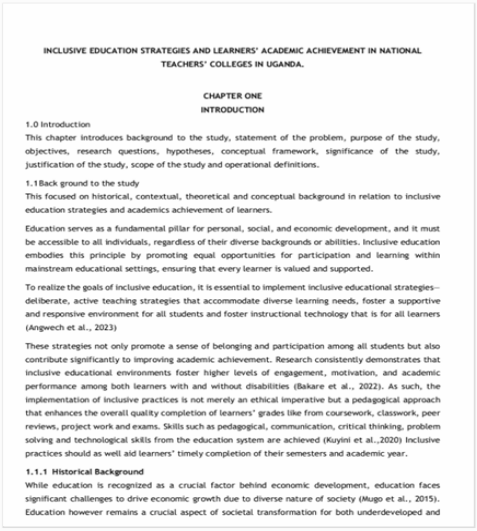
Word count:	31,055
Character count:	179,403
Submission date:	11-Aug-2025 12:29PM (UTC+0300)
Submission ID:	2728197194



INCLUSIVE EDUCATION STRATEGIES AND LEARNERS' ACADEMIC ACHIEVEMENT IN NATIONAL TEACHERS' COLLEGES IN UGANDA.

CHAPTER ONE
INTRODUCTION

1.0 Introduction

This chapter introduces background to the study, statement of the problem, purpose of the study, objectives, research questions, hypotheses, conceptual framework, significance of the study, justification of the study, scope of the study and operational definitions.

1.1Back ground to the study

This focused on historical, contextual, theoretical and conceptual background in relation to inclusive education strategies and academics achievement of learners.

Education serves as a fundamental pillar for personal, social, and economic development, and it must be accessible to all individuals, regardless of their diverse backgrounds or abilities. Inclusive education embodies this principle by promoting equal opportunities for participation and learning within mainstream educational settings, ensuring that every learner is valued and supported.

To realize the goals of inclusive education, it is essential to implement inclusive educational strategies--deliberate, active teaching strategies that accommodate diverse learning needs, foster a supportive and responsive environment for all students and foster instructional technology that is for all learners (Angwech et al., 2023)

These strategies not only promote a sense of belonging and participation among all students but also contribute significantly to improving academic achievement. Research consistently demonstrates that inclusive educational environments foster higher levels of engagement, motivation, and academic performance among both learners with and without disabilities (Bakare et al., 2022). As such, the implementation of inclusive practices is not merely an ethical imperative but a pedagogical approach that enhances the overall quality completion of learners' grades like from coursework, classwork, peer reviews, project work and exams. Skills such as pedagogical, communication, critical thinking, problem solving and technological skills from the education system are achieved (Kuyini et al.,2020) Inclusive practices should as well aid learners' timely completion of their semesters and academic year.

1.1.1 Historical Background

While education is recognized as a crucial factor behind economic development, education faces significant challenges to drive economic growth due to diverse nature of society (Mugo et al., 2015). Education however remains a crucial aspect of societal transformation for both underdeveloped and