EFFECTIVE PEDAGOGY IN NIGERIAN SECONDARY SCHOOLS: HOW CRITICAL THINKING CAN BE ENCOURAGED

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Abstract

EFFECTIVE PEDAGOGY IN NIGERIAN SECONDARY SCHOOLS: HOW
CRITICAL THINKING CAN BE ENCOURAGED

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Researchers widely recognize critical thinking (CT) as an essential aspect of effective instruction and learning based on its impact on students and educational institutions at all levels. The purpose of this qualitative study was to explore how critical thinking skills can enhance the performance of Nigerian secondary schools and consider Economics so that teachers and policymakers could be provided with research-deduced recommendations to make informed steps forward toward encouraging the development of critical thinking in the student's learning experiences and performance.

The sample comprised 60 participants, ten economics teachers, and fifty secondary school Economics students in Abuja Municipal Area Council (AMAC), Federal Capital Territory (FCT). With a basic qualitative approach, data were gathered using an open-ended interview protocol with teachers and Focus groups with students. Subsequently, a thematic analysis of the collected data was conducted, focusing on the two research questions highlighting the identified themes. The results of this study indicated how teachers' experiences and perceptions of critical thinking skills could be adopted to encourage students' learning outcomes in the study of Economics in Nigerian Secondary schools.

This study reflected the dearth of teachers' understanding of the relevance of critical thinking and the teaching approaches they often use, which gives more credence to traditional teaching methods rather than student-centered ones. Besides, indicators from participating teachers and students suggest that critical thinking could be a helpful tool for improving teacher-student relationships, creating a more conducive and interactive classroom relationship, and ultimately culminating in achieving teaching and learning goals. The study's outcomes highlighted the importance of thinking in their learning activities and how it can enhance students' performances during and after classroom activities. It might result in positive change and support for teacher's training programs on how to guide their students in developing critical thinking skills for better academic performance. Policymakers, curriculum designers, journal publications, and educational institutions would use the outcomes of this research to examine how teachers' careful selection of effective pedagogy can encourage the development of critical thinking skills in students.

Declaration

I declare that this thesis has been composed solely by myself and has not been submitted, in whole or in part, in any previous application for a degree, except where states otherwise by reference or acknowledgment, the work presented is entirely my own.

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I acknowledge that I have not used any AI tools to create, proofread, or produce any text or ideas related to any draft or final versions of the thesis.

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Dedication

I dedicate this thesis to all Nigerian secondary school students who aspire to be critical thinkers

and are willing to contribute their quota to the development of education in Nigeria.

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My immense appreciation to the Almighty God for His innumerable blessings on my life and the inspiration I have received to embark on this path.

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I want to thank the Education Resource Centre (ERC), Abuja and the management of the FCT Secondary School Education Board (SSEB) for their unwavering support and for providing various data that enhanced the success of this research work. Also, I sincerely appreciate the administrators, Vice principals, teachers, and students of all the schools sampled for their time and assistance.

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Table of contents

List of Abbreviations

AMAC	Abuja Municipal Area Council
EFA	Education for All
ERC	Education Resource Centre
FCT	Federal Capital Territory
FGD	Focus Group Discussion
FME	Federal Ministry of Education
JSS	Junior Secondary School
MDG	Millennium Development Goals
NEEDS	National Economic Empowerment and Development Strategy
NERDC	Nigerian Education Research and Development Council
NPE	National Education Policies
SSEB	Secondary School Education Board
SSS	Senior Secondary School
SSSC	Senior Secondary School Curriculum
UBE	Universal Basic Education
UBEC	Universal Basic Education Commission
UNESCO	United Nations Educational Scientific and Cultural Organization

List of Tables

List of Figures

CHAPTER 1: INTRODUCTION

1.1 Introduction

The introduction of economics into the Nigerian school curriculum in 1966 is a tool the educational sector can use to invest in the development of the nation's economy by generating new knowledge that will expose students to real-life learning environments and experiences and create economic awareness in students early enough to aid the growth of the nation's economy (Oleabhiele & Oko, 2018). However, the urgency of the issue is stark in the research that has shown a high population of secondary school graduates who are not productive and employable due to their low performance in economics and lack of development in critical thinking skills (Amuda et al., 2016; Mbagwu, 2018; Afolayan, 2020). The lack of teachers' encouragement of critical thinking in students has adversely impacted their performance. It has culminated in various economic challenges in the country as a high population of secondary graduates who are not productive and employable are released yearly by schools into society (Mbagwu, 2018).

The rapid change in technology and information in the last few decades has exposed people to intense information and technology, making developing more relevant skills inevitable (Cáceres et al., 2020; Wambsganss, 2020). A crucial part of these 21st-century skills is Critical Thinking skills, which are required and beneficial in every area of human endeavour. For instance, in science, these skills can be applied to evaluate the validity of experimental results that are highly valued in research and development. In literature, these skills are apt to analyse and interpret complex texts. This skill is essential for effective communication and understanding diverse perspectives. At the same time, in economics, it is relevant to identify and proffer solutions to the challenges inherent in a nation's economy and enhance growth and development. It has become pronounced and relevant for individuals to infuse themselves into the changing world and develop

personal ways of evaluating their information for better life decisions. In economics, developing critical thinking skills is apt to increase students' motivation to develop problem–solving and creativity skills relevant to their learning content or jobs after school (Park, 2021). It is in contrast to low thinking, which exposes students to decisions that are unsupported by any evidence and often leads to them making wrong decisions (Haber, 2020). It is also beyond Edward De Bono's lateral thinking, which emphasises routine thinking of one known idea to a new one (Melechi, 2020). Critical thinking requires the personal development of specific intuition by evaluating available information to help one live a fruitful life in the school environment and beyond, ultimately creating consciousness to fit into the changing world.

The dynamism of technological and economic global development has demanded an educational system to help learners think critically about solving emerging problems associated with this trend. Building an educational system to guide students towards developing their critical skills has become necessary rather than a luxury to motivate and promote applicable learning rather than mere memorisation (Schmaltz et al., 2017; Park, 2021). It emphasises the global recognition of critical thinking skills in Education, affirming that educators worldwide share this belief in the significance of these skills to learners' success. Educators are saddled with the responsibility of integrating critical thinking skills into curricula due to the importance attached to their development in education. They are the ones who can encourage and guide the students to ask critical questions, analyse, and evaluate information to impact more excellent knowledge of the learning content or activities aimed at developing higher-order thinking skills (Park, 2021). The importance of critical thinking in Education enhances people's efforts to add value to the world through personal and other modes of thinking to understand issues better (Chafee, 1988; Haber, 2020).

Educators globally have emphasised the importance of students developing critical thinking skills to help them understand and judge the information they receive. Bearing the knowledge that accessing information is no longer difficult and is within the closest reach, deciphering the truth from the truth requires critical thinking skills (Jones, 2015; Haber, 2020). While there is much awareness to include critical thinking education in school curricula globally, the effect has not been significant as most workplace managers and Chief Executive Officers(CEOs) of conglomerates are still not convinced that students are equipped enough with the skill to think critically and solve problems during their school years (Cargas et al., 2017). To address this challenge and make reasonable imparts in critical-thinking Education, integrating the concept into teachers' curricula is not just optional but urgent in enhancing effective pedagogies. However, it should not necessarily affect other learning activities that have been in use. Hence, teachers should acquire the necessary skills needed to introduce students to learning content explicitly and encourage constant practices for a better outcome (Haber, 2020; Wambsganss, 2020) to encourage students to develop critical thinking techniques to make better decisions in life and outside the classroom. The benefits of infusing the teaching and learning of critical thinking into curricula are immense in inspiring educators to take action and motivating them to see the positive impact it can have on their students' learning.

Fahim & Rezanejad (2014) observed that "Unlike the previous popular trends in educational contexts, nowadays the learners are encouraged to inquire about the validity and truth of ideas, challenge and question them, strive for their own opinions, argue over different types of knowledge through reasoning and logic, and in essence seek scientific, reflective, logical, and critical thinking instead of non-scientific, intuitive, illogical thinking" (p.128). Sellars et al. (2018) explained critical thinking as an intellectual process that requires skills to conceptualise information through analysis, synthesis, and evaluation from or generated by observation,

experience, reflection, and communication to support belief and action. It involves the skilful display of knowledge through understanding content deeper than nominal learning of complex ideas for a lifelong application. Fahim et al. (2014) emphasised that critical thinking enables the analysis of facts to generate new ideas compared to defending opinions through inference and evaluation of arguments to solve problems. Conversely, Paul (1990) viewed those who cannot think critically as "unclear, imprecise, vague, illogical, unreflective, superficial, inconsistent, inaccurate, or trivial" (p.795). Since critical thinking has recently become a core issue in Education, teachers must guide their students mentally beyond memorisation to acquire thinking skills that will transcend school years. It will enable them to collect, understand, and ruminate deeply on information to cope with the ever-changing technological advances and their associated challenges.

In Nigeria, secondary school education is vital to an individual's self-actualisation in preparation for higher Education and the workplace; hence, the role of the Government is germane in emphasising the human capital formation of students as well as the capacity building of teachers. The Government's role in promoting critical thinking skills in secondary Education through providing necessary resources and support for teacher training programs is not just crucial but empowering. The Nigerian government's commitment to promoting critical thinking skills in education is a testament to its recognition of its importance and dedication to improving education quality. According to Mbagwu (2018), there are challenges, predominantly, low allocations and funding of the education sector below the 26% benchmark stipulated by the United Nations Educational Scientific and Cultural Organization (UNESCO). In the last ten years, variation has shown that between 6 and 11 per cent of the total national budget allocated to the sector is negatively affecting this critical sector of the nation's economy (Mbagwu, 2018).

Research showed that 1999 Nigerian educational indicators negatively impacted the nation's economy after transitioning to civil rule due to some impediments. Such indicators include poor and non-implementation of the various National Education Policies(NPE) formulated in line with the global standard of engagement, growing population, the challenge of geography and faith, inconsistent democratic rules, low levels of learning achievement attributed to poor teacher quality and traditional learning strategies (Afolayan, 2020; Akanbi & Jekayinfa, 2019). Building a revolutionary educational system to encourage and develop critical thinking skills to strengthen cognitive and intellectual capacities at all levels of the nation's Education is apt in line with global practices (Okunuga et al., 2020; FGN, 2014; Akanbi & Jekayinfa, 2019). A contentious review of the Nigerian curriculum is apt to enable the adoption of innovation that can aid the sustainability of teaching and learning outcomes through developing critical thinking skills.

Critical thinking emphasises the importance of questions in acquiring knowledge and gaining better insight through an objective, in-depth examination of content (Fahim & Rezanejad, 2014). Paul (1985) highlighted the importance of questions in critical thinking while defining critical thinking as asking and answering questions through analysis, synthesis, and evaluation. In Education, questioning in classroom interaction is an essential tool and an important indicator of critical thinking for teachers or students to broaden their cognitive skills (Albergaria-Almeida et al., 2011; Haber, 2020). Teachers and students must disclose a path for content comprehension, thereby igniting critical thinking and further buttressing the importance of social constructivism pedagogy, a blend of the teacher and student, as guide and centre of learning, respectively. Since learning is a collaborative process between student and teacher, the place of questioning will enable meaningful insight into the context that can broaden or reduce students' criticality, which, according to Mayer (1986) and Haber (2020), allows full attention and participation rather than mere engagement in learning. Developing critical thinking skills is beyond

memorisation of learning content; it is more about a deeper understanding and a better grasp of complex ideas that can apply to life beyond school. Teachers must build a support system to help the students develop their critical thinking skills in line with their knowledge of the subject (Cáceres et al., 2020).

According to Fahim and Rezanejad (2014), critical thinking, understanding, and emphasis in educational programs are apt for developing the education sector. Most researchers postulated using a single framework as instruction for critical thinking, which should not be restricted to a few subjects, departments, or specific languages but to all subjects (Abrami et al., 2015). Students can learn across the curriculum by developing and reinforcing a common approach that allows for a centralised and seamless organisation of learning activities. Edward (2017) noted that the inclusion of specific approaches that can help students reflect on the learning experience: "Reflective thinking and writing allowed students to expand their grasp of the thinking skills and promoted intellectual growth, leading to the enhancement of students' CT abilities" (p.57).

The quest for more people capable of engaging in innovative activities in the 21st century to sustain competitiveness in a changing world requires developing life skills relevant to thinking critically. Developing and practising critical thinking strategies is a daily occurrence for a life-long habit of mind as the world becomes more complex due to various innovations and ideas. Most educators consider critical thinking essential to improve learners' communication skills and to deal with attitudes and ideas (Abrami et al., 2015; Larsson, 2017; Cáceres et al., 2020). Conversely, there have been problems recently because most teachers must consistently use critical thinking strategies in their teaching experiences. However, the engagement of students in critical thinking is considered essential. However, the potential for students to develop these skills is immense.

Developing critical thinking skills in economics will be more viable to teach and learn economics in Nigerian secondary schools when critical thinking is included and emphasised in the

Nigeria curriculum as it will allow the students to develop competency that will assist them to identify parts of an argument, make inferences using reasoning, judge without bias, evaluate evidence, recognise fallacies, and solve problems (Umeala, 2015; Edward, 2023). Effective pedagogies, which refer to the various methods and approaches used in teaching, that support critical thinking can facilitate students' performance and become more relevant to developing the country's economy. It is apt for stakeholders in the nation's education sector to emplace a deliberate and periodic reviewing of critical thinking concepts in the economics curriculum to enable students to develop critical thinking skills early in life in preparation for after-school life and contribute their quota to national economic development (Umeala, 2015).

1.2 Statement of the problem

Developing critical thinking in the twenty-first century in the classroom is often viewed as evidence that schools provide lessons that meet the requirement of preparing students for higher learning and life after school (Hummell, 2016). However, it requires some rigour for students to use critical thinking skills in evaluating, synthesising, and analysing to solve problems (Larsson, 2017; Kopzhassarovaa et al., 2016). It also gives credence to combining their previous knowledge with what and how to think for learning to be effective (Kuh et al., 2011; Haber, 2020). Conversely, Cáceres et al. (2020) observed that many teachers are not disposed to engaging students in critical thinking practices and do not possess basic requirements that support CT as common classroom practice. Thus, it is evident that critical thinking is not as pronounced as envisaged since teachers were inadequate in practices, perceptions, and implementation of CT and needed further research and development to achieve learning outcomes (Cáceres et al., 2020). Similarly, Cargas et al. (2017) and Haber (2020) affirmed that critical thinking skills are among the most coveted skills in the 21st century that can transform learning. Every student should have developed it before the end

of their educational journey. It implies that critical thinking connects educators and learners to reach modern educational goals and outcomes. Some calls suggest that 21st-century teachers should possess strong pedagogy theory and classroom management and prepare students to enter the global economy (Husbands & Pearce, 2012; Cargas et al., 2017; Cáceres et al., 2020).

In Nigeria, though teachers commonly utilise a variety of pedagogical approaches to achieve set goals, one of the characteristics of successful pedagogies involves giving students clear thinking about long-term learning outcomes and short-term goals in an inclusive learning environment (Husbands & Pearce, 2012). According to Cargas et al. (2017), a lack of teachers' training and proper implementation has culminated in the underutilisation and underdevelopment of critical thinking. However, it has been promoted as an essential component for over two decades. Studies claim that students cannot think critically, while teachers' knowledge of critical thinking in practice is limited (Abrami et al., 2015). Critical thinking is a widely supported concept but not widely practised in Nigerian secondary schools, which shows the disconnect between the preparation programs of teachers as an essential facilitator and the implementation of critical thinking in the classrooms (Al-Ghadouni, 2021; Ogunode & Adah, 2020). Abrami et al. (2015) admitted that training teachers to be critical thinkers is essential. Cáceres et al. (2020) agreed that teachers must be trained and clearly understand the concept through practice and experience before engaging the students to develop the skill. Oleabhiele and Oko (2018) identified the importance of critical thinking in the study of economics in Nigerian Secondary schools. They agreed that students with the skills play pivotal roles in the nation's continued economic success and dominance. Cáceres et al. (2020) suggested developing and implementing critical thinking in schools to support students' job skills and self-confidence acquisition. Hence, teachers must be trained and equipped with the tools and dispositions to support the implementation of CT if we expect students to develop

CT skills. They must be willing to make curriculum and instructional decisions that foster students' abilities to think and interpret in training, practising, and experiences (Halpern, 2014; Hill-Jackson et al., 2019).

Furthermore, educators and curriculum planners must be specific about student-centered pedagogies suitable for each economics topic by engaging teachers to acquire critical thinking skills that support effective pedagogy relevant to achieving learning objectives (Cáceres et al., 2020; Oleabhiele & Oko, 2018). It is suggested that a curriculum for pre-teacher training and in-service training programs that make teachers critical thinkers and teach students to become critical thinkers through sustainable and inclusive learning experiences should be developed. For example, teachers can engage the students in dialogue on trending economic activities, such as inflation or unemployment rates, to make them think and contribute to learning. This way, students are not just memorizing facts but are actively engaging in critical thinking and applying it to real-world economic issues.

1.3 Aims and Purpose of the study

The study investigates the relevant pedagogies teachers can use to encourage critical thinking in students' learning experiences and students' response to it. It aims to expatiate the knowledge of critical thinking in teachers and students and ways of developing their critical thinking skills. The study aims to create awareness and understanding regarding the importance of emphasizing critical thinking in the teaching and learning of economics in Nigerian secondary schools, to clarity on pedagogies that support it and how teachers can harness it for optimal student performance.

1.4 Nature of the Study

For this qualitative study, I applied Interview sessions and Focus Group Discussions (Appendix C) to measure responses by the research participants drawn from the targeted population. The inclusion factors were Economics students ages 14 years and above in Senior Secondary School 2 and economics teachers, mostly with Bachelor's Degrees in Economics and related subjects. The questions from the interview session addressed the following: participants' learning and teaching experience; participants' perception of the importance of critical thinking; various pedagogies that support critical thinking; and students' experience when specific pedagogies are employed in teaching and learning. Informed consents were distributed to all participants before the interview sessions, while the interview location for the participants was determined by the school management to avoid disruption of classes and school activities. Themes gathered from the composed interview questions and were compiled, while the saturation point was defined as duplicate responses attained. Thematic analysis was utilized by taking the compiled data and identifying the patterns that emerged.

1.5 Significance of the Study

The evolving nature of twenty-first-century education, characterised by rapid technological advancements and changing societal needs, requires a shift from traditional learning methods for better teaching and learning goals. This study investigates effective pedagogies in Nigerian secondary schools and how critical thinking can be encouraged. Given the need to develop students as critical thinkers, make informed decisions, and contribute to national development, this study is apt for improving the education system in Nigeria.

This study examines how educational tools such as critical thinking skills can influence academic outcomes. By identifying this tool, the research aims to identify teachers' roles as a key element that can encourage or influence student performance in developing critical thinking skills.

This research makes a significant contribution to the field of education by providing empirical data on the role of teachers as critical thinkers in student performance. It supports how critical thinking offers educators, policymakers, and researchers valuable insights to achieve improved educational outcomes. This study helps to clarify the impediments that can affect the encouragement of critical thinking and identify specific approaches, such as problem-based learning and Socratic questioning, which are most germane to impacting student outcomes.

The findings from this study have important direct implications for school administrators, policymakers, and educators. It will assist teachers in using teaching methods that can enhance students' performance in economics and change the teacher's perception from that of a mere instructor to that of an effective teacher. This can lead to improved educational outcomes by ensuring students have access to the necessary tools for learning. Furthermore, the insights gained can help policymakers understand and recognise the importance of critical thinking in pre-teacher training programs and On-the-Job Training equipment, potentially revolutionizing the education system and designing targeted funding and support policies that address specific needs within schools to enhance overall educational quality.

This study lays a robust foundation for future research, inspiring a new wave of exploration into revolutionising the Nigerian secondary school educational system. It delves into the areas of effective pedagogies and funding to support the encouragement of critical thinking, addressing existing gaps in the literature. By identifying various approaches that support the development of students' critical thinking skills and their impact, this study paves the way for future research to explore the long-term effects of encouraging critical thinking on student performance and to examine how different critical thinking-enhanced approaches influence these outcomes.

The study highlights the broader benefits of critical thinking in society, emphasizing its crucial role in ensuring access to qualitative education. Their analytic disposition underscores the importance of preparing students for tertiary education and life after school. These findings underscore the urgency and necessity of encouraging critical thinking in Nigerian Secondary schools to promote economic development. By informing educational policies that encourage critical thinking in the school curriculum, this research supports efforts to emphasize a more strategic approach to including critical thinking from Nigeria's basic level of learning.

Encouraging the development of critical thinking in Nigerian secondary schools is vital for developing effective educational policies and practices. This study provides strategic insights that can guide schools, curriculum developers, policymakers, and educators in making informed decisions about implementing approaches that support the inclusion of critical thinking in the classrooms. The research underscores the need for sustained funding in education to provide necessary learning tools to enhance the teaching and learning of how to think critically for teachers and all students. Future research should continue to explore these dynamics to strengthen educational outcomes.

1.5 Research questions

The research question for this qualitative study investigates: **What pedagogies can teachers use to encourage critical thinking in students' learning experiences, and how do students respond when teachers use pedagogies to support their critical thinking skills.** The sub-questions were:

- What is the knowledge of critical thinking among students?
- What is the knowledge of critical thinking among teachers?

- What are the barriers to learning critical thinking among students?

- What are the barriers to teachers' learning of critical thinking?

- What are the pedagogies teachers use to teach critical thinking to students?

- What are students' reactions to various pedagogies used in teaching critical thinking?

1.7 Scope of this Study

It is apt to explain the context of this study Nigeria, which is located in West Africa and shares borders with Niger Republic and Chad to the north, Benin Republic and Cameroon to the west and east, respectively, and the Atlantic Ocean to the south traversing the Gulf of Guinea. Nigeria, a federal constitutional republic with 36 states and the Federal Capital Territory, Abuja, became a republic in 1963, following her gaining independence from the British in 1960 (Idogo, 2010; Olajide, 2015). There are numerous languages, ethnic groups, and tribes, but the three major tribes are the Hausa, Igbo, and Yoruba. At the same time, English is the official language for business transactions in schools across the country and other official activities (Isichei, 1997).

Abuja, the Federal Capital Territory (FCT), which lies in central Nigeria, was created in 1976 and officially became Nigeria's capital in 1991. It is in the central part of Nigeria on an Area of 2,824 square miles (7,315 square km) bounded by Kogi, Kaduna, Nassarawa and Niger states. It comprised six (6) Area Councils: Abuja Municipal Area Council (AMAC), Abaji, Bwari, Gwagwalada, Kuje, and Kwali councils. Abuja is one of Nigeria's ten most populous cities, with a population of about 3,652,000. There are 21 Senior Secondary Schools in AMAC with thirty (30) Economics teachers and four hundred and sixty-one (461) economics students.

1.7.1 The education system in Nigeria

Education in Nigeria includes the primary, secondary, and tertiary levels. The Federal Ministry of Education oversees and regulates public and private educational institutions. Government and private stakeholders such as non-governmental organisations (NGOs) and private individuals manage educational facilities as stipulated by the National Policy on Education, which sets standards and guidelines that educational institutions follow to prepare students for nation-building and development. Tertiary education is directly under the purview of the Federal Government, the State government oversees Secondary education, and the Local Government takes care of primary education. Under the Federal Ministry of Education, the Nigerian Educational Research and Development Council (NERDC) is saddled with implementing educational policies in Nigeria. Table 1.1 presents the education system in Nigeria.

Table 1.1
Education Systems in Nigeria

Kindergarten	Two years (not compulsory). Ages 4- 6 years
Primary School:	6 years (compulsory education) From ages 6-12 years
Secondary School	6 years (It consists of two phases - Junior Secondary School, continuation of primary school, and Senior Secondary School. Each phase lasts 3 years and is rounded up with exams, after which certificates are issued to the students. From ages 12-18years
University or Polytechnic	Minimum of 4 years with the corresponding degrees

1.8 Overview of Secondary School Education in Nigeria

As the bedrock of educational progress, the curriculum is relevant in shaping individuals who can actively contribute to societal advancement and sustainability. It serves as a bridge, connecting school activities and experiences with all segments of society (Gbamanja, 1997). This process is instrumental in fostering capable young people who can effectively tackle societal issues and contribute to their advancement.

The Nigerian curriculum has evolved while considering the population of the youth to address areas relevant to society development in eradicating poverty, critical thinking skills development, core values facilitation that are apt for re-orientation, encouraging the development of lifelong entrepreneurship and aligning with the National Policy on Education (Federal Republic of Nigeria, 2004; Agbese, 2020). The Nigerian curriculum fosters unity, promotes self-reliance in the economy, and establishes a just and egalitarian society with equal opportunities for all citizens in a democratic setting (Agbese, 2020; Hryhorenko & Muslim (2017) identified the evolution of the education system in Nigeria from 6-3-3-4 to 9-3-4. According to the 6-3-3-4 system, a child attends primary school for six years, junior and senior secondary school for three years, and then a higher institution for four years. In comparison, the 9-3-4 system suggests a child that is academically sound for six years in primary school, three years in junior secondary school, before moving to senior secondary to spend another three years and then to the university to spend four years (Ogwo, 2023; Hryhorenko & Muslim, 2017).

The study's essential, technical, and vocational aspects were part of the first nine school years. Udofia (2021), for example, reflected on the role of curriculum planners in discovering gaps

in the previous system that impeded the realization of the National Policy Education goals. It reflected the quality of students who must be adequately tutored and fit to meet global standards due to gaps in basic life-long skills, functional literacy, and numeracy (Federal Ministry of Education, 2008). These gaps manifest in significant unemployment levels and minimal capacity building to perform well, where school leavers were only job seekers rather than job creators in a nation blessed with abundant natural and human resources (Udofia, 2021). It affected and weakened all other sectors of the economy that could not operate or match the level of international awareness and competition in line with global best practices.

The identified gaps prompted the review and merger of the curriculum content of primary and junior secondary school (JSS) into a unified content suitable to achieve the educational goals of both levels. Curriculum planners introduced the 9-year Universal Basic Education (UBE) in 2006 to streamline educational activities from the primary level and prepare the students early enough for better preparation. The curriculum planners discarded content viewed as obsolete and no longer relevant or capable of meeting the challenges of the 21st century for ICT-driven content. The new curriculum emphasized creating a solid foundation for JSS leavers to acquire functional skills for job and wealth creation, eliminating poverty, and developing positive values before getting to the Senior Secondary School (SSS) level based on the National Economic Empowerment and Development Strategy (NEEDS). Generally, the revision and upgrade emphasized a curriculum that is domesticated in line with the country's needs while not neglecting contemporary issues and global best practices (Federal Republic of Education, 2008). McGrath et al. (2018) mentioned that the new curriculum published in 2011 emphasized technological and vocational development in attaining national educational goals based on global reforms like the Millennium Development Goals (MDGs) and Education for All (EFA) to support the nation's NEEDS.

A key institution under the Federal Ministry of Education that has been instrumental in enhancing and maintaining the quality of Nigeria's education system is the Nigerian Educational Research and Development Council (NERDC), which, through its various programs and projects in educational research, curriculum development and renewal, book and language development, library and informatics, and extension services, the NERDC has shown its obligation to improve education in Nigeria. Establishing six zonal offices nationwide in collaboration with the Federal and State Ministries of Education and the National Council on Education further underscores the NERDC's dedication to ensuring effective oversight. This proactive approach to addressing the evolving needs of the Nigerian education system is a testament to the NERDC's commitment to preparing students for the challenges of the 21st century.

The Universal Basic Education (UBE) program, as outlined by the Universal Basic Education Commission (2011), is a testament to the Nigerian educational system's unwavering commitment to lifelong learning. This commitment is not just a promise but a dedication to providing nine (9) years of formal primary education for every Nigerian child of school-going age, regardless of their background. The UBE program aims to equip students with a solid foundation of literacy, numeracy, manipulative, communicative, life skills, and ethical, moral, and civic values, supporting life-long learning. The development of a 9-year primary education curriculum and a new Senior Secondary Education Curriculum (SSEC) by NERDC to drive the UBE program is a testament to this commitment. The UBE program is a comprehensive initiative that aims to transform the Nigerian education system, providing every child, regardless of social status, the opportunity to aspire and reach their full potential.

Developing the new Senior Secondary Education Curriculum is a testament to the Nigerian educational system's commitment to student-centric learning. The curriculum, emphasizing the

continuity and flow of themes and topics experienced from Basic Education through Senior Secondary one to Senior Secondary three, ensures that students' learning experiences are cohesive and comprehensive (Kimchi & Ogedegbe, 2015). The infusion of emerging issues like value orientation, peace and dialogue, proper human education, family life/HIV and AIDS education, and entrepreneurial skills into the relevant section of the curriculum reflects the system's responsiveness to the evolving needs of the students. This approach ensures that the curriculum is student activity-centered, enhancing creativity and developing the relevant skills while considering the three domains: cognitive, affective, and psychomotor (Orji, 2011; Kimchi & Ogedegbe, 2015). The curriculum also recommends that every senior secondary school graduate be well prepared for higher education to acquire trade/entrepreneurship skills, eradicate poverty, create jobs, generate wealth, and enhance a strong foundation for ethical, moral, and civic values received at the basic education level (Ewumi et al., 2012; Kimchi & Ogedegbe, 2015). The curriculum addresses strategic positive national values, including ethics, moral and critical thinking, strategic communication skills, entrepreneurship skills, functional literacy, and numeracy (Udofia, 2021). It prepares students for skills and knowledge development to address the challenges in a rapidly changing world, and it is suitable for the support, encouragement, and development of critical thinking skills in Nigerian secondary school education.

1.9 Summary

This study examined the nature of the Nigerian education system and how critical thinking can be encouraged to achieve teaching and learning outcomes. This Chapter discussed the importance of secondary school education in the Nigerian education sector and how it prepares students for tertiary education and workplace experiences. It highlighted the roles of teachers as a driving force in the use of effective pedagogy that can encourage students to develop critical

thinking skills, provide an understanding of the concepts of critical thinking, and examine the changes in students when they receive explicit critical thinking instruction. Finally, this study identified the benefits of critical thinking to the Nigerian school curriculum in general and the students in particular as they apply the skills to real-world situations.

CHAPTER 2 - LITERATURE REVIEW 2.1

Introduction

This Chapter begins with an explanation highlighting the constructivist theory underpinning this study and the perspective of learning and teaching that emphasises critical thinking. This study explained the strategies for teaching students how to engage in critical thinking while identifying the relevance of individual study approach, dialogue, anchored instruction, and mentoring to teaching it, regardless of whether critical thinking skills are generic or context-specific. The literature review presents the relevance of these approaches to critical thinking. It underscores their importance for better learning outcomes in Nigerian secondary schools, making this study particularly significant for the Nigerian educational context.

2.2 Rationale for this Chapter

Previous literature suggests that traditional teacher-centred teaching, characterized by a hierarchical classroom structure that prefers the teacher to give knowledge and instruction, is still prevalent in most classrooms due to the underutilization of modern approaches that enhance instruction delivery (Persaud, 2018; Ismail, 2019). In Nigerian classrooms, these traditional approaches, which often involve rote memorization and passive learning, have yet to help the students' performance. It has generated concerns from educators and policymakers about the educational dynamism of the 21st Century, which supports student-centered approaches with pedagogy relevant to a change in the status quo.

According to Obemeata (1991/2012), the Nigerian education system maintains a traditional teacher-controlled classroom system where the teacher dominates and gives direct instructions with little or no input from the student, thereby not allowing the students to think and reflect on

their thoughts. However, effective teaching is imminent when economics teachers change the status quo from mere knowledge givers to facilitators who can guide students to think (Cáceres et al., 2020) but not relinquish their roles and responsibilities to the students. The use of various approaches, which are part of the constructivist theory, is apt for sustainable and result-oriented learning activity (Abrami et al., 2015); hence, the emphasis on critical thinking as a tool needed by teachers and students to achieve the instructional outcome and how it can be encouraged to support effective pedagogy in the classrooms (Holmes et al., 2015).

This study accounted for the identified gaps. Specifically, the underutilization of student-centered approaches and poor awareness of critical thinking can be encouraged in the Nigerian educational sector. It aimed to enlighten and admonish the teacher and student on how critical thinking can change the narratives in Nigerian secondary schools when included and encouraged in the instructional methods used by the teacher. Therefore, the need for this current study is apt to provide additional evidence on the relevance of critical thinking to effective pedagogy in Nigerian secondary schools.

2.3 Theoretical Framework

This study combines the social works of Abrami et al. (2015), Piaget's (1971) and Bruner's (1960) constructivist theory. According to Piaget (1971), constructivism is a pronounced theory which is profoundly applied in learning based on how it supports the building of individual knowledge. It is applicable in various perspectives to show how people acquire knowledge, such as cognitive constructivism as propounded by Piaget (1971), which suggested the importance of individual understanding of their environment to develop knowledge structures (schemata). It implies that previous knowledge and new knowledge are relevant for individuals to develop

knowledge. Piaget's theory emphasized how active involvement of children in learning in areas such as problem solving skills impact performance in classroom activities in line with cognitive constructivism (Ritter, 2021). It suggested that teachers should emplace diverse learning activities that support children interaction with their environment to enhance their own learning. Teachers' adoption of various learning approaches is germane for effective classroom activities suitable for the whole class. Conversely, some gaps were identified in Piaget's work which carried out his early studies which was deductive due to the small sample size.

Bruner (1961) constructivist theory believed that the purpose of education was to enable learner think and solve problems applicable in diverse situation rather than mere imparting knowledge. The theory aligned with Piaget's theory that children are curious enough to construct their own knowledge and often relate their experiences with what they learn. Conversely, both theories differs as Piaget's emphasized on the child's developmental stages of understanding while Bruner focus on the support of knowledgeable adults for child's intellectual development. Bruner, further believed that child's development is a continuous process and not different separate stages of thought at different points of development, base on Piaget's theory.

Abrami et al. (2015) created a crucial foundation for a comprehensive synthesis of meta-analysis strategies teachers need to teach critical thinking to students. It advocates for relevant and specific teaching strategies to help students develop CT skills and dispositions. This meta-analysis underpinned several collaborative theories inquiry by John Dewey and Edward Glaser. It also emphasized the need to investigate instructional approaches and how they affect critical thinking outcomes and to identify the student population exposed to various instructional interventions (Johnson & Hamby (2015).) This theory as adopted by Abrami et al. (2015) emphasizes that all citizens must think critically to possess an understanding of activities happening in their social

circle and be able to make meaningful and substantiated input. It identified specific pedagogies teachers can adopt to achieve teaching goals while assisting students in thinking about what they learn. The study further examined Piaget (1971) and Bruner's (1960) constructivist theory, a cognitive learning framework to help understand how critical thinking can be encouraged to enhance effective pedagogy in Nigerian secondary schools. As part of the process of this study, the participants' beliefs in their abilities to think critically and develop the skills were essential components of the research, with emphasis on the empirical evidence of Abrami et al. (2015) that there are many teaching strategies and practical techniques for encouraging students to develop CT skills and dispositions such as dialogue, authentic instruction, and mentorship.

Explicitly, Abrami et al.'s (2015) study showed that most teachers acknowledge the importance of Critical thinking in teaching, but only some utilize the skill in their teaching experiences; hence, students are not encouraged to develop skills to achieve learning objectives. Abrami et al. (2008) also highlighted that understanding the strategies for teaching critical thinking is apt to harness the benefits, noting that teaching it in generic or content-specific forms is an instructional intervention with various specifications based on education level from kindergarten to tertiary. Ennis (1989) suggested and identified the critical thinking typology of four courses, generic, infusion, immersion, and mixed, as relevant interventions for teaching. Conversely, Norris (1985) supported the mixed approach, the most relevant of the four courses to enhance CT skills and dispositions, or restricted their attention to particular issues by combining the general and infusion approaches or the general and immersion approaches.

Incorporating critical thinking not only into classroom activities but also into teachers' pre-service or in-service programs will enhance the skills of the teachers so the students can acquire

personal knowledge and build critical thinking skills (Miri et al., 2007). The constructivist theory recognizes the need for students to acquire knowledge to think critically and enable them to develop critical thinking skills and disposition. However, scholars and policymakers need to explore it to make the roles of teachers more significant and bridge the gap between the acquisition of theory and practice of critical thinking by students, irrespective of school curriculum or subjects. It is then apt that teachers are familiar with critical thinking to teach students to develop and apply the skills (Cáceres et al., 2020). Therefore, it is expedient that schools pay more attention to critical thinking holistically to build lasting content and context that can take students beyond their school years (Cargas et al., 2017). The constructivist theory supports learners' active construction of knowledge. It also emphasises the need for teachers to deviate from being imposers of knowledge and analyse learning content while paying attention to students' responses (Kurt, 2021). Adopting student-centred approaches such as peer dyad, dialogue, and debates is relevant to making students think about what they learn and contribute during classroom activities and beyond (Sibtain & Hussain, 2018; Abrami et al., 2015).

This study sought to investigate how teachers can encourage students to develop critical thinking using approaches that support critical thinking which involves concrete and tested examples or scenarios to teach a concept, individual study, where students are allowed to explore a topic on their own, dialogue, which encourages students to engage in a discussion about a topic, and mentoring in the learning process, as highlighted by Abrami et al. (2015). It also sought to investigate students' experiences of ways their teachers influence their critical thinking skills by using these approaches. All the approaches highlighted by Abrami et al. (2015) are student-centered instructions, though they all identified the teacher as a guide toward achieving students' learning objectives. For example, anchored or authentic instruction refers to all learning activities

that begin with a story, problem, or a case and engage students to think and express themselves rather than wait for the teacher to solve the problem. It allows teachers to present learning instructions to students using an authentic environment with issues that students must resolve to connect to learning content and skills (D'souza & Vijaya Kumari, 2018). Some anchored or authentic instruction categories are problem-solving, case study, role play, simulation, and games. Critical thinking can also be encouraged through the individual study approach, which allows students to explore various ways of learning alone or individually. The individual approach allows the student to explore content beyond the curriculum and gain insight into information not included in the initial learning content. It is an approach gaining much prominence in this era of massive development and interconnectivity of the internet. Individual study encourages the development of critical thinking skills by making learning convenient for students while taking responsibility for their progress (Kopzhassarovaa et al., 2016).

Another approach is the dialogue method, which stimulates thinking and a better understanding of curriculum content and concepts to enhance performance in education. Dialogue leads to creative and purposeful interaction that reveals our unregulated thoughts without necessarily imposing them on the other person. The last category is the mentoring approach, which is the relationship between the teacher and students aimed at developing, guiding, and nurturing the students' potential toward a cordial relationship and promoting learning by the teacher. Mentoring can be a long-term and formal relationship that encourages the mentee and the mentor (teacher and student) to commit to knowing each other, sharing experiences, and encouraging one another to achieve set goals. Abrami et al. (2015) highlighted mentoring categories relevant to developing critical thinking skills and disposition, such as one-on-one teacher-student interaction, peer-led dyads, and internships.

Figure 1

Theoretical Framework of Critical Thinking
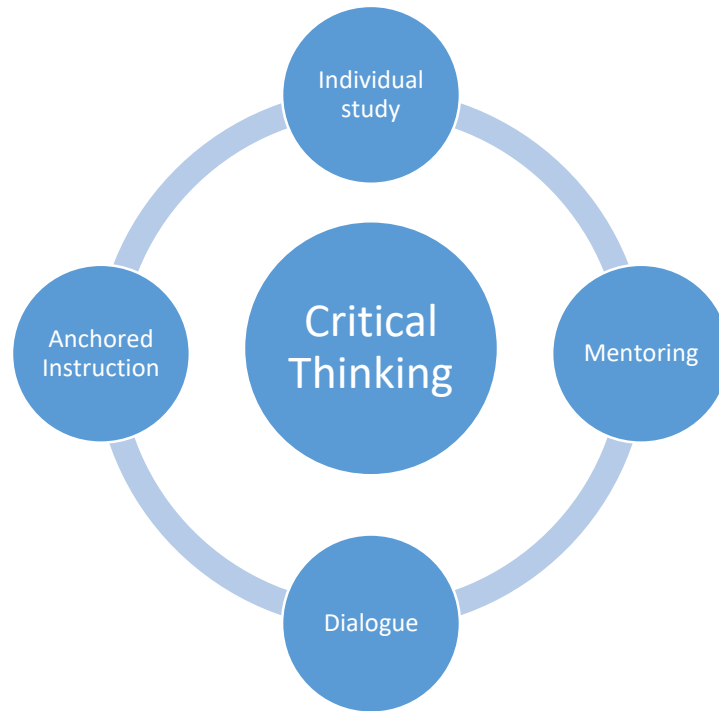
Theoretical Framework of This Research Borrowed from Abrami et al. (2015).

2.4 Constructivism

This thesis is underpinned by the constructivism theory, a pedagogic approach that acknowledges the learner as the centre of learning activities. This theory, propounded by Jean Piaget, emphasises the role of the teacher as a facilitator of students' learning drive. It is a learning theory that underscores the learner's active role in constructing knowledge, suggesting that learners interpret information based on their past experiences, views, and cultural background. The theory also states that learners must actively construct content by acquiring new knowledge while accommodating existing knowledge structures. Brau (2018) further delineates two forms of constructivism: radical and social. Radical, or cognitive constructivism, is when individuals

construct knowledge based on their subjective interpretation of their active experience. Social constructivism, by Lev Vygotsky, and John Dewey, conversely, explains that knowledge is constructed socially through interaction with others, emphasizing the importance of collaborative learning. At its core, this theory helps students master the progression of their learning, fostering a sense of inspiration and potential in educators.

Bruner (1956) and Agbenyeku (2017) highlighted three principles of teaching and learning from a constructivist point of view: Students should emphasize instruction that supports their willingness to learn, considering their experiences and learning context, explicit instruction that they can quickly learn, and instruction designed to help them explore more information to fill in identified gaps. These principles underscore the importance of critical thinking in learning as a student-centered approach that equips them to build a sound thinking structure for immediate and future use. Constructivist theory is a form of higher thinking order that discourages rote memorization and repetitive lecturing. However, learners who engage in real-world activities can demonstrate higher levels of knowledge through creativity, collaboration, and cognitive skills towards adaptive and enduring learning. Constructivist teaching challenges and promotes students to think critically. It is most suitable for cultivating students' critical thinking development in a learner-centered environment. Halpern (2014) asserted that critical thinking and problem-solving skills are essential as critical thinking extends beyond efficiently using a skill in a particular context while integrating the attitude and disposition to acknowledge appropriate skills needed with the subsequent inclination to apply those skills.

Von-Glassersfeld (1985) and Kurt (2021) explained that learners access information using their senses to construct knowledge from their new experiences and ideas with which they come

in contact in the natural world, their culture, and their existing knowledge. It enables learners to make sense of the knowledge they form and connect it with what they understood previously (Bruner, 1960 & Kurt, 2021). Furthermore, learners are motivated to reflect on their consciousness and past experiences to absorb new and unique knowledge, which they can use to influence and inspire other learners in their environment.

Constructivism is a progressive pedagogy that teachers can adopt to encourage students to reason, study individually, develop their interests, and structures their knowledge; hence, it aids adaptive and experimental learning rather than activities that only transfer knowledge. Bruner (1960) emphasized the need for teachers to deviate from being an imposer of knowledge to analyzing learning content while paying attention to students' responses. The teacher's role is relevant to monitoring students' level of assimilation beyond teaching through lectures but engaging them in an interactive session to know when they encounter new knowledge and should modify the new knowledge acquired to ensure the students are in the right perspectives (Hiner, 2013). The theory does not condemn the teacher-led pedagogic approaches. However, it complements, builds, and penetrates them through active and innovative teaching methods, such as brainstorming, case studies, and group teaching methods, which are student-centered. It equips and allows teachers to develop a deeper understanding and reflect critically on themselves and their teaching, and mentally construct new knowledge about the teaching approaches and their students in order to improve their teaching strategies and achieve an effective learning environment (Snowman et al., 2012; Worley & Worley, 2019).

Implementing constructivism in the classroom can be done through various strategies. For instance, teachers can encourage cooperative learning through group discussion so that students

can brainstorm and ask and answer questions. Assigning students to become experts in specific parts of group projects can also foster a constructivist learning environment. Additionally, teachers can give general explanations on a topic and allow learners to relate and show interest based on their previous knowledge, thereby promoting the active construction of knowledge. This theory strongly emphasizes collaborative learning that supports teamwork and mutual learning.

To maximize the benefits of this theory, teachers should take cognizance of novice learners. They should give them more structure to begin the learning process so that they can memorize the subject and recall it to get to the application level since learning first starts with remembering and understanding. Teachers should observe group work closely to discourage participation by only dominant learners to the detriment of other learners. It will assist full participation from all group members who disagree with the dominant narrative of a group. Brau (2018) suggested a suitable measurement mode conducive to learners reflecting on what they learn since learning outcomes may require them to think ahead while applying them to their learning content. There is the challenge of time constraints in the operation of the constructivist framework; hence, teachers thoughtfully plan to spend more time preparing and engaging the learners to give them more time to think and reflect on what they learn. Other potential challenges include extensive preparation and planning, students' possibility of struggling with self-direction, and the need for ongoing assessment and feedback to ensure learning occurs.

UNESCO (2010) recommended the following approaches that support the constructivist theory for twenty-first-century teachers since the framework relies on the learners to be in control of their knowledge acquisition and encourages the instructor to serve as a facilitator. They are experiential learning, storytelling, values education, inquiry learning, appropriate assessment,

future problem solving, outside classroom learning, and community problem-solving teaching strategies (Ritter, 2021). Though it has limitations that can erode the realization of its benefits, constructivism is a learning theory that affirms that knowledge is through a process of action, reflection, and construction; hence, the link between experiences and ideas in the creation of new knowledge, group learning and cultural influence on knowledge assimilation; and inquiry and the integration of the real-world and classroom activities must be taken into consideration to encourage critical thinking skills and disposition.

2.5 Definitions of Critical Thinking

Teaching and learning in the 21st Century have continued emphasizing the transformative power of acquiring critical thinking skills crucial for individuals' workplace and personal lives. Many researchers recognize this transformative power as a vital educational goal, given the increasing global recognition their critical thinking skills have gained over the years (Abrami et al., 2015; Dekker, 2020; Kettler, 2014). These skills are not just necessary, but they have the potential to enhance students' competence for a desirable instructional outcome (Wagner, 2014). The shift from traditional instructional approaches to those that foster critical thinking, as evidenced by various research studies, is a testament to the transformative nature of these skills. They develop students' problem-solving ability and decision-making skills, fostering analytical, reflective, and communication skills.

Developing critical thinking skills has become imperative because thinking assists the student in gaining an understanding of learning content (Al-Ghadouni, 2021). It reduces learning gaps and creates more seamless and active classroom activities, which aids in improved performance by both teachers and learners (Clemmitt, 2015). While the awareness of critical thinking is expanding globally, the identification of instructional methods used for assessment by

most educators has not recorded adequate recognition, as teacher training and in-service programs do not engage in pedagogy that supports critical thinking (Paul, 2005; Reynolds, 2016; Wagner, 2014; Mabrouk, 2010; Noddings, 2015; Abrami et al., 2015; Jones, 2015; Larsson, 2017).

According to Clemmitt (2015) and Barnett (1997), the over-reliance on traditional instructional strategies, such as standardized tests, and the lack of knowledge in teaching critical thinking are significant challenges hindering the promotion of critical thinking skills in the classroom. These shortcomings have led to a global demand for students who can think critically and contribute to decision-making processes. This need for change in traditional methods is urgent, as students are increasingly required to be proficient in critical thinking and basic skills (Wagner, 2014). Therefore, understanding the evolution of critical thinking over the years is crucial for achieving educational goals.

Despite abundant research on critical thinking, Cargas et al. (2017) opined that many scholars have described and defined critical thinking using variables such as skills, disposition, or both. These are core characteristics embedded in the definition of critical thinking. Critical thinking, as defined by Brookfield, 2012; Johnson & Hamby, 2015; Halpern, 1998; Bok, 2006; Johnson & Hamby, 2015; Jones, 2015 and Cargas et al., 2017, involves analytical thinking and decision-making skills. Willingham (2008) and Hackman (2005) have streamlined their definitions to focus on reflective thinking on belief. Many authors have proposed different classifications of critical thinking, including psychological, philosophical, and educational approaches. The psychological approach, proposed by Lai (2011) and Dwyer et al. (2014), focuses on the use of cognitive skills, while the philosophical approaches, postulated by Socrates, a Greek philosopher, and other authors such as Ennis (1985) and Paul (2009), emphasize the outcome of critical

thinking. Understanding these diverse perspectives is an intellectual challenge that can stimulate our thinking about critical thinking.

Most of the definitions which have expanded over the years emanated from the teaching of Socrates' dialectic method of inquiry that used a reflective questioning method and traditional definitions that focused on gaining knowledge and clear understanding (Paul et al., 1997; Haber, 2020; Johnson & Hamby, 2015). Similarly, John Dewey proffered the definition of critical thinking, scrutinizing any belief or knowledge while considering the evidence that supports them and how to arrive at the final decision. It further explained that such thinking, also known as reflective, is limited to beliefs on evidence and beyond the physical and persistent and considers knowledge on support or empirically guided (Dewey, 1997). Finally, Sumner's (1940) definition of critical thinking highlighted its importance in education and the effect of its development on teachers and students. It expressed that education can be good when the products (students) possess critical thinking skills that make them relevant to society as good citizens.

The contemporary definitions of critical thinking, as proposed by Edward Glaser, Richard Paul, and Peter Facione, are not just theoretical constructs. They are efficient and applicable to any subject, content, or problem, enhancing the quality of thinking and adding intellectual value to them (Paul & Elder, 2003). These definitions underscore the transformative power of critical thinking, which influences individual self-instinct, self-disciplined, self-monitored, and self-corrective thinking. They also support deliberate standards of superiority and careful command of their use through effective communication, abilities to solve problems, and commitment to socio-cultural inclination.

According to the definition by Michael Scriven and Richard Paul (1987), which was presented during the eighth conference of the Foundation for Critical Thinking, critical thinking is an intellectual disposition that involves the active use of skills to understand concepts that one analyzes and apply while evaluating information gathered through observation, experience, reflection, reasoning, or communication, as a guide to belief and action. This definition emphasizes that critical thinking is about the subject and generally accepted intellectual values. Scriven & Paul (1987, 2005) and Hummell (2016) further explain that critical thinking examines the structure of thought that captions reasoning in the area of purpose, problem, or question-at-issue; assumptions; evidence; concepts; reasoning that supports conclusions; implications and effects; objections harnessed from other viewpoints; and frame of reference. The definition also states that critical thinking addresses various modes of thinking, such as scientific, mathematical, historical, anthropological, economic, moral, and philosophical thinking, while responding to subject matter, issues, and purposes prone to changes. Scriven and Paul (1987) highlighted two critical thinking components: information and belief-generating and processing skills, and intellectual habits to guide behavior-using skills. They emphasized that these components entail specific ways of seeking and handling information beyond acquiring and retaining it alone. It is the continual use of skills acquired rather than merely having them and accepting results beyond using the skills acquired.

According to Scriven and Paul (1987, 2005), motivation is relevant in critical thinking when attached to firmness and integrity. However, it is prone to manipulation to influence self or group interest when it is not grounded, thereby becoming a mere idea for those who use it for selfish gains. They emphasized that critical thinking is not universal but individualistic. Developing the skills and disposition is a life-long endeavor, underscoring the importance of

continuous learning and development in critical thinking. It depends on the quality of individual thought and the depth of experience they possess about specific questions they answer that are far beyond false beliefs or judgmental about realities that cannot be substantiated. Elder's (2007) definition explained that critical thinking aligns with a critical thinker's qualities. It noted that critical thinking is devoid of self or any motives far beyond the fairness of the mind and not guided by the sentiment of self. Elder (2007) emphasized that critical thinkers live rationally, reasonably, empathically, and consciously, acknowledging inherent flaws in human thinking when not checked or guided.

The dictate of self does not influence critical thinkers or focus on one's social group. However, it engages intellectual tools, concepts, and principles to analyze, assess, and improve thinking while developing virtues like integrity, humility, civility, empathy, justice, and confidence in reason. Elder (2007) further posited that critical thinkers are always conscious of inherent flaws such as reasoning, human irrationality, prejudices, biases, distortions, uncritically accepted social rules and taboos, self-interest, and vested interest. However, they can continually improve their reasoning abilities to handle these flaws. Critical thinkers acknowledge the complex nature of society but constantly endeavor to improve and contribute to a more rational, civilized society. They must consider complicated issues and acknowledge others' thoughts or ideas. Elder (2007) highlighted that critical thinkers are committed to life-long practice, which supports self-improvement, which is needed to be conscious and to be able to live in an uncritical and unjust dangerous world.

Glaser's (1941) definition of critical thinking emphasized three things that aid the ability to think critically: disposition, knowledge, and skills. Disposition is essential as an attitude needed

to consider thoughtfully identified problems emanating from one's experiences (Qing et al., 2010). Knowledge explores logic and reasoning; skill is relevant to the application method. Glaser (1941) posited that Critical thinking should be examined based on the belief or form of knowledge based on supporting evidence and conclusions. Glaser (1985) further defined critical thinking as the scrutiny of problems to gain knowledge and use the right skills for decision-making. He further stated that critical thinking helps us check through what we believe in or know, backed up with evidence to enable us to draw reasonable conclusions.

According to Glaser (1985), critical thinking leads to identifying and understanding problems without prejudice. The definition emphasised frantic efforts to acquire in-depth and precise knowledge of the problems, using variables to proffer arguments that can assist in evaluating, inferring, or drawing an unbiased conclusion that can shape a belief pattern and allow a generalised conclusion based on a broader experience of specific judgment about life activities. Glaser (1941) further opined that critical thinking entails identifying problems and finding workable means of addressing them through a collection of relevant information while identifying assumptions and values, need to understand and use clear and accurate language for data interpretation based on available evidence. According to Glaser (1941), evidence will aid the recognition of the existence (or non-existence) of logical relationships between propositions to draw the required conclusions and generalisations and decide on which to use to readjust one's patterns of beliefs based on more experiences acquire, and to judge accurately specific things and qualities in everyday life.

Other contemporary definitions include Ennis (2018), who defined critical thinking as being reflective before making decisions. This definition explains that reflective thinking enables

a critical thinker to reason and judge the quality of an argument while asking the right questions to develop, defend a position, and draw a conclusion. Abrami et al. (2015) adopted a definition developed by a Delphi consensus panel of 46 experts and offered a broad definition centered on skills and disposition that is not devoid of criticism. This definition explains the importance of critical thinking as it enables the basing judgments on thorough interpretation and analysis of a problem, as well as evaluation and the ability to conclude from available evidence in a standard way and consider the context.

The Delphi Report (1990) gave the consensus statement about critical thinking by a group of experts who expressed their understanding of critical thinking as a purposeful self-judged conclusion arising from interpretation, analysis, evaluation, and inference, as well as an explanation of the evidential, conceptual, methodological, soteriological, or contextual considerations upon which we base that judgment. It emphasizes the features of an ideal critical thinker, which include habits inclined by biases, flexible scrutiny of information while considering other information that seems not relevant, and being persistent in focusing on the needed inquiry before embarking on decision-making (American et al., 1990; Parslow, 2002; Burbach et al., 2004; Ahmad & Mukundan, 2015). Abrami et al. (2015) also aligned with Facione's (1990b) definition of the criteria of an ideal thinker as someone versatile in habits like inquisitiveness, being well-informed, trustful of reason, open-mindedness, flexible, fair-minded in evaluation, honest in addressing personal biases, meticulous in making judgments, careful to reconsider, explicit about issues, articulate to solve complex matters, diligently search for relevant information, selecting reasonable criteria while focusing on and persistent in seeking results.

Doyle (2020) posited that a good critical thinker should identify information and separate valuable facts to draw practical conclusions to solve problems or make decisions. Conversely, this definition raised more insights by some researchers who considered it too rigid on the concept of critical thinking and the identity of a critical thinker. According to Thayer-Bacon (2000), though this definition transcends skills and disposition, it should be flexible enough to include intuition, emotion, and imagination, which are very important in critical thinking discourse. In addition, Butler et al., (2017) advocates a neutral and comprehensive view of critical thinking that will allow students to question foundational aspects of the social systems they stay in beyond their skills or disposition.

Both contemporary and traditional definitions express the importance of critical thinking in education and how it has broadened intellectual standards and created awareness for improved thinking quality (Paul & Willsen, 1993). They all identified critical thinking as empowering individuals to analyze information without bias and evaluate it through various lenses, such as facts, data, and research findings (Doyle, 2020). These definitions, in alignment with Scriven & Paul (1987), also encompass the integration of thinking skills beyond academic learning in real-world settings, not only in the classroom and school but also demonstrate effective strategies suitable for teaching the skills that critical thinking is the ability to analyze, interpret, infer, explain, evaluate and self-regulate clear and consistent disposition (Scriven & Paul, 1987).

2.6 Knowledge of critical thinking amongst students

Learning in the 21st century emphasizes developing and improving the ability to think at a higher level by students. This could be seen in a student's ability to analyze a complex historical event, evaluate the effectiveness of a scientific experiment, and synthesize information from

multiple sources to form a new perspective, or be creative in solving a mathematical problem. Developing a higher order of thinking allows students to think critically and creatively. Globally, education improves the quality of human resources and encompasses diverse influential factors such as teachers ' ability to successfully guide learning activities, effectively assess students ' performance independently or collectively, and evaluate the learning process and outcome. Knowledge of critical thinking among students is apt to help teachers streamline and give direction on classroom activities towards achieving learning objectives aligned with the school curriculum.

Since critical thinking is the ability to think smarter while analyzing and evaluating thoughts that are not biased but can be substantiated, students' ability to think about ideas or modern ways and ability to be able to master situations and raise diverse ideas to increase their experiences in higher dimensions is imperative. It is in tandem with Bloom's (1956) taxonomy, which classified low-level thinking abilities as the ability to remember, understand, and apply, and the synthesis analysis ability, evaluation ability, and the ability to analyze. Knowledge of critical thinking in among students has transcended classroom boundaries and become necessary in the real world. It is about developing thinking skills that are logical and are metacognitive indicator of higher thinking ability, a key to success in the professional sphere (Robb, 2017; Kim et al., 2019). Students can feel motivated and engaged by emphasizing the real-world relevance of higher-order thinking, realizing that these abilities are essential for their future professional and personal development and academic success.

The constructivist theory supports learning experiences that allow students to construct their knowledge and develop their thinking skills beyond thinking acquired through formal education (Martin, 2014; Ennis, 1989). According to research studies, modern, effective teaching

strategies should emphasize normative principles such as transiting the simple to the complex, accessible to the problematic, concrete to abstract, known to unknown, the particular to the general, from whole to part, from empirical to rational, from psychological to logical, from actual to the representative (Facione, 1990 & Ejide, 2006). It demands a change in approach for teachers from the traditional teaching methods that do not engage the students in developing their thinking skills depending on whether they have lower or higher skills. The lower-order thinking skills support students to recall what they know. Lower-order occurs when students transmit knowledge through routine or recite knowledge previously acquired. It involves giving students information from simple facts to more complex ones. However, higher-order skills are the advanced and deep mode of thinking that leads to a diverse solution. (Brau, 2018). It requires students to transform ideas by analyzing, synthesizing, and evaluating them to interpret or understand new meanings.

Learning experiences enable students to develop problem-solving, creative thinking, inference, generalizing, predicting, question-posing, decision-making, critical thinking, systemic thinking, and estimating skills (Brau, 2018; Robb, 2017). Critical thinking support contemporary teaching and learning approaches in line with constructivist theory to help students achieve learning objectives (Miri et al., 2007). It help connect information meaningfully to solve problems by applying knowledge in a new and creative way. It goes beyond basic memorization and observation of facts to identify reliable information, analyze data, communicate findings, and develop solutions.

Developing critical thinking skills can help learners solve problems efficiently by connecting different ideas. Bloom's Taxonomy identifies these skills as more rewarding than memorization and repetition. This study focused on promoting critical thinking to build learning

towards achieving educational objectives for national development. Teachers should encourage activities or learning environments that can assist students in analyzing, evaluating, and synthesizing learning content using their critical thinking skills (Budhi & Suwarni, 2019).

2.6.1 Analysis

Analysis is one of the most essential skills of critical thinking (Facione, 1990). Guiding the student to analyze a piece of information or idea entails understanding why the facts are the way they are and breaking problems down into components to enable better understanding. The analysis skill is a tool teachers employ to expose students to a broad knowledge of the information they can apply to a real-life situation while developing their critical thinking skills to help them respond to classroom instructions, which is germane to learning. Teachers' goals should be strategic teaching that supports critical analysis of information and encourages an exchange of opinions among students (Obanya, 2001).

Analysis, as highlighted in Facione (1990), is a critical thinking skill that seeks a clear statement of the issue, identifies stated and unstated assumptions, determines the strength of an argument, judges the identification of a problem, and keeps the original and fundamental in mind. It is relevant to helping students analyze issues and interpret information before coming to conclusions. The support of teachers towards building a classroom environment for actualizing learning objectives that are sustainable for the future beyond classroom experience becomes an asset for them. The ability to analyze ideas is apt to encourage the development of critical thinking skills among students. Teachers are responsible for teaching students how to practice and develop fluency in basic skills by reflecting on the information before applying it in a complex situation (Ennis, 2018) and understanding the reasons for their conclusions when analyzing any information.

They should also know there is a correlation between the evidence and their argument to analyze a more complicated argument and provide the evidence that connects them. Teaching students to analyze information will support their knowledge of critical thinking skills for better learning experiences

2.6.2 Evaluation

Evaluation emphasizes student responsibility and autonomy, while teachers help them connect their previous experiences to their teaching (Perkins, 1991). Evaluation is the ability of a learner to judge the value of information based on a particular purpose, a skill that involves critically using knowledge to ascertain its quality. According to Facione (1990), evaluation is the assessment of the credibility of statements logically for unbiased representation based on a person's perception or judgment. The constructivist theory supports examining the thinking process to determine the various approaches students can adopt to solve problems. Teachers should persistently teach students how to check the credibility, accuracy, and reliability of their sources of argument to determine whether it is false, biased, or cannot be substantiated. Evaluation is relevant to assisting students in considering content based on credibility, accuracy, and reliability before making decisions.

2.6.3 Synthesis

Synthesis is considered a vital goal in education that enables students to connect different patterns or structures and then create new ones from them (Goldman & Scardamalia, 2013). It is relevant for teachers to encourage critical thinking skills and guide learners to form new ideas by putting diverse ones together (Facione, 1990). It includes producing a theme and a plan that can

lead to new ideas. Though students may be able to analyze arguments, when applying the knowledge and skills to evaluate any given situation, they should integrate ideas and apply many techniques to solve problems and retain knowledge expediently. In addition, teachers can teach students how to synthesize a thorough understanding of learning content, evaluating and integrating it into existing patterns or structures to create a piece of new knowledge (Goldman & Scardamalia, 2013).

2.7 Knowledge of Critical Thinking among teachers

Teachers' ability to contribute and execute a dynamic change in educational reform is sacrosanct to the quality of education globally (Retnawati et al., 2018). Their roles are multidimensional in terms of the teaching approaches they often adopt and availability of tools to achieve learning objectives. One of such approaches is the use of critical thinking, a 21st century tool which is gaining more attention globally as it is relevant to prepare students to meet the demands of life after school years (Cargas et al., 2017; Lapek, 2017). Teaching critical thinking has thus become an important phenomenon to build students who will fit in and relevant in this changing world. It is also relevant to help teachers engage students more in learning so as to present them with authentic experience that will ignite their curiosity and exchange of ideas about real-world issues (Lapek, 2017). Teachers' knowledge of critical thinking is significant for students as it is needed by companies to solve difficult problems, demonstrate critical thinking characteristics, and work cooperatively with others to achieve organizational goals (Campbell & Kreysman, 2015). It is pertinent for teachers to decipher and disseminate information to students in a way that evokes higher-order thinking skills to solve problems vastly (Sung et al., 2015). Teachers should bear in mind that critical thinking should be procedural while introducing it to students with purpose and intent to engage and motivate students to be active learners in the academic

environment. Teachers' knowledge of critical thinking impacts on students' development of soft skills needed to prepare them for life beyond high school and the global workforce, hence they serve as a strong support system to help students to be more profound critical thinker (Robb, 2017).

Knowledge of critical thinking in teachers prepares students for a global society and rid themselves of old concepts such as rote learning that does not allow the students to think about what they learn. Teachers who are critical thinkers consciously identify that students require critical thinking skills to flourish more in post school engagement as they are 21st-century skills (Kivunja, 2014). Their knowledge of critical thinking are often harnessed to guide students to compete in the world, challenge them to work with others, be innovative and develop more soft skills such as communication, problem solving, creativity and innovation, and collaboration as premier guideline for' competence to meet the standard for being successful in life and career (Kim et al., 2019). Knowledge of critical thinking allows teachers to perform strategic roles in terms of the teaching approaches they often adopt and tools to achieve guide students in achieving learning objectives.

There are gaps in teachers' knowledge of critical thinking when the teachers' training programs do not develop or encourage teachers to be critical thinkers. Knowledge of critical thinking in teachers is important to guide students in meaningful and purposeful learning while motivating them to be active learning within and outside learning environment. It enables students to collaborate and become profound critical thinkers (Robb, 2017). Knowledge of critical thinking in teachers assist students to be successful in the future because the skills they acquire become pertinent to prepare students to be successful in life beyond high school and in a their future profession (Ismail et al., 2018).

2.8 Teaching critical thinking in the classroom

Instructional strategies are diverse learning approaches teachers use to assist students in learning or gain a better understanding of the learning content (Persaud, 2018). They are techniques teachers employ to make the learning experience more active by encouraging students' active participation. Instructional strategies assist students in learning with minimal support from the teacher through regular practices that will enable them to identify the appropriate methods and how to use them to complete their tasks effectively. They motivate students to improve their learning experience, encourage them to gain more insight into what they learn, and allow them to demonstrate their knowledge when needed. Teachers who employ instructional strategies allow students to build their capability and make meaningful connections between real-life situations and classroom activities (Meador, 2021). They use it to monitor and assess student performance through different evaluation methods to achieve learning outcomes.

Instructional strategies influence teachers' instruction toward meeting specific learning objectives while equipping students with the tools and skills needed for a successful learning outcome. These instructional approaches must fit all learning styles and the developmental needs of all learners. Hence, teachers must be equipped with various relevant skills that support the development of effective instructional strategies to maximize benefits and increase student learning opportunities while guiding against boredom during instructional activities (Dekker, 2020; Fung, 2017). When teachers use various instructional strategies, it guides and exposes students to individualize their learning style study and engage longer in learning activities. It is apt, therefore, for teachers to select and align their strategies to suit the learning content and the peculiarity of the students since only some instructional strategies will fit every situation. Teachers can set up a framework to help them examine their instructional practices to suit the needs of their

learners by assessing and reflecting on the strategies and skills required to deepen their knowledge of suitable approaches *(*Miri et al., 2007*)*. To make instructional decisions, teachers must consciously and purposefully identify the content and processes they must address, students' strengths, needs, and interests, the shared essential learning that could be incorporated, and the most effective instructional approaches.

Approaches to delivering learning content in education are significant to achieving learning outcomes and improving students' performance while enhancing assimilation (Meador, 2021). They make teachers engage students actively in the learning process to ensure they meet learning objectives. Generally, instructional approaches are the standard methods used by teachers to provide learners with the needed guidance during classroom activities (Meador, 2021; Persaud, 2018). They are the strategies the teachers employ to make learning seamless for students to learn independently and strategically while creating platforms for students to identify and use learning methods to achieve their learning goals when the teacher provides the learning environments for them to thrive (Tiruneh et al., 2018).

Practical instructional approaches are relevant to teachers and students; hence, they must meet the learning styles of all learners, irrespective of their peculiarities (Meador, 2021). Despite the shreds of evidence on how teachers select and adapt instructional objectives with learning content that fits critical thinking in the classroom, the significant roles of the teacher do not deserve less attention (Meador, 2021; Lehmannl et- al., 2021). A practical instructional approach is beneficial in equipping teachers to assess students' performance using various methods of evaluation (Persuad, 2018). In addition to exposing students to learning styles that can enable effective learning, teachers must be more equipped to use various approaches to strengthen the student's learning opportunities. Exposing students to various approaches suitable to learning

content can engage them longer in learning activities and leads to better performance as teachers equip them to connect learning content with a real-life situation and demonstrate knowledge gained when applicable (Persuad, 2019).

Great emphasis is given to how instructional approaches can influence and develop critical thinking in education, irrespective of the discipline or context. However, there are diverse opinions and arguments on the definitions from classical to contemporary, though it is gaining more prominence as a tool to achieve sustainable learning of objectives. For example, Al-Ghadouni (2021) highlighted different instructional approaches relevant to developing critical thinking: dispositions, general, infusion, immersion, mixed, and holistic. Al-Ghadouni (2021) also emphasized that the mixed approach is more viable, though not frequently used, than the immersion method, which could be more effective in achieving the set learning objectives but often used by teachers. Based on this submission, Rimiene (2002) observed that the choices made by an individual are how they identify and attach meaning and purpose to life and how they connect their environment and existence through holistic education. Hence, there is a need to identify approaches that can guide students to acquire critical thinking skills to influence holistic changes in their education beyond the classroom. This effect will be a change in orientation and self-realization for holistic better performance.

Practical instructional approaches involve the decision-making process to determine suitable approaches to assess the student's achievement of educational outcomes. It is a component of critical thinking for a student to conclude, identify, analyze, and reflect on information to determine its consistency (Linn, 2000; Miri et al., 2007). The definition of critical thinking by Facione (2011) emphasizes the importance of making good decisions. It explains that people become more relevant and live purposeful lives in society when they learn how to make good

decisions. However, being educated and having a sense of justice does not make them fulfilled or grant them happiness in every area of life, but to achieve them. Facione (2011) further explained that when people make the wrong decisions, the adverse effects spread across everyone and create avoidable burdens. Consequently, the right choice of instructional approaches in teaching and learning can lead to better delivery of instructions and assessment of student performance.

The definition of critical thinking by Watson and Glaser (1980) supported the idea that decision-making determines the choice of practical instructional approaches and explained that Critical thinking is a habitual method of asking questions that can lead to the ability to recognize and admit evidence-based information of acquisition. It is the development of knowledge for logical deduction after weighing different alternatives based on available evidence. Furthermore, the place of decision-making in critical thinking is the development of skills that can enhance the ability to make a logical deduction, using attitudes and knowledge to identify what to do or not to do, beliefs, and then making decisions while bearing the consequences. It enhances skills development to bridge any gap, enabling students to make wrong choices in the classroom and beyond.

Whatever approach the teachers use to engage students actively in the learning process, they must evaluate its effectiveness to ensure it meets specific learning objectives and can equip students to perform better (Persuad, 2018). Some of these approaches are direct and indirect instructions. Direct instructions are usually didactic and actively involve the student in the learning exercise teachers use to provide and develop clear and explicit explanations of skills in sequence to students. They include lectures, practical and drills, demonstrations, didactic questioning, deep and thorough teaching methods (Dekker, 2020). In addition, the teacher guides the student in pre-teaching to enable skill development and aid learning objectives. Though relevant to the teacher-

centered direct approaches, the indirect approaches are student-centered, flexible, explorative, creative, and develop student skills. Though this approach is time-consuming and allows students to be independent and creative in learning processes, it only allows part participation of the teacher in providing or encouraging step-by-step skill acquisition (Sibtain & Hussain, 2018). These two approaches are relevant to teachers and allow them to guide arranging a learning environment and give feedback for the students to explore and actively participate in learning activities (Funk, 2017).

The emphasis on teachers' requirement to equip classroom activities and curriculum with critical thinking skills and elevate students' mental workflow beyond mere memorization has continued to be a significant requirement for teachers. Developing critical thinking skills in classrooms is expedient to keep up with the evolving technological advances for students to obtain, understand, and analyze information on a much more efficient scale since learning content is now available, but understanding and making sense of such information requires developing critical thinking skills to identify and sort the true from fake to guide against biases (Cox, 2014; Al-Ghadouni, 2021). Conversely, educators need to emplace strategies and skills to equip students to think critically to cope with these changing technological advancements and other challenges they may encounter. Against this background, teachers should encourage creativity by preparing and equipping learners in advance to think independently during classroom activities using prior knowledge. Teachers should only sometimes be quick to help students think about what they learn but give them time to think and respond or ask questions before providing the information they need to understand learning content better (Haber, 2020). It is apt to encourage the development of critical thinking through brainstorming. Questioning techniques can stimulate students to think about what they will learn. It allows them to be critical thinkers while exposing them to more

information about what they can learn, and the empowerment of students through critical thinking motivates and inspires educators (Dekker, 2020).

Teachers can encourage students to think critically, engage in self-questions, and participate actively in the classroom by classifying, categorizing, comparing, and contrasting information about learning content available to them (Haber, 2020; Persuad, 2019). It will help students think about the significance of the available information and expose them to endless ideas to broaden their knowledge of the learning content. Teachers can guide and encourage students to think and relate their thoughts to life experiences, as it will assist them in connecting their thinking with concrete content and understanding patterns to express their views on what they think. In another situation, teachers can assist students in thinking and understanding how others think by providing group opportunities, including getting students to work together. It will expose them to gaining insight into the thoughts of their peers in order to understand how other people think. It will also introduce students early to complex thoughts so that they can be problem solvers whenever they encounter difficult situations.

Teaching critical thinking should be explicitly to avoid students assuming what to be rather than understanding and analyzing information before concluding (Jones, 2015). It requires teachers to inspire students to continue practicing those skills independently since critical thinking is not a one-off skill that cannot be developed or valuable for a season (Persuad, 2018). Inspired students can apply the critical-thinking skills they learn in class to improve their knowledge of learning content and context to make better decisions in life while reinforcing their value and continuous use of the skills acquired. It emphasizes the crucial role of educators in fostering critical thinking, making them feel valued and integral to the learning process.

According to Zhang (2022), critical thinking in education is essential to broaden students' horizons in understanding the cognitive domain of human beings while assisting them in identifying the intellectual skills that take place during the thinking process. There are three key components of critical thinking, also regarded as higher thinking skills: problem-solving, creative, and meta-cognitive, which are essential and steer thinking toward critical thinking (Zhang, 2022). Problem-solving skills are significant and crucial skills that support reasoning and other underlying skills. It replaces arguments and brings solutions to problems. It differs from critical thinking because it is relevant to solving critical and uncritical problems. Developing problem-solving skills allows critical thinkers to remain focused on the problem while being versatile and emphasizing the solution and the decisions to take (Ennis, 1996; Gómez-Pérez, 2010; Wilberding, 2019). Creative thinking skills help individual capacity towards a specific event or action. It is not equal to critical thinking, but it supports its development.

Creative thinking emphasizes using knowledge, intelligence, imagination, and ideas to create new solutions to problems (Birgili, 2015). The third component is meta-cognitive skills, which refer to thinking about one's thinking. It activates self-awareness when students learn and practice thinking. Metacognition is of two types; the strategic type allows students to ask questions about when, why, and how. The other type creates awareness for students to plan, monitor, evaluate, and revise their thinking process and outcomes. Metacognitive skills enable students to develop self-consciousness and better evaluate their understanding and weakness in specific subject areas (Zhang, 2022). It supports students in resolving challenges and achieving success in areas with challenges. Students only sometimes develop this skill, but it emphasizes critical thinking more.

Cáceres et al. (2020) identified other approaches proposed by researchers, including the general, infusion, and immersion approaches. However, the most effective of these three approaches is teaching critical thinking explicitly with a specific subject. Paul & Elder (2003) explained the general approach as a classical study of critical thinking, identifying with diverse curriculums and their expression in classroom activities. Critical thinking must be taught by principles and harnessed by practicing the skills for maximum gains. Swartz &Park (1994) and Bensley et al. (2016) explained that infusion strategies are the principles and practices of teaching Critical thinking using diverse subjects. The infusion approach shows that explicit teaching of critical thinking supports meta-cognition and analyzing arguments, both vital critical thinking tools. Immersion is the third stage of the instructional approach, which portrays critical thinking as the explicit teaching of subjects that enable students to participate actively in learning by engaging in deep thinking and asking questions (Huber & Kuncel, 2016).

While there is no specific approach to learning critical thinking, the correlation between the teaching approach and active students' involvement is germane to facilitating and promoting the skills. Emphasizing teaching content rather than the process of teaching critical do not impact critical thinking; adopting various approaches such as dialogue, group learning, roleplaying, debate, and quizzes are helpful strategies for students to promote and facilitate critical thinking and develop analytical and reasoning skills (Abrami et al., 2015). Teachers can adopt many strategies, such as questioning, to impact students' thinking and their ability to develop critical thinking (Ennis, 1993; Abrami et al., 2015; Dekker, 2020; Haber, 2020). When teachers use higher-level cognitive questions generated through critical thinking, students can use the information from their teacher to formulate the responses they give. Conversely, lower-level cognitive questions are less supportive because students will only respond to questions in the

simple application of information through recall and merely recognition without engaging in thinking. It underscores critical thinking's importance in students' personal and academic growth, making educators feel responsible and committed to fostering these skills.

Developing good questioning skills can help teachers' ability to ask higher-level questions to enhance intellectual discipline and engage in counter-thinking and self-evaluation, which influences their competence and approach to teaching (Paul, 1993; Haber, 2020; Dekker, 2020). Their interaction with teachers or peers can influence students' cognitive learning outcomes. An affirmative and constructive Learning environment is rewarding and can foster thinking. Hence, teachers can use their competence and teaching approach to encourage and praise students to use their ideas to think. Teachers' dispositions in their instructional practices and interest in critical thinking can influence students' thinking and learning when preparing them to engage in higher cognitive thinking. Thus, teachers can demonstrate their critical thinking skills by modeling and mentoring students to be critical thinkers (Brookfield, 2012). They can emphasize explaining abstract concepts and carefully organize their presentations for students to think and understand.

Dekker (2020) opined that questioning is a helpful strategy teacher can use as a practical activity to engage and encourage students to think. It allows teachers to check the level of students' understanding of learning content. Conversely, teachers should use questioning sparingly to avoid boredom and responses not enhanced by thinking. It is apt for teachers to ask only appropriate questions based on students' language and thinking level to get them fully engaged, encourage critical thinking, and avoid students losing confidence and interest in the learning activities (Dekker,2020; Haber, 2020). Teachers can design sequential or leading questions to engage students' participation in learning through thinking about their learning content. Most teachers

observed that such sequential questions prepare students to be active during classroom engagements.

All the participants in the study acknowledged that brainstorming, debates, classroom discussions, and quizzes are crucial student-centered approaches relevant to encouraging critical thinking in addition to other approaches in the literature reviewed and the interview sessions. Brainstorming is relevant when introducing a new lesson or reviewing the last lesson or previous knowledge. It is one of the methods identified by curriculum experts that could enable desirable learning outcomes by developing learners' critical thinking (AlMutairi, 2015). Brainstorming helps the teacher to engage students through questions and learning activities that lead them to self-research and self-exploration beyond learning content. The teachers acknowledged the importance of brainstorming to make students recall what they have learned during previous classes and contribute to their current lessons. Teachers can assist students in practicing brainstorming regardless of their learning content or subject since students can brainstorm better when their teacher sets the pace for it (Khan & Ashraf, 2021; Owo et al., 2016). Most students also expressed that when they brainstorm before, during, and after their lessons, they think widely, generate ideas, participate actively, and contribute meaningfully to learning (Khan & Ashraf, 2021). They also shared that brainstorming prepares them for what to expect before the teachers introduce the topics and after each lesson.

Debates and classroom discussions are other practical activities that encourage critical thinking. It allows students to discuss controversial topics that can make them think and contribute to learning. Most students observed that engaging in controversial topics supports and helps them develop their critical thinking skills (Dahl et al., 2018; Qianmei Li et al.,2020). Although there

might be initial anxiety about the contribution level to the discussion or debates, students often respond and contribute favorably over time. Debates are relevant for developing students' communication skills as they can assist them in expressing their position during discussions. It assists the students in taking a stand based on their thoughts about any issue. Most students expressed their satisfaction whenever they engaged in debates. They learn how to analyze and evaluate thinking and present their ideas in organized and persuasive ways (Qianmei Li et al., 2020).

In summary, practicing critical thinking skills is essential. Hence, teachers can promote these skills in students if they understand the concepts and how to develop them personally. Teachers' role is essential to encourage students to develop their critical thinking skills when they ask higher-level questions, use active teaching strategies, and demonstrate good facilitation skills, as well as when their attitude and knowledge of critical thinking are reflected in their teaching approaches (Dahl et al., 2018)

2.9 Importance of Critical thinking in effective pedagogy

Critical thinking is essential in various dimensions of human endeavors. It helps individuals make explicit judgments on information that has passed through a series of assessments and scrutiny before making decisions (Dewey, 1933; Roth & Doug 2015). It allows individuals to identify and reflect on their information while checking through personal and others' assumptions to decide what to do or believe (Brookfield, 2012). CT is a valuable and relevant skill for problem-solving and decision-making in all facets of life because it helps analyze complex data, evaluate situations and actions, and implement the most appropriate actions. It is relevant in modern education for knowledge development, assessment, and utilization, hence the clamor for its

inclusion in the school curriculum (Foresman et al., 2016). Similarly, selecting teaching pedagogies in every discipline is essential for easily comprehending learning activities.

International reviews of Siraj and Taggart (2014) identified essential pedagogic strategies that contribute to the effective use of critical thinking approaches in the classroom. They include organization, classroom climate, shared objectives, making links explicit, behavior management, personalized teaching and learning, dialogic teaching and learning, collaborative learning, Assessment for Learning (AfL), and Plenary. Teachers need to possess high organizational skills while using relevant instructional approaches. Teachers should prepare ahead of time and manage their resources adequately to meet the individual needs of the learners. They productively use instructional time by maintaining a good pace and ensuring that every second of their lessons counts. They need more time to achieve a good, effective, smooth classroom routine. Good classroom organization assists learners in being self-reliant since they are responsible for their own time and resources, know what to do, and do it. Conversely, teachers need to employ an organization that is fit for the purpose and tailored to the individual needs of their learners so they will be conscious of the productiveness of instructional time**(Shiel, 2017)**. There needs to be a clear expectation from the learner. Consequently, learners will be dependent on the teacher, unable to maintain a learning pace, and will start learning slowly and waste time during transitions.

Using the appropriate approaches that support the development of critical thinking skills based on shared objectives is germane to achieving teaching and learning goals. Teachers should ensure that all learners, without exception, understand the learning concepts and ideas they present in lessons by ensuring learners understand the lesson's main ideas. Teachers should also closely observe learners when they are unclear on the learning content and intervene for more precise

understanding by changing activities when required. Teaching critical thinking in the classroom should align with the learning objective, which must be clear to all learners and should be able to identify what the teacher expects from them within a specific time frame after each lesson (Roth & Doug 2015). As focal points in learning and teaching activities, teachers should always check and correct learners' understanding of key concepts and ideas to assist students in gaining new insight and be focused and motivated to meet learning goals in clear terms.

Homework is a form of individual learning strategy teachers use to engage students to think about what they have learned or need to learn. Teachers should not set homework simply because they were required to set it but to encourage students to develop critical thinking skills and use them to make learning meaningful to them before or after each class activity to gain more insight into what they learn. This emphasis on the value of homework assignments will make educators feel the importance of their role in promoting critical thinking. Conversely, teachers should be flexible while setting homework to make it meaningful and result-oriented. It can be more engaging for students when teachers give a lead on what is expected from the student to link them with what they were learning; teachers should create opportunities during lessons to set homework for students and should not restrict learning only to what was planned already in addition to the timetabled requirements (Roth & Doug 2015). Teachers can set homework to clarify and consolidate students' understanding of learning content and ensure all children can use it. For teachers and students to harness the benefits of setting homework, teachers can reprimand students who do not do their homework and praise or give incentives to those who do theirs.

The classroom climate is the overall relationship between teachers and students: students and students. A good learning and teaching environment is needed to achieve educational goals

quickly. Classroom climate in an effective learning environment is favorable and very pleasant while the learners relate with respect and exhibit excellent performance. Teachers maintain a good relationship and inclusiveness with the learners and avoid discriminatory tendencies that can create a gap in learning. They discipline learners when they err without negative feelings. For teaching and learning to be effective using critical thinking, the learners and teachers should guide the students to be sociable and cooperate with their peers. Also, there is significant respect between teachers and learners as they carefully observe the entire classroom ethos and maintain quality relationships. A good classroom climate allows learners to respect the feelings and opinions of their peers.

Teachers can maximize the use of appropriate instructional approaches by taking into cognizance the different behaviors of their learners. Management of the differences in the behavior of learners will help the teacher determine when and how to respond to their classroom activities and their effect on learning outcomes. Some students exhibit high discipline and attentiveness during classroom activities, leading to fewer distractions and good time management. Achieving teaching and learning goals becomes more realistic when learners are disciplined and less disruptive as they think, reflect on what they learn, and contribute (Roth & Doug 2015). Conversely, where the overall level of discipline is low among learners, the teachers will need more time to correct behavior using humor or a quiet reminder to gain their attention and make them think about what they are learning. The behavioral pattern culminates in the instructional approaches teachers design to manage teacher- or student-centered classroom activities. Critical thinking may become a mirage when levels of chaos, disruption, and teacher over-control (teachers-centered approaches are considered to the detriment of student-centered approaches.

Achieving learning goals through appropriate pedagogy that supports the development of critical thinking skills requires collaborative learning. Bearing in mind the divergent cognitive levels of learners, encouraging collaborative learning becomes expedient for all learners to achieve learning goals. Collaborative learning situations entail learners working as a team, benefitting from learning together and managing their differences. It is a range of pedagogical strategies, such as group work for specific purposes, such as differentiation and peer tutoring, which requires learners to work collaboratively through sharing roles, ideas, and information. Collaborative learning allows learners to spend time collaboratively and as "sounding boards" for each other or to comment on each other's work while working in a group to solve a problem. Although learners require more time to collaborate and achieve learning objectives, teachers' input through coordination, reminders, humor, or a quiet reminder can assist the learner in gaining more collectively. Also, teachers can set homework related to group work to measure and evaluate what the children are learning.

Teachers are more likely to personalize their learners' learning experiences and encourage critical thinking by being sensitive to the individual needs of the learners in their classes and by providing rich learning materials. Personalized teaching and learning allow the teacher to adapt all aspects of his or her teaching to the needs of the specific individuals within a classroom group. Teachers rarely achieve teaching objectives when they detach or distance themselves from learners by not offering feedback or noticing children's behavior or needs (Stedman & Adams, 2012 & Shiel, 2017). Conversely, teachers can use a friendly approach to observe and be sensitive to the needs of the children while providing outstanding learning materials specifically chosen and adapted for learners to achieve learning objectives. Teachers can make links and examples of learning content outside the lesson. They should connect related lessons with the outside world through practical

learning for clearer understanding. It will assist learners to think widely and broaden their knowledge about what they learn. It will also provide teachers with a variety of high-quality teaching resources while gaining understanding and response to the learner's needs.

Dialogue is an ancient approach that stimulates learning, especially when the learning content is unclear. It is vital in teaching and learning to enable teachers to analyze learning content while students gain in-depth and more insight into what they learn. Teachers use dialogic teaching to engage learners in instructional conversation and interactive discourse that can enable them to think and understand learning content. It is a participatory approach involving dialogue and questioning in which teachers and learners participate in classroom activities, much more than only the teachers imparting knowledge. Dialogic teaching often includes "higher order" thinking skills that challenge the learner. Most teachers do not engage students in dialogue due to time constraints, which often do not challenge learners to think.

Teachers should provide opportunities to constantly get feedback from learners by assessing what they learn over time to enable learners to reflect and review their learning activities. It will also help learners identify and understand their level of performance and allow teachers to guide them on how to improve what they learn. Assessment for learning (AfL) can be done by the teacher providing feedback to the entire class, groups, or individual learners. Teachers should emphasize the quality of the feedback, focusing more on finding ways to improve the work rather than just providing praise and encouragement. It will give the learner the to reflect critically on their own and each other's work while considering what will work well and how their performance could be improved (Stedman & Adams, 2012).

Plenary is the end part of a lesson, usually associated with whole-class interactive teaching. It aims to assess the extent to which the teachers and students meet the lesson's objectives and how they understand the concepts to provide assessment information to the teacher for planning the next lesson. Creating an opportunity for further discussion about learning content at the end of the lesson is essential to encourage the development of critical thinking in line with teachers' instructional approach (Foresman et al., 2016).). It will enable learners to explore issues more deeply and extend the work and concepts covered in the lesson. Teachers and learners can engage in an interactive discourse about learning to extend learners' thinking and understanding and impart knowledge. Teachers can utilize plenary informally to assess learners' understanding of basic concepts and skills and give feedback to students on their performance. At the same time, they share their experiences, address issues observed during the lesson, and engage learners to solve problems they identify collaboratively. Most plenary sessions often encounter the challenge of time and improper planning, as most teachers merely respond and answer questions that need to be more in-depth to allow learners to engage them to think critically or share strategies that can assist them in thinking and asking insightful questions.

The above mentioned factors seem impossible to educate teachers who may not appreciate the importance of critical thinking in the classroom nor identify the need for learners to achieve learning goals through their professional development. How schools and teachers interpret, understand, and respond to the characteristics mentioned above of effective schools or teachers will determine the level of improvement and effectiveness the schools and teachers record as achievement (Harris et al., 2005). The schools determine the content/curriculum, while the teachers determine how it is taught (classroom pedagogy). Conversely, what the teacher teaches is essential and contentious; the pedagogy teachers decide to employ should be given adequate

attention. The inputs of the schools and teachers should equip learners to apply their knowledge to real-life situations and be relevant for later employment and full participation in society.

2.10 Approaches that support the development of critical thinking in the classroom

Selecting suitable approaches for teaching and learning critical thinking is apt for teachers to guide curriculum development and practice decision-making. In addition, the learner's interest, previous knowledge, learning styles, and development levels are part of achieving the learning objectives needed for students' assessment (Al-Ghadouni, 2021). In addition, selecting instructional approaches is often multi-faceted since one approach may only produce some result projected to achieve learning achievement and could lead to boredom when not carefully selected. For emphasis, one instructional approach may only be suitable for introducing learning, another may be useful for indirect instruction (Sibtain & Hussain, 2018). While recent researches explores how different pedagogical practices aid the development of critical thinking across various disciplines in different stages of education (Febriansyah et al., 2023; Edward, 2023), few works of literature support students' development of critical thinking skills (Nazemi, 2016). Since incorporating critical thinking in teaching and learning is gaining more attention in the 21st century (Halpern, 2014), identifying and using suitable approaches will further expand the infusion of critical thinking pedagogy to achieve learning outcomes beyond the walls of the classrooms.

Lai (2011) highlighted how critical thinking influences the choice of instructional approaches and argued that more researchers in the 21st century, especially in education, identified critical thinking as an essential tool for success because it can help students develop relevant skills in school and beyond. Lai (2011) pointed out that students with critical thinking skills should be able to analyze and reason objectively to make decisions and solve problems since critical thinking emphasizes reasoning, how to think, and factors that encourage good thinking. These features are

relevant to objectively developing an open mind and entertaining others' viewpoints, propelling the ability to learn more.

In addition, Abrami et al. (2015) identified the choice of pedagogy that will reshape the learning experience in the 21st century. They explained that as the world changes, so does the structure of learning that leads to various transformations and developments, such as new skills, knowledge, and understanding. However, these new interventions require consistency in learning to meet the pace of development that influences the drawing up of new educational policies. Furthermore, critical intelligence, emphasis on change, and adopting new and innovative ideas that can encourage logical, sustainable development are gaining more prominence than acquiring technically inclined knowledge and competencies.

Understanding the concept of critical thinking can aid the selection of instructional approaches suitable to achieve the learning outcome. Since selecting the best approach encourages seamless practices that can lead to successful pedagogy in education, identifying their advantages and challenges is apt. Many researchers, such as Glaser (1941) and Ennis (1989), pointed out the gap inherent in the aspect of critical thinking skills that are generic or context-bound, that is, whether the pedagogical approach to critical thinking should be on subject domain or subject domains cum context (Al-Ghadouni, 2021).

To select the most effective approaches, many researchers have argued that immersion is most suitable for teaching critical thinking, though without emphasis on a specific subject. Abrami et al. (2008) suggested teaching it explicitly with consideration to any desired subjects. However, in recent years, various designs for teaching critical thinking have considered any subject chosen, though integrating such into the classroom has yet to record significant coverage. Abrami et al. (2015) identified four categories of integrating critical thinking into classroom activities. They

include Individual study, dialogue, anchored instruction, and mentoring approaches. The individual strategies engage the students to work without assistance while establishing learning content, while the dialogue approach entails engaging students in the discussion. Anchored instruction presents situations that can captivate the student toward learning. At the same time, mentoring is the strategy that allows an expert to explain learning content to those who do not have prior knowledge of the content (Pini, 2009). Abrami et al. (2015) further stated that out of the four strategies, the combination of dialogue and anchored instruction gives the best results when used for learning.

In summary, challenging the student to think critically by using suitable instructional approaches can make the learning experience last longer and impactful for life beyond classroom activities. Since the promotion of critical thinking is the objective of constructivist teaching, a learner-centered approach, selecting the approaches that can enable this objective remains the core responsibility of the teacher as a stakeholder and driver of the curriculum.

2.10.1 Individual Study

The expanding scope and dynamic change in education have contributed immensely to the increase in creative cognitive activities of the student to enhance their ability to identify problems, analyze them, and arrive at a conclusion (OECD, 2018). Such changes often support decision-making to develop the student's critical thinking skills. One task of the school and the educational process in a modern society where the young generation is making new demands on individuals includes getting and processing information and selecting the main one. It is apt for teachers to deviate from all teaching and learning approaches that adhere only to the teachers as the sole distributors of knowledge but guide students to socially adapt individuals as new personalities in

a growing world of knowledge (Anderson & Krathwohl, 2000). Emphasizing a student-centered approach can make the learning process more effective and participatory for every student, and it encourages students and teachers to work together for a common goal. The teacher's role as a guide and organizer of the learning process enables students to develop personal initiatives and contribute to learning.

Individual study is high-level thinking that is becoming more valuable in modern education to educate students to develop their thinking, generate ideas, and arrive at logical conclusions that will enable the teachers to critically conduct assessment and analysis of their study in preparation for future lessons (Kopzhassarovaa et al., 2016). Teachers can use individual learning to identify specific instructions, expectations, and how to conclude. It will help teachers expand the learning process, increase teaching efficiency and effectiveness, and give a positive dimension to learning in individual study development that encourages students' critical thinking skills (Parviainen et al., 2017).

Many educators and researchers appreciate students who can think critically and develop skills that distinguish them in life experiences, not only in the classroom (Cargas et al., 2017; Arum & Roksa, 2010). Teachers can encourage individual study by supporting and presenting students with information that can allow them input and decide for themselves information vital and relevant to them, especially when they engage in study independently. Cluster (2001) opined that independent study is a core aspect of developing critical thinking that entails the ability of an individual to think and formulate ideas, solve complicated problems, and estimate personal beliefs. Individual study, also known as independent study, allows students to explore various learning methods and complements the curriculum available. In addition, it exposes the student to study

beyond the content of the curriculum by expanding on other related information not included in the initial learning content (Kopzhassarovaa et al., 2016).

Abrami et al. (2015) defined individual study as "instructional techniques and learning activities based on students' work" (p.284). It occurs when students engage in lone study, which could be learning activities to solve problems without assistance. It complements curriculum content by enabling the student to explore diverse learning methods, explore more of the curriculum content, and make the teaching and learning process seamless during classroom activities. It encourages critical thinking skills by making learning convenient for students while taking responsibility for their progress (Kopzhassarovaa et al., 2016). Individual study also involves studying without direct supervision or attendance in a classroom to learn and complement formal education. It is rapidly growing in popularity, as most parents and students have observed a drastic improvement in grades, confidence, and commitment to learning.

There has been a noticeable deviation from the traditional method of group learning to students' support and use of individual learning. Educators posited that the particular study method is gaining prominence as it prepares students more for the changing learning environment than the group learning method in the early twenty-first century (Fung, 2017). Though the individual study method is convenient for the students and helps them take responsibility for their progress, students are often poorly prepared due to lack of experience and unpreparedness. However, digitally enhanced tools such as computer-based learning enable students to organize and encourage individualized learning (Vehmas et al., 2017).

Tihinen et al. (2020) explained that the individual study method has transformed and enhanced diversity in education and has supported the changes in working life with an enlarged working group, which is an asset in the new era of workplace development. Nold (2017) and

Vehmas et al. (2017) observed that the dynamism of the work environment is building a digitally inclined workforce and has made individualized study paths more relevant, creating more support and awareness for sustainable future working experiences and life. In addition, the skills students need in individual study are not general but generic to create a specialization in the workforce and lead to professionalism for economic development. Parviainen et al. (2017) also acknowledged the effect of individual study on digitalization, internal organizational increase and efficiency, and exposure to broader opportunities externally. It will transform the business environment into a vibrant and sustainable venture. With the internet and other electronic tools, students can conduct research independently to acquire more knowledge and increase their attitude and level of experience to help participants in the classroom less cumbersome (Dewhurst et al., 2000; Kopzhassarovaa et al., 2016).

Students can develop individual learning skills by thinking independently and critically engaging in individual study methods. These qualities will help them adapt flexibly to changing situations, be creative, generate ideas using modern technological tools to acquire concepts, skills, and knowledge, and develop relationships that expose students to improve and reflect on different areas of life (Polat, 2002). Educators and researchers on critical thinking have identified the importance of individual study in enhancing students' cognitive skills at a level of education (OECD, 2018; Enni, 2015; Barnett, 1997). They mostly assert that individuals can only think individually, though assistance and guidance from the teacher to learn the thinking process are essential (Kopzhassarovaa et al., 2016). Individual study is a controlled way of thinking critically through a specific line of thought that can be adjusted logically (Elder & Paul, 2008). It can be definite or broad, leading to focusing and judging results while acting and considering the viewpoints of others along with personal views. Halpern (2000) emphasized critical thinking as an

essential tool to measure the effect of thinking skills on achieving the learning outcome. In addition, Halpern (2000) explained that cognitive development is not memorization, which is not deep and does not necessarily translate to understanding the learning context the student needs for future uses.

Cluster (2001) opined and identified conditions that enable independent thinking while acquiring information and setting the problems that can ignite our reasoning and bring up a convincing argument. Cluster (2001) also argued that students who engage in individual study methods develop their critical thinking skills to help them solve problems, generate ideas, make decisions, and bring up convincing arguments. Considering the importance of critical thinking to teaching and learning to achieve educational objectives in the twenty-first century and the changing workplace environments, encouraging individual study as an effective pedagogy that can assist students in developing critical thinking skills in their learning activities is relevant and should be supported (Abrami et al., 2015; Tihinen et al., 2020). With individual study, a student's cognitive development will create a chance for an individual to develop future skills to meet education needs. However, for students to engage in individual study and optimally benefit from it, they must exhibit a significant level of discipline and develop high concentration and self-motivation during the learning process.

Developing critical thinking can occur at all stages of learning, such as identifying problems, analyzing problems, and understanding the formation of the problem to arrive at a decision that considers the need for proof, affirmation, or denial. Critical thinking is beyond synthetic, creative thinking and arises from human consciousness to solve problems through guess or insight. Critical thinking supports self-learning through self-assessments that last for a long time. The self-learning aspect assists students in developing self-criticism of thinking and giving

credence to personal thoughts and assessments that can help detect an error or gain new insights to confirm the truth of an idea or fact (Anderson & Krathwohl, 2000).

Students can develop critical thinking through independent or individual learning, which involves various aspects of thinking. Bloom's Taxonomy of Educational Tasks (1994) explains the bottom and top-order questions from a task that requires learning from memory and understanding concepts to the next level, where you apply ideas to develop new solutions and evaluate the entire thinking process. While teachers ask questions and expect responses from students, it is apt to ask questions that students do not have any foreknowledge about but encourage them to think independently to give divergent views. Teachers can encourage individual learning by asking complex questions that are problematic and will require students to think critically. The process of thinking can be either passive or active. Hence, it is expedient for teachers to guide the students in understanding the information and the various approaches they can use to think about them. Teachers can teach students self-assessment to determine their readiness to analyze available information and allow dimension of criticism for better outcomes. Assisting students with high-level thinking is germane to the development of individual learning; teachers should provide students with more creative projects or case studies to help them ask questions, identify the causes of phenomena, and apply thinking competencies (Anderson & Krathwohl, 2000) (Cargas et al., 2017).

2.10.2 Dialogue

The dynamism of knowledge as provincial and evolving has been a valuable educational tool in the modern world and human existence (Phillipson & Wegerif, 2017). It creates an avenue to open people's understanding of events and happenings that can assist them in contributing to various discussions and engaging in dialogue about our lives and environment. Revising previous

information is a continuous process in the modern world and our lives to make such information more valuable and relevant. In this view, developing the ability to engage in thinking that can encourage contributions to acquire more knowledge is often apt through dialogue in the form of exchanging opinions and ideas (Jay et al., 2017; Phillipson &Wegerif, 2017). However, since peoples' views differ, the challenge of understanding each other can lead to their engaging in dialogue.

Dialogue is a teaching method that stimulates thinking and a better understanding of curriculum content and concepts to enhance performance (Abrami et al., 2015). Dialogue combines the Greek words ' dia' and 'logos,' which means communication between two or more people (Smith, 2015). Dialogue is not a direct form of communication that requires directed answers, but it is when two people relate, interact, and reflect on the purpose of a topic. Dialogue means having concern, interest, or commitment to others' contributions to any information and trusting such contributions, though there can be some risks in doing this (Jay et al., 2017; Isaacs, 1999). In addition, though opinions may differ in dialogue, considering others' views can enhance the quality of discussions. Based on this, it should not be downgraded or out rightly rejected without respect but should be appreciated and valued. When we dialogue, there should be feelings for others to keep hope alive, make the topic more factual and fruitful, and gain the confidence of those we dialogue with (Phillipson & Wegerif, 2017). However, where there is distortion in the information we share or our belief, we should provide evidence and reasons to back up when asked to avoid any assertion that can oblige us to commit ourselves.

There is much difference and understanding between when people engage in ordinary discussion and when they dialogue. While discussion often leads to argument and making efforts to ensure a sound conviction on a topic to change the views of others, dialogue leads to creative

and purposeful interaction that reveals our unregulated thoughts without necessarily imposing them on the other person (Tran, 2008). It enables the discovery of creative consciousness and creates a free flow of ideas among all the participants in the dialogue. Bohm (1997) identified three conditions necessary for dialogue to take place. To begin with, those who dialogue should not emphasize assumption or pre-judgment. It may not be avoidable, but exploiting it for better discussion is possible. In addition, participants must appreciate themselves as peers and set out for mutual discoveries in dialogue that creates more understanding and insight. Furthermore, there should be a guide or a facilitator who preserves the sanity of the dialogue process to ensure that the context of the dialogue is not distorted but maintained. Since students cannot discover everything for themselves, allowing them to engage in dialogue becomes expedient for understanding various perspectives and acquiring more knowledge. Therefore, as a teaching method in education, dialogue provides a platform to engage the students in learning and an excellent environment in which to thrive and contribute to the learning process (Phillipson & Wegerif, 2017).

It is not just a teacher-led approach to teaching and learning. It is a continuous conversation between teachers and learners that gives opportunities for students to be active and contribute to classroom discussion through the construction of knowledge. There is a level of acceptance and less resistance on the topic of discussion by the student in education when the teacher gains the students' confidence. It encourages them to trust, think, and participate further in the discussion, which may not be only oral. Abrami et al. (2015) stated that Critical dialogue can take several variations, such as whole-class/ group debates or discussions. It explains the multi-dimensional ways dialogue can facilitate learning with or without modern electronic tools.

The dialogue process includes the teacher explaining the learning content while clarifying vital points to help students understand and contribute through dialogue. It is collaborative since it helps students think in diverse ways to contribute to discussions and arguments to make learning meaningful and impactful (Phillipson & Wegerif, 2017). It is not a teacher-centered pedagogy but a talk between teachers and students. It allows students to contribute and acquire detailed knowledge. Students can use dialogue to expand their understanding of the learning context. At the same time, the teacher can explain salient points, introduce new ideas, and clarify salient points that can encourage students to open up a dialogue with them (Wegerif, 2007). Dialogue helps teachers interact through discussion and argumentation with students to identify their needs and understand their level of progress.

Engaging in dialogue is a pedagogy that requires guidance and teaching by teachers to encourage student participation in learning. Education is beyond knowledge acquisition alone; drawing them into a conversation can enhance their thinking and contribute to learning content. Dialogue is apt for knowledge development needed to make students better citizens while contributing to national development. However, how teachers engage students in dialogue is very important to identify and establish the pedagogy that can support how students can use dialogue in learning to improve their performance (Walshaw & Anthony, 2008; Wilkinson et al., 2015). Using dialogue as a teaching method and learning without first engaging the student, teachers should create a platform to teach through it so that students can harness the gains of dialogic pedagogy. Researchers like Lev Vygotsky (1997) posited a theory that when students are involved in their culture and community, they imbibe things they learn to guide their thinking (Tran, 2008). It forms the basis for teachers and education stakeholders to guide and help students develop further in interacting with their peers in their community. In addition to developing thinking skills,

students will learn to speak and discuss meaningfully with others to shape their social activities and culture, guided by teacher input.

One key aspect of dialogue is its role in fostering students' critical thinking, enabling them to grasp the topic of discussion and make reflective contributions that are free from bias or basic inference but are deeply engaged with the topic. Miri et al. (2007) explained, ' The constructivist theory recognizes that students need exposure to learning experiences that enable them to construct their knowledge and promote their thinking skills' (p.354). When students effectively engage their thinking in discourse, considering their thought processes and those of others, they can contribute constructively to learning. Significantly, the outcomes of such contributions extend beyond the school years, equipping students with the skills to solve future problems. Therefore, before students express an opinion or thought during a discussion, they should be cognizant of the existing or present knowledge or discussion points and understand the learning context by engaging in practical thinking (Kersaint, 2015; Phillipson &Wegerif,2017). It is also essential to connect thinking with dialogue that goes beyond mere words or conversation but involves thoughts that provide direction and create awareness, which is meta-cognitive, to support inclusion through contribution to learning when students think about what their thinking means (Barak & Lefstein, 2021).

Teachers can encourage dialogue as an effective pedagogy by avoiding only objective questions to assess or measure learning; instead, they should allow the students to think about the present and previous knowledge to gain new insight through reflective thinking (Alexander, 2020). In essence, to accept and contribute to conclude discussions, students should scrutinize them through critical thinking to bring up fresh ideas rather than accept them. An important aspect of dialogue teachers should pay attention to during class activities is objective questions, which only

sometimes make students see reasons to reflect and think critically about their responses (Jay et al., 2017; Tran, 2008). Instead, it makes them narrow down their thinking without being explorative and weighs various options while thinking. Teachers can further guide the students to practice dialogue through group study, where students can develop independent strategies and ideas that lead to more discoveries and expanded learning activities. Dialogic pedagogy can open students to diverse ways of thinking to develop strategies for critical thinking and, subsequently, make thinking more natural and easy to do (Barak & Lefstein, 2021). In addition, it will help the student gain more knowledge and understand different ways of engaging in critical thinking and creative dialogue.

According to Phillipson and Wegerif (2017), using dialogue as a teaching method takes time and requires much effort from teachers and students. It is designed to suit subject content and meet curricular goals. While it is only suitable for some subjects, it can help to solve puzzles. It is apt for teachers to understand when and how to use the method to harness the benefits far more than acquiring knowledge. It will ensure that the selected method fits specific course content and curricular goals to achieve set objectives for the required knowledge of the learning content. It is the path to thinking well and solving problems because the thinking process is sometimes generic. Wegerif (2013) opined that the thinking process is not specific to the individual because people have their own ways of thinking. However, they can think beyond academic learning to contribute to societal problems. Dialogic education is sustainable for everyone, especially the youths, to understand the diverse perspectives in education and life after school to make their dialogue seamless and achieve learning goals (Gorard, 2015).

Dialogue in education is as old as education since talking plays a significant role in teaching and learning. According to Abrami et al. (2015), the dialogue process has three categories:

question-asking, discussion, and debate/ Socratic dialogue. These three processes are characteristic of critical thinking that enhances the interaction between students and teachers.

2.10.2.1 Questioning

An aspect of teaching and learning that empowers students and enhances the quality of strategic instruction thinking toward the achievement of set goals is questioning. Questioning is one of the teaching strategies the teacher uses to prompt students' thinking around learning objectives to aid participation in classroom activities (Kyriakides et al.,2013; Kazemi & Hintz, 2015Haber, 20202). Teachers and students use questioning as the leading indicator of critical thinking to recall and engage in higher-order thinking (Nappi, 2017; Dekker,2020). Conversely, effective questioning requires structured planning by the teacher to achieve teaching and learning goals and encourage continuous discourse between students and the classroom teacher (Santoso & Yuanita, 2017). Questioning is an effective teaching tool purposefully designed for students and teachers to benefit from learning content (Browne & Keeley, 2012; Dekker,2020). Questioning can be on a higher or lower level. It is relevant to engaging students to acquire knowledge to foster engagement and critical thinking skills needed to process and address new situations while making meaning of the world around them. Teachers are encouraged to engage students in higher-level questioning to assist them in examining concepts using analysis, evaluation, and synthesis to gather and recall information other than the lower level, which does not leverage students to think maximally (Santoso & Yuanita, 2017; Haber,2020

Questioning is relevant to critical thinking as a generic competency to be developed by students to create student-centered learning environments where they engage in processes such as making inquiries about learning and developing problem-solving skills to think critically (Nappi,

2017; Haber, 2020). It discloses information to kick-start and activate critical thinking. Cuccio-Shirripa and Steiner (2000) state that "questioning is one of the thinking processing skills which is structurally embedded in the thinking operations of critical thinking, creative thinking, and problem-solving. It comprises the smaller micro-thinking skills of recall, comprehension, application analysis, synthesis, and evaluation. Questions guide knowledge construction in forming and changing cognitive networks or schemata" (Cuccio-Shirripa & Steiner, 2000. P.21).

Similarly, Facione, Facione, and Giancarlo (1996) emphasized the relevance and link between critical thinking and questioning: "Critical questioners, critical learners, are curious, challenge authority, internalize, practice scientific and critical thinking and questioning. Critical questioners are motivated and inclined to drive and involve themselves in meaningful critical thinking while making decisions and solving problems." (p. 71). Browne and Freeman (2000) and Febriansyah et al. (2023) also suggested questions to promote critical thinking: What words or phrases are used ambiguously? What variables can support the assumption in the foundation for reasoning? What evidence was provided for the claims in the reasoning? What is the quality of the proffered evidence? Are the analogical components of the argument persuasive? What important omitted information is omitted from the reasoning? What rival might explain the conclusion? What alternative inferences can reasonably be drawn from the evidence?" (p. 302).

Conversely, there are challenges in how questioning is used in the classrooms, as teachers often pose questions that do not allow students to recall information that can assist them in asking or responding to questions. Teachers engage in questions that are not guided by specific aims or trigger thinking but barely judge students' level of intention (Dekker, 2020). These challenges are due to teachers' need to understand what constitutes higher-order thinking questions. As such, they

only restrict themselves to asking questions at the lower-order thinking level. Another reason for teachers not asking higher-order thinking questions in class is the over-emphasis on completing the syllabus and the misconception that asking higher-order questions will require more time for students to think and articulate their answers. Also, teachers need to learn how to ask higher-order questions, whereas the educational system does not enable them to ask questions and develop their critical thinking skills (Dekker, 2020; Febriansyah et al., 2023). These challenges only enable the students to answer questions based on whatever information their teachers provide from a textbook, and even when they do, it is on low-level thinking. The need for more questioning skills in teachers often makes students hold back and feel they might ask or respond stupidly. They become apprehensive and afraid that their teacher could reprimand them for asking the 'wrong question.' Practical questions from students will give teachers insight into their thinking, fuel curiosity in the class, and develop peer learning. It will also enhance students' capacity to develop deep thinking and increase conceptual clarity.

2.10.2.2 Discussion

Discussion means using open-ended questions to sustain and achieve all the learning goals (Kersaint, 2015). It makes classroom activities meaningful, especially where teachers have strong discussion skills and an understanding of the subject matter before embarking on or igniting it to create a supportive classroom environment (Wilkinson et al., 2015). Since the development of critical thinking skills encourages students to think deductively and make logical interpretations to arrive at a logical conclusion, discussion methods are independent learning processes that make students take the responsibility to do the learning by themselves through the regular exchange of information, experiences, and opinions to gain a clearer understanding on issues under discussion

and resolve joint decision (Brookfield, 2012). It is one of the learning solutions that can be adopted to improve students' critical thinking skills and strengthen their mastery of what they learn. It is an important learning method to develop students' mastery skills, initiative, and creativity to make informed decisions from lessons received and information gained from others.

Through the collaborative nature of the discussion method of learning, students are encouraged to give various interpretations and perspectives that expose them to sharper focus beyond their assumptions (Brookfield, 2012). With the complexity of the classroom environment, the discussion is a social learning process that aids the development of critical thinking skills and assists students' response to learning based on their abilities, experience, and readiness for learning. The role of teachers or facilitators is apt to ensure that discussions are genuinely inclusive so that all voices are heard and guide against deviation from learning content caused by assumptions and other impediments. Teachers can develop students' critical thinking capacities by assisting them to break out of personal frameworks of interpretation and guiding them to identify different assumptions in the various perspectives of the group responses.

2.10.2.3 Socratic dialogue

Socratic dialogue is the use of conversation by a group leader or a teacher to know the truth and value of the opinions of individual group members. It is a conversation where an individual or a group of people answers questions through reflection and thought to agree or conclude on a specific topic (Febriansyah et al., 2023). It is a thriving dialogue that is brief rather than a personal experience. Students must be willing to answer questions asked by the teachers. Socratic dialogue involves directing students to think about the answers to basic questions during the discussion while exploring prior-held beliefs to build a more robust and precise view of their learning

experiences (Dekker, 2020). It is a planned questioning technique from the lower order of thinking (universal or questions that cause critical thinking and may not have a right or wrong answer) to the higher order of thinking (thought-provoking questions) that enables students to develop a positive change in the cognitive processes required to ask higher order thinking questions and not just be passive receivers of knowledge. The goal of Socratic dialogue is to assist students in identifying the truth needed to sharpen, reflect, and think about what to discuss before making input to learning (Cargas, 2017, Haber, 2020). It is not about arguing because of differences of opinion but about reaching a mutual agreement after a dialogue. The basic rules of Socratic dialogue include being able to express doubts, being attentive to others, refraining from monologues, asking no hypothetical questions, not referring to published works, and striving for consensus (Gose, 2009). These rules are relevant for developing critical thinking skills for a better learning experience.

2.11 **Authentic or Anchored Instruction**

Structuring subject matter to deviate from one method of instruction to another has become necessary due to increased content and loss of valuable information. The advent of technologies has led to advancement from traditional methods to more comprehensive, less cumbersome, and multidimensional learning that can support a better learning experience (Daniel-Gittens et al., 2014; Seel et al., 2017; Kurts, 2021). Modern structured learning methods provide multiple ways of teaching complex content compared to traditional methods, with limited access. Most educators and researchers concur that the core principle of education is to teach students ways of thinking independently and handling problems (Zydney et al., 2014; Kurts, 2021). To ensure that students think independently, providing the needed tools to support them as the anchor instruction, a technologically driven method, is apt. John Bransford led a group that developed anchor learning

in 1990 (Bransford & Stein, 1993; Bransford et al., 1990). Anchored learning is a constructivist approach that suggests that all learning activities should begin with a story, problems, or a case. It assumes that students learn more if the teacher makes learning active and engaging for the students to think and express themselves rather than how to solve problems by the teacher (Tobias & Duffy, 2009).

The method initially focused on developing interactive videodisc tools to encourage students and teachers to pose and solve complex and realistic problems. It is a technological-based learning method used by students to infuse information available to them with real-life experience during learning activities (Wang, 2016; Daniel-Gittens et al., 2014). Anchored instruction, when integrated with electronic learning with relevant multimedia activity, asks open-ended questions that can ignite debate and tie to a story that can make learners explore and solve problems (Wang, 2016). Anchor learning in education is an authentic standard knowledge base available for students to harness information of value that can support learning experiences. It entails presenting learning instructions to students using an authentic environment with issues that learners must resolve (D'souza & Vijaya Kumari, 2018). These issues or problems are the anchors that students use to connect learning content and skills. It includes valuable and rich information that students must regularly set and apply to life goals. The anchored learning approach is formally or informally functional through stories or videos. At the same time, the student decides which to use to solve real or complex problems and focuses more on the subject or learning content.

Anchor education helps students gather information to think and cope with problems rather than memorize learning content (Daniel-Gittens et al., 2014). In essence, anchor learning does not support memorizing information but identifies how to think and solve a problem while gaining students' attention. This approach stimulates the student's cognitive development to interpret and

give meaning to a problem the way an expert would (Wang, 2016; Kurts, 2021). It is situated learning, which forms a nexus between a story and a real-life situation. It helps the student use available context for knowledge application of a particular idea to understand a topic better. Anchored instruction in education will assist students in knowing the focus of a problem and change their perception to examine other perspectives that can help solve the problem when used to teach (Daniel-Gittens et al., 2014; Zydney et al., 2014). Invariably, students will expand their thinking scope to identify and exhaust all other variables that can help to solve problems. It provides opportunities for students to learn content while attempting to understand and solve authentic problems that arise within particular disciplines.

Kurts (2021) explained that anchored instruction guides students to relate previous knowledge to the actual situation and use their knowledge in the context provided. It involves a connecting story with a real-life or authentic situation. The role of the teacher is to guide the student in relating instructions to authentic learning, though anchored instruction is a student-centered approach. Teachers can guide the learning activities by providing stories, videos, hints, and information, as well as the problem students will aim to solve and assist them in achieving the learning goals. According to D'souza & Vijaya Kumari (2018) and Kurtis (2021), though anchor instruction is beneficial to developing the student's cognitive skills, some challenges adversely affect its gains. It includes teachers' roles that have remained the same from the traditional teaching method over the years. Most teachers are comfortable using linear methods, though students are more inclined to use modern technology supporting anchor education.

To encourage and support the students, teachers must be flexible, change the status quo of learning from the stereotype culture of being an expert to a guide, and engage in learning by accessing resources that enrich their topic (Zydney et al., 2014). Another challenge is that teachers

often need clarification about the use of anchor instruction, which cannot guide the students to solve problems effectively and ignite a change that supports students to be more active in classroom activities. In addition, teachers often need to learn when to guide the students against struggling with thinking and solving a problem. According to Kurtis (2021), teachers should understand and organize the anchored instruction stages for effective utilization and achievement of learning goals. The planning stage includes the introduction stage, the stage when the teachers engage the students and prepare for the problems to solve; the familiarization stage, when the teacher coordinates the students, prepares them for the task ahead, and hands over the problem-to-solve to them; and the expansion stage when the student research the problem, bring up ideas at the planning stage and decide how to solve the problem.

After the planning stage is the transfer stage, where they consider methods to solve similar problems; the last stage is sharing experience and how they have addressed the problem. Kurtis (2021) also highlighted four essential components of anchored instruction: (1) Meaningful context: learning context, such as video, should be concrete enough to solve problems since videos are visible and used as tools for problem-solving. (2) Provision of real scenarios or activities that can help students practice skills. (3) Video content should be provided to enable students to gain clear insight, understand the problem, develop ideas, and view the various dimensions of the problem. (4) Identification of the learning target by the student to remove obstacles and solve problems.

Anchored instruction is more beneficial for a small group of students as it enables active participation in solving the anchors without the teacher taking absolute control of the learning activities. However, it allows students to express their intellectual autonomy (Seel et al., 2017). Teachers can encourage every student to reflect on any question that may come up while finding a solution to problems and organize themselves to present the information they conclude correctly.

In addition, students can use them to connect related subject areas to reflect and integrate the knowledge of other learning activities. Teachers should restrict their activities to directing rather than controlling learning by supporting the student in developing skills and creating a learning plan for the utilization of anchor instruction and to serve its purpose (Seel et al., 2017). The student should take charge of the questioning process and strategize how to handle problems they have to solve. Examples of the methods used in Anchored instruction include applied problem-solving, case studies, simulations, playing games, and role-play. Although all these methods aim to develop the student's cognitive skills to engage in critical thinking, teachers should make selections by considering the learning context's suitability and the student's capability.

2.11.1 Applied Problem-solving

Challenges attached to traditional teaching instructions do not foster the development of critical thinking or a complete learning environment for learners to thrive and perform better. Creativity is an integral part of students' need to observe, classify processes, interpret, analyze, and make decisions on information. Creativity and the ability to think critically are effective problem-solving methods that are important in the school curriculum. Teachers should assist students in focusing on thinking as a vital element for knowledge acquisition in real-life activities. It includes recognizing and solving problems through systematically applying the right skills and effective teaching content when combined with technology (Chauhan, 2017; Belland et al., 2017; Doyle, 2021; Bapoğlu-Dümenci et al., 2021). Problem-solving is a continuous process that helps students use prior knowledge to discover new things, find solutions to challenges by making predictions, and test available options to arrive at a satisfactory conclusion. Problem-solving enables students to learn and gain new knowledge while working on problems. When students think about problems

to solve, they brainstorm ideas from previous knowledge and new ones to observe, understand, analyze, and interpret for decision-making of a specific concept (Doyle, 2021).

Problem-solving skill is the ability to handle and solve difficult and complex challenges. Mandal (2019) defined Problem-Solving as the ability to mentally understand, analyze, and find a solution to a problem (p.12234). It is a vital tool used in everyday life to handle unexpected situations and find solutions. There are valuable traits needed globally to solve a problem in every facet of life, to address the situation, and to make decisions. These traits include the ability of the student to listen actively and analyze the situation, be creative, have good communication skills that can spur good decision-making skills, and have skills in research and productive team building (Mandal, 2019).

In education, learners can develop problem-solving skills at different dimensions and proportions, though it is germane to use them creatively to make decisions and resolve conflicts or address setbacks (Belland et al., 2017; Doyle, 2021; Mandal, 2019). Problem-solving is an essential skill learners need to confront complex challenges in their education or personal life. It makes individuals happier, more confident, and more independent to have achieved a feat, especially when they make choices in a challenging situation. Problem-solving skills help learners determine the source of a problem to find an effective solution (Doyle, 2021). It is a vital educational goal that helps students find solutions to challenges without fear and increase their self-worth and confidence.

According to Maheshwari (2017), the objectives of the problem-solving method include creating awareness for students to understand the strategies, systematic approach, and diversities of solving problems. In addition, problem-solving objectives include improving the students' abilities to select and implement the appropriate solution strategies to get the correct answers to

problems. Students should show reasonable perseverance to gather relevant information when solving problems to arrive at a reasonable conclusion.

Educators and researchers have proven that learners exhibit critical thinking skills when confronted with challenges to handle and solve them with vigor and determination (Abrami et al., 2015; Maheshwari, 2017). Building an education system where learners' early training is to solve problems is apt to deal with more challenges as they mature. Hence, introducing problem-solving skills in the classroom will help learners identify problems to solve and think critically about possible solutions (Wilberding, 2019). Furthermore, learners can test the appropriate solutions before analyzing the result needed to guide decision-making. Where the teacher is experienced and can direct learners to solve problems, learners often broaden their understanding and engage in confidence-building to see problems as opportunities to grow. (Mandal, 2019). In the same light, schools that understand the importance of problem-solving skills to the students' development include it in most class activities to develop the intellectual capability of the learner to become active and relevant in society through the decisions they make (Chauhan, 2017). Learners who solve problems constantly build their confidence and develop skills that enable them to think critically and improve their performance beyond the classroom experience.

For most learners, problem-solving is a skill they develop as a personal trait. It helps them discern what problems are, how to differentiate those that need to be solved, and how to solve them. Problem-solving skills aid students in developing critical thinking skills when they understand the causes and effects of the situation. It makes learners more resilient, develops courage, takes risks, and sees challenges or situations from different perspectives. Learners who practice problem-solving are often patient and are good time managers who grow to become confident in whatever they decide to do (Chauhan, 2017). However, the problems students

encounter as they progress in life change or become more complex. This is where problem-solving skills thrive, as they teach students to be independent and more creative, preparing them for the future and reducing anxiety about the unknown. More importantly, problem-solving skills make students, educators, and parents feel more prepared and adaptable for the challenges that lie ahead.

The new challenges globally have led to the demand for employees who can add value to organizational growth by being creative and thinking critically to solve problems (Mandal, 2019). In view, it is apt for learners to develop problem-solving skills that can motivate them to be innovative and build a high level of curiosity for a lifelong experience (Maheshwari, 2017; Doyle, 2021; Bapoğlu-Dümenci et al., 2021). The new trend in most organizations is team building of employees by employers that want organizational excellence. Teachers should encourage group problem-solving to equip students for future career development and excellence. Learners should be encouraged to build their capacity by acquiring more technically inclined knowledge while seeking opportunities to solve problems in their study area and practicing role-play as a tool for skill development (Gómez-Pérez, 2010). In addition, the learner should observe others, tap into their experiences by asking questions, and observe the technique used successfully.

2.11.2 Case Study

A case study is a learning approach used to research, analyze, and check the patterns of an occurrence or behaviour (Erickson, 2018; Gillham, 2000; Rowley, 2002; McCombes, 2019). It is an in-depth study of a person, group, or event to acquire facts needed for decision-making. It does not support the generalisation of the outcome of a large population, though it is specific and subjective, which is necessary to avoid a misguiding conclusion (Erickson, 2018). Many disciplines like education, psychology, social work, medicine, and political sciences use the case

study learning approach as a preference that can help to study the trend of events and activities that can support decision-making (Erickson, 2018). Case studies scrutinise a portion of an event or activity using observations and interviews to acquire details relevant to the discussion and give instructions (McCombes, 2019). It provides detailed information on the learning context.

A case study is relevant in education to gather facts and investigate difficult things that are not easy to replicate but useful to collect vital information of value (McCombes, 2019; Erickson, 2018). It helps students understand how to probe things, explore unique phenomena, and describe different factors as they interact in real-world contexts (McCombes, 2019). Researchers consider case studies valuable educational data sources based on their complex and diverse nature. Discovery from case studies can ignite fresh ideas and discoveries that might be relevant for exploration. However, a case study cannot help detect the cause and effect of an occurrence since it does not support the generalisation of the outcome (Wilson, 1996). It can be misleading and make the formulation of biased decisions easy. In addition, adequate time for students to think thoroughly while using the method often needs to be adequate, leading to sub-standard information analysis. When the information provided as a case study is inadequate or the case is old, it adversely affects the analysis of solutions that may not be relevant to current issues (Erickson, 2018; Kendra, 2021). There is a concern with the case study approach for validating subject areas where an accurate answer to questions is required. However, there is a need to balance the case study approach with other approaches so that students can understand the main issues and enable better application (McCombes, 2019; Wilson, 1996).

The case study approach is relevant in education to develop learners' critical thinking skills and help teachers identify ways of balancing classroom techniques to achieve learning outcomes (Kendra, 2021). Teachers use case studies approaches to engage learners using open-ended

questions that can help them engage in critical thinking. In addition, teachers use the case study method to equip the learner when the learning context requires decision-making or solving a problem. Students then analyze the case the teacher gave to solve the problem and make decisions not focused on data or analysis. A case study approach should back up learning content for it to serve a purpose and only be suitable for use with adequate preparations, though it requires little preparation before introducing it to the learner (Kendra, 2021; Rowley, 2002). It can stimulate students to find solutions to problems, especially in a group study where students share ideas to bring up solutions and conclusions on new strategies.

Students should be able to understand and recall information using the case study method. This method helps develop skills necessary for effective learning, helps students see learning in a real-world context, and helps them apply their knowledge to develop new ideas (Rowley, 2002). Students should also learn to scrutinize and understand information by breaking it down to form new ideas.

During group discussions and activities, analyzing and formulating new ideas help students attach reasons to whatever decision they take on any information (Herreid, 2006; Erickson, 2018). When the students understand how to use case studies as a learning technique, they will improve their evaluation skills and performance for better learning outcomes. The role of the teacher as a guide is to ensure that the proper use of the case study approach is appropriate. It will help to understand how receptive the student can be toward the method in preparation for learning (Lendrum & Tolan, 1995).

The preparation level involves asking students to think about relevant questions to the case and then setting rules for proper guidance by listening to the discussion and making contributions and comments to direct the case toward a solution (Gillham, 2000; Kendra, 2021). However, the

teacher must avoid interjecting or taking over the process to allow the student's full engagement. Additionally, the teacher should observe and note the student's progress in line with the content by carefully structuring necessary comments using the computer or the board before the discussion or evaluation process. It is apt for teachers to grade participation accurately with the contribution of each student while identifying those who needed more guidance and support before the exercise (Kendra, 2021; McCombes, 2019). Preparations are essential to the case study approach that students and teachers need. The case study method allows the teacher to open fresh ideas on old problems and test solutions with new ones. The effectiveness of this approach motivates and engages students to collaborate while using this approach of learning (McCombes, 2019).

In conclusion, case studies are apt for students to focus on a specific unit of study to employ their cognitive strength to develop critical thinking skills. Case studies are also a research appraoch in education that gives a broad view and enriches the content for a better understanding to encourage critical thinking (Kendra, 2021). It can assist the teacher in setting clear boundaries around the learning context to avert deviation and loss of focus and should add value to previous learning instructions.

2.11.3 **Simulations**

Introducing learning content to the student can be daunting when the selection of pedagogy is faulty, and the learning content needs to be more attractive (Braghirolli et al., 2016; Becker & Hermosura, 2019 & Westbrook et al., 2013). Teachers need various approaches to deliver learning contexts that consider the subject, curriculum, learner education level, and other environmental factors. Getting the student involved in the learning activities to improve participation and performance is apt. It can be rewarding to both teachers and students when the context is for better

understanding. Persuad (2019) noted that using effective pedagogy creates a link in the classroom that enables the teacher to deliver learning content clearly and considerably to assist the student in developing the needed skills and attitude. Hence, teaching learners how to apply prior knowledge to real-life action can stimulate them to practice any action.

Simulations have been established to be an effective tool for improving learning and encouraging students to understand actions while accepting errors during tests or experiments (Becker & Hermosura, 2019). Simulating in education means arousing learners' interest using imitation while teaching. It is a method that is becoming more prominent in the classroom environment as a skill used by teachers and learners to display some roles without any rehearsal but happens spontaneously. In the simulation teaching approach, teachers' training includes teaching and guiding the students to achieve learning goals. A simulation-based approach is a teacher-centered approach that places the teacher at the center of learning to ignite the learner in the learning process (Cox, 2014). It entails using educational tools to make teaching and learning experiences more impactful and rewarding (Becker & Hermosura, 2019). It supports the constructivist learning and teaching strategy as the student engages in the thinking process after stimulation to learn and engage them in interaction by the teachers. The simulation-based approach has gained more recognition with technological advancements and has made learning more innovative. In addition, the development of new technologies has helped to integrate simulation methods in learning for guidance and ignited learning to develop cognitive skills to achieve learning outcomes.

There has been increasing development of Simulation tools due to the evolving progress in computer science that has expanded the use of computers for teaching and training programs (Leathrum Jr et al., 2018). The effect is the sustained use of simulation for teachers to guide

students in developing their critical thinking skills to improve their performance and attain set goals. The development of technology has made simulation tools gain prominence in education and become indispensable in the end. Simulation involves taking on a role to solve a problem and keep students in a situation where they can be active and engage in learning (Lawson & Leemis, 2017). It is preferred over the traditional method because it helps students understand concepts using experience that increases long-term retention and memory of material.

Simulation exercises are usually in conjunction with other learning methods, such as problem-based, simulated games, and role-play, to promote critical and evaluative thinking that aids more interaction between teacher and student (Cox, 2014). Students are encouraged to scrutinize the information and tools the teacher provides where learning content is ambiguous or open-ended (Lawson & Leemis, 2017; Shapira-Lishchinsky, 2015). It helps students understand the core content of the learning concept and develop practices that aid them in experimenting and gathering facts. Simulation engages the student in receiving direct instructions that prepare them to understand the learning context better. In addition, they reinforce skill development in a student that helps them understand how to manage social and environmental activities (Lateef, 2010 & Fletcher, 2019). Simulation application in education and training programs helps increase team performance. It minimizes avoidable errors, especially in some areas of learning, like aviation as a study where training in the affective domain increases the performance of pilots and reduces human error or accidents. Simulation tools are long-term and cost-effective tools to demonstrate and transform abstract concepts or topics into interactive content for students to understand (Wang, 2014). Students can become familiar with and interact with simulation tools to improve and reinforce their theoretical knowledge for better performance.

According to Shapira-Lishchinsky (2015) and Braghirolli et al. (2016), the effectiveness of simulations depends on their accuracy and the task to learn. They can be more effective when there are multimedia and components for prompt feedback to help the student stay connected, understand the content, and make necessary adjustments during the simulation exercise. Simulation can make learning authentic by accurately illustrating real-life experiences or situations, especially during a rehearsal of an event (Shapira-Lishchinsky, 2015). It helps to remove boredom that may arise when there is repetition in learning content by making learning activities interesting, captivating, and result-oriented. With the simulation method, learners are prone to developing diverse skills and ideas generated from rehearsals that can help to personalize learning content for better performance (Mazur, 2016). It enables interaction among learners to develop skills and acquire experiences, especially during STEM programs, for future careers (Liu Qiang, 2017; Leech, 2019)

However, teachers should take precautions while using stimulation in learning, as it requires adequate time to stimulate the student and is very complex to assess student-learning experiences. In addition, it is easy for teachers to be too absorbed and deviate from the learning context while using the stimulation method, though experiences shared are more beneficial to other teaching techniques (Fletcher, 2019; Shapira-Lishchinsky, 2015). Teachers should ensure that the student realizes that the purpose of stimulation is to achieve educational goals to not only engage in any competition and understand that scope and content are dynamic, though the disparities in principle using stimulation are significant to effective pedagogy (Fletcher, 2015). However, teachers should make students understand the stimulation procedure from the onset to avoid confusion or uncertainties. This understanding is critical to feeling prepared and confident. In addition, the teachers should know what to expect from the process and be ready for questions that

arise during learning activities while keeping a close tap to ensure that the students understand and gain from the process.

2.11.4 **Playing games**

Games in education are tools for giving instructions with some rules to observe. They are a student-centered educational tool for developing creativity and thinking in the learner. Though it is one of the oldest teaching methods, gaming is an unconventional method that teaches the user to manage risk, persistence, and critical thinking (Warren, 2021; Reid, 2018; Altmann et al., 2018 & Adams, 2017). Educational games generally are not just for fun but to share knowledge and develop skills that can lead to engagement in a higher order of thinking (Warren, 2021 & Walsh, 2023). Though a game is a form of play that takes cognizance of set rules, many authors prove that educational games are not to play but to engage and motivate the students to acquire knowledge (Galant, 1987; Okoń, 2007). They noted the distinguishing features, including the game's competitive nature, scoring method, and explicit rules, which play does not necessarily employ. Games in education support subjects with abstract content and strategies related to playing the game to help learners retain information and apply it to solve problems (Warren, 2021; Adams, 2017). A game-based learning approach often generates negativity due to some of its tools that may lead to addiction if not adequately managed by the teacher. However, there is a strong collaboration between the teacher and the students when the game-based learning method is introduced into learning. This collaboration creates a bond that enables in-depth exposition into the learning context, making educators feel connected and part of a team (Reng & Schoenau-Fog, 2016).

Educational games are tools for knowledge and skills acquisition while using play to observe rules and scoring of student performance. They are activities and interactions between participants organized to attain goals using set rules related to the subject matter to introduce competition (Gaweł, 2016; Walsh, 2023). Educational games are apt to develop students' competence levels and reinforce their emotional and motivational strength to think critically. It can build their work as a team and enable good communication, analytical and time management skills (Reng & Schoenau-Fog, 2016). They are also effective for students to persist in taking up tasks and overcome challenges that can stir them to achieve success and be motivated to learn new things to develop their competency and critical thinking skills. This significant component enhances their creativity and problem-solving skills (Reng & Schoenau-Fog, 2016; Walsh, 2023). Games aptly prepare learners for a different and fast-changing environment and improve traditional teaching methods to achieve learning goals. There is a need to employ soft skills relevant to learning due to technological development, such as communication, teamwork, and time management. Using game-based to teach soft skills is more engaging and result-oriented for learners to develop interpersonal skills in empathy, listening, decision-making, and critical thinking, as it is relevant to the achievement of teaching and learning goals in the school curriculum (Tapia-Nunez, 2021 & Gaweł, 2016).

Teachers can use games to identify the capability of individual students in various ways by understanding their traits, level of perseverance, and competence skills (Tapia-Nunez, 2021). Additionally, teachers can introduce curriculum content by presenting related issues using games to influence the learning and interest of the students. Teachers can help students learn independently and effectively by including games related to learning content to stimulate learning and solve problems. For an effective game-based learning method, teachers should select the game

suitable for the content and set the rules appropriately (Reng & Schoenau-Fog, 2016). It may require expatiating the rules guiding the games to ensure clear understanding and application to learning by the students.

Teachers should assess the students and give feedback to see concrete results for efforts during games to discourage loss of interest and remove the thought that games do not add value to their learning experiences. Teachers should discuss, analyze, and revise the student's activities before, during, or after a game gain from a game-based learning method. It is a source of motivation to help the student that learning can take place while having fun (Warren, 2021 & Reid, 2018).

Games are vital and complementary in learning to encourage, engage, and motivate students to learn while playing (Tapia-Nunez, 2021 & Adams, 2017). Students learn more and engage in healthy competition with a suitable learning tool, while teaching becomes less stressful and participatory. However, teachers should select and incorporate games according to students' ages and content to avert distractions and remove every impediment to learning. In addition, teachers should also learn how to teach with games to motivate students and encourage inclusiveness to get the entire student involved since games are student-centered (Reng & Schoenau-Fog, 2016). While students may be motivated to learn, wrong fitting into specific roles or positioning based on the learner's capability could cause distraction or loss of motivation. Teachers should be careful not to force roles on students but should improvise, differentiate, adjust, and assign less attractive roles based on their capabilities. It will remove the challenge of the student losing interest in the games. While setting up the goals and rules of the games, students can be involved and engaged to avoid lengthy explanations the teacher would make before accomplishing the task and foster students to be creative (Reid, 2018 & Walsh, 2023).

Students can reap long-term benefits from game-based learning, developing cognitive skills, strategic thinking, and digital literacy. Students can enhance their cognitive skills by keeping a tab on the game's rules and observing vital information and actions. They can use their strategic thinking skills to quickly predict, solve problems, and make decisions based on the content of the games. Game-based learning, especially with technologically inclined games, can advance students' digital literacy, fostering creativity and analytical thinking (Altmann et al., 2018 & Adams, 2017). In addition, game-based learning can develop other skills, such as physical, teamwork, knowledge, and communication skills, which students can retain for a long time. With creativity, students can imagine and develop new ideas to infuse into the games during construction, while the teacher can create a missing link for the students to fill in. Students engage in critical thinking that enables decision-making when carefully selecting games with due consideration. They think and decide what to do to reach their goal while playing a specific role. Additionally, the game method encourages team and group work toward carrying out a task effectively. However, teachers should guide and discourage the game's monopoly by any group member in order to create balanced learning (Adams, 2017).

Although game-based learning methods impact students' learning activities at all levels of education, they can adversely affect their performances when the designs are outside the student level or aligned with the learning goals. Games can distract and lead to time-wasting in the school schedule when poorly organized (Kapp, 2012). In addition, when teachers need to become more familiar with technological tools, they do not benefit from using the method since most games are technologically inclined. It will create a gap between teaching and learning and could lead to deviation from learning goals. Games can lead to student addiction when not in moderation, causing physical or psychological challenges that impede learning (Tapia-Nunez, 2021 & Adams,

2017). Moderation and adequate teacher guidance when using games during learning are crucial to avoid students becoming physically and mentally stressed. Furthermore, teachers should emphasize censoring selected games to guide against information that can negatively affect students.

2.11.5 Role Play

Role-play is a skillful way of working through a situation or a problem by taking up a practicing role in what to do or say. It motivates and leaves a lasting memory on both the teacher and the learner (Doğantan, 2020). Role-play in education is an instructional technique that allows students to explore skillful situations or real scenarios to develop experience and strategies to acquire knowledge (Hidayati & Pardjono, 2018; Westrup & Planader, 2013; Bawa, 2020). Role-play is very important in education because it has been observed to improve the level of students' engagement in learning and helps lighten up class activities with the active participation of students. In addition, role-play helps students identify and understand different perspectives and view things in other ways. Therefore, it is apt for teachers to design the method to cater to all students' needs and prepare them to benefit more from the learning activities (Hidayati & Pardjono, 2018; Moreno-Guerrero et al., 2021).

Role-play is not a teaching method used alone but to complement others for a better learning experience (Erturk, 2015; Bawa, 2020; Harbour & Connick, 2005). In personal situations and experiences, the role-play method provides beneficial learning opportunities. Role-play helps learners connect fast to learning content when teachers use it to give instruction. It develops the capability of learners to contribute meaningfully during class activities while teachers study their inherent behavior to assess them and make necessary adjustments where needed (Erturk, 2015).

Teachers can also use the role-play method to know learners' level of understanding and identify how they can apply knowledge to learning. Role-play is often an unstructured, short, and spontaneous presentation the teacher uses to explain learning content (Crow & Nelson, 2015). Unlike the simulation and game methods, which are structured activities and last a long time, teachers should consider the topic before adopting the role-play method.

This method is more learner-centered than other approaches. However, the teachers' role in guiding learning activities is apt to structure how learners can achieve instructional learning goals and experiences (Crow & Nelson, 2015). Students apply learning content in a role and decide on the outcome when the role-play method is structured. Though it is suitable for group work to help students work as a team with their peers to complete a task in their specific role, they can maintain personal roles to achieve learning goals. Role-play enables students to apply learning content in a real-world context and helps them make a personal decision to express themselves without limitations on their scope of knowledge (Sarkissian McPhilomy, 2014). In addition, students can use role-play to engage in critical thinking and apply learning content more deeply (Sarkissian McPhilomy, 2014).

Another aspect of role-playing is the interactions between the learners and the instructor that often ignite discussions, debates, or even casual conversations during the session. This level of interaction helps develop a sense of community learning between the learners in the session. It provides opportunities to practice communicating in various social contexts of role-playing that can aid teachers and students in accessing prompt feedback on the level of understanding of learning content. In addition, students can apply the method in a real-world context to remember their roles during class activities and understand the learning content better (Sarkissian

McPhilomy, 2014). Both students and teachers can use this method to create scenarios when the learning context is not readily available or too abstract.

There are diverse ways of using the role-play method to benefit from it and enhance educational instruction. Moreno-Guerrero et al. (2021) explained that the teachers should include and explain the roles students must play distinctively with detailed information to complete their tasks and ensure they understand what to do to connect their role to learning content and make learning decisions. Teachers should allow students to complete their tasks within a specific timeline by asking them to work individually or as a group to exchange ideas (Moreno-Guerrero et al., 2021). When students are in groups to complete a task using role-play, the teachers should observe their conversations and deliberation. It will help the teacher assess how they arrived at their conclusions and justify their decisions (Hidayati & Pardjono, 2018; Crow & Nelson, 2015).

When used effectively, role-play is a powerful tool for achieving learning goals. It enhances student engagement and participation and provides a robust method for individual assessment. This is particularly beneficial during group work, where some students may require additional support. The teacher's role in assessing individual performance is pivotal, and role-play scenarios, such as during exams, can stimulate all students to participate in their learning actively.

Technology is vital in role-playing to be effective and less cumbersome, though the teacher may refrain from using it. It can strengthen learning when devices such as video cameras, smart phones, and others are employed to record events and activities for future use, reference purposes, and analysis (Moreno-Guerrero et al., 2021; Erturk, 2015). Students can create a role from technological devices recorded to participate in discussions beyond classroom activities when face-to-face learning may not be suitable. Another advantage of technology in role-playing is the inclusion of more external and experienced participants using the Internet to communicate

(Moreno-Guerrero et al., 2021). It encourages the convergence of all learners when the possibility of face-to-face learning may not be available. During the peak of the COVID-19 pandemic, role-play was prominent with online educational activities, which motivated and engaged the students in concrete learning activities using technical equipment or other hands-on. It helped the students understand what to do and how with minimal teacher intervention (Moreno-Guerrero et al., 2021). With role-play instruction, teachers guide learners to engage in critical thinking to enable them to take up roles that lead to decision-making, thereby making learners take charge of their learning process.

2.12 **Mentoring**

One of the core responsibilities of the teacher is to guide and develop the student toward learning and achieving learning goals. This responsibility is underscored by the importance of mentoring in student development. The success of this collaboration depends on how the teachers can mentor the students and how the students present themselves for mentoring. Mentoring is a relationship between the teacher and students aimed at developing the students' potential. It is a process of guiding and nurturing students to develop a cordial relationship and promote learning by the teacher. It involves creating awareness by both the teacher and the student for individual development based on trust and confidentiality. This emphasis on mentoring in student development should make educators feel the weight of their responsibility and the commitment required for their student's growth (Pini, 2009).

Mentoring focuses on relationships that allow the teacher to build a special relationship with the students to develop their potential. It can be a long-term and formal relationship when the mentee and the mentor are committed to knowing each other, sharing their experience, and

encouraging one another toward achieving set goals (McKinley, 2021; Etzkorn & Braddock, 2020). On the other hand, it can be a piece of one-step mentoring advice, selecting an experienced mentor who is a specialist in a specific area to assist with a need. In addition, mentoring can be informal and not organized but purposeful and aimed at achieving set goals.

Mentoring in education is pairing students with a teacher or older students who could be volunteers to act as role models. It is more than academic skills; it aims to develop attributes such as resilience and confidence building (Laverick, 2016). It has become more valuable in education when selecting mentees and mentors who guide students with low performance or encourage inclusiveness. Mentoring is significant in education in providing instructions, guidance, personal support, and feedback (Etzkorn & Braddock, 2020; Pini, 2009). Developing a purposeful and thoughtful mentoring program is crucial for the mentor and mentee to benefit. It will prevent the wrong selection or pairing of mentee and mentor due to a lack of trust and strong ties that can be detrimental or negatively impacted (Laverick, 2016). It is also germane to place a mentoring program with a clear goal that encourages regular interaction and evaluation to make it effective and result-orientated.

An important aspect of mentoring is training teachers to be good mentors and guide students since mentoring shapes a new teacher's values, beliefs, and teaching skills. Elena and Cohen (2021) emphasized mandatory training of mentors, mainly education sector teachers, who can positively impact students and benefit from the mentoring program either formally or informally. The teachers' training program should include a mentoring program that can influence their behavior and the choices they can make later in their careers (Elena & Cohen, 2021). It will give them a good and strong start in their career, while the experienced teachers who serve as mentees will be recognized and supported. During mentoring, experienced teachers will be able to

learn innovative practices from new teachers who are more exposed to new methods and ideas due to the dynamic technological development (McKinley, 2021; Pini, 2009).

With the experience gathered by the newly mentored teachers, mentoring students becomes less cumbersome by guiding them to achieve instructional outcomes seamlessly (Elena & Cohen, 2021). Hence, the new teachers should prepare for classroom challenges and give quality instructions that can affect the student's performance. In addition, teachers should improve their learning skills to make them more resilient and increase their communication skills for enhanced self-confidence.

Mentoring is a tool the teacher needs to support the various teaching methods to allow the student to focus and attain the level of the set learning outcome (Pini, 2009). The teacher's role as an effective mentoring program driver requires comprehensive training for the student to harness and sustain the benefits (Weston & Clay, 2018; Smith, 2015; Laverick, 2016). The program should include measures to guide against mentor dropout that can adversely affect the mentees' performance. Teachers can recognize the mentoring process by studying active listening, satisfaction, reflection, and classroom management (Smith, 2015). In addition, the teachers need to be acquainted with qualities that can help and nurture the students to develop good communication and deep listening skills that can influence mutual respect, in addition to an honest, empathetic, and collaborative relationship in an environment suitable for mentorship.

Abrami et al. (2015) explained that Mentoring is a one-on-one teaching and learning process that supports critical thinking aimed at detecting errors in information. It buttresses the definition that mentoring entails an experienced person, such as the teacher (mentor), interacting with someone less knowledgeable, the student (mentee). Such interaction aims to guide and show the path and acquisition of knowledge for better performance. Paul & Elder (2006) noted that

thinking is an aspect of human life prone to distortion when not critically done. Therefore, students need a clear understanding of thinking to analyze issues without bias. In addition, Ennis's (1989) definition of critical thinking as a thoughtful and reasonable process that aims to make sensible decisions about what to believe or what to do indicate that mentoring students to think is apt. It is a good decision-making process and developing critical thinking skills to achieve the instructional outcome. Subcategories of mentoring that can develop Critical thinking skills developed by Abrami et al. (2015) are One-on-one teacher-student interaction and Peer-led dyads.

2.12.1 **One-on-one teacher-student interaction**

Classroom management is always an assiduous task for the teacher when there is a low level of interaction with the student. Teachers make the time spent by the students in the classroom more productive when they replace some behaviors with methods that can aid the establishment, maintenance, and restoration of relationships with the students for enhanced academic performance. Interpersonal interaction between the teacher and student is apt in school and classroom settings (Cadima et al., 2016). It is not a relationship between people of the same age or level; hence, the teacher as an adult has the responsibility to coopt the student into an interpersonal relationship to develop their academic, social, affective, and motor skills (Pennings et al., 2018; Cadima et al., 2016; Bernstein-Yamashiro & Noam, 2013). One-on-one interaction between the teacher and the students is when they adjust their behavior to establish a pattern that aids the achievement of educational goals. A relationship results in holistic social engagement that culminates academic and psychological wellness (Cadima et al., 2016; Parker, 2019). One-on-one interaction can make students resilient and build their capacity while interacting with the teacher to develop attitudes and beliefs on how they behave and comport themselves.

One-on-one interaction can have various dimensions based on the dynamic nature of human relations. The teacher may decide to relate with students who are aware and understand the teachers' expectations of them and those they need to teach what to do in conformity with the school and classroom setting (Bernstein-Yamashiro & Noam, 2013). The teacher can interact with the student from their weak point or strength to make adjustments and ensure classroom management. One-on-one interaction between teacher and student allows closeness, distance, and upper and lower relationships.

The teacher and student bond when they get close but adjust and create distance to be aware that they have different personalities (Parker, 2019). The teacher is to control and influence the students in the lower part of the relationship so that they can benefit from the teacher, who is a leader. With the glaring ratio of a teacher to a specific number of students and getting them to focus on the lesson without losing valuable time, class management may break the barrier through the interaction of the teachers with the students on a one-on-one basis. Lack of a good teacher-student relationship can lead to academic and behavioral challenges that could thwart the attainment of learning objectives (Parker, 2019; Baker, 2006). Therefore, it becomes imperative for teachers to build a relationship with students to create an effective classroom environment to engage and demonstrate positive academic behavior.

There will be no interaction between the teacher and students when they do not foster any relationship that can impart learning because it discourages the students from expressing themselves or engaging in meaningful discussions supporting learning. Many students do not relate with the teacher when they do not encourage interactions capable of eliciting questions or contributing to learning, hence the low performance of such students. However, engaging in one-on-one classroom relationships will enable students to gain confidence to communicate, take

charge of their studies, and access personal attention, making them succeed (Parker, 2019). It influences the student to be independent and regular in school and classroom activities. Personal interaction between teacher and student enables students to build self-esteem and develop skills like critical thinking to aid productivity (Denmark & Podsen, 2016). It helps students develop academic self-concept, stimulates them to enjoy learning, encourages them to strive toward high achievement standards, and increases intellectual and professional development.

A one-on-one relationship empowers teachers to fully know and track their students' progress while gauging their successes and struggles (Hill-Jackson et al., 2019). In addition, it enables students to practice interpersonal communication and interact with other students simultaneously while sharing ideas based on preferences (Denmark & Podsen, 2016), a vital component of engaging in critical thinking to enhance performance and lasting knowledge.

To maintain one-on-one interaction with the students, the teacher should not focus on one aspect of students' lives, such as education alone, and ignore their emotional well-being (Hill-Jackson et al., 2019; Denmark & Podsen, 2016). It is apt for teachers to take cognizance of how students interact positively or negatively during classroom activities and regular checks to identify and address their needs and focus more on positive behaviors than disruptive ones that are often well-pronounced (Stronge, 2018; Gasser et al., 2018). The teacher should avoid conflicts capable of straining or weakening established relationships with the student but enhance an interpersonal relationship that supports classroom management. They should hold up students who have made mistakes during learning to build trust and emphasize solving problems to acknowledge their contributions and build their trust and confidence (Meinhard et al., 2018 & Stronge, 2018). Teachers should maintain close and interpersonal interaction by strengthening the line of

communication with the students to attain positive results in the cognitive, affective, and social domains of the students.

2.12.2 **Peer-led dyads**

There is a significant opportunity when students learn from other students since their level of knowledge needs to be at par. Students can use games to give instruction and engage in game playing together in a formal setting (Warren, 2021). There are evolving changes in the school curriculum and learning content that have continued to elicit concerns about instructional methods that can aid learning outcomes. One such change is the mentoring method, which significantly improves the teacher's capability to engage the students in learning and get them to learn from other students for an effective and result-oriented learning experience (Andrews et al., 2019). Peer learning comprises people other than teachers or experts with some expertise who are at par with their fellow learners. The students are not superior in position or responsibility to learn from others (Saez et al., 2018; Andrews et al., 2019; Kumpulainen & Kaartinen, 2003). Peer learning can be a formal or informal process of students acquiring and offering emotional support to each other to achieve a set educational outcome. The teacher can be a facilitator or give the peer direction on learning from peer teaching. It does not imply that the teacher can usurp the roles of the students and serve as a guide while the students engage in the learning process.

Peer dyad is beyond a two–way learning activity; it involves knowledge sharing, ideas, and experiences between students (Harris & Meltzer, 2015). It is an independent mode of sharing learning experiences, which has helped students learn and participate in activities with their peers. A peer dyad comprises all activities coordinated by the teacher as the facilitator, allowing students to work together and solve problems that lead to an outcome (Harris & Meltzer, 2015). It happens

through mutual engagement supported by the group's understanding of how to solve a problem. It is collaborative learning where students work jointly on a task while attaching meaning that may arouse their thinking to support what they already know (Cillessen et al., 2011; Boud, 1988; Harris & Meltzer, 2015). It enables students to develop skills to organize and plan learning activities while working mutually, giving and receiving feedback, and evaluating their learning experiences. According to Boud (1988), peer dyad or peer group learning is multi-faceted. It includes private study groups, counseling, peer-assessment schemes, senior students tutoring junior students, the creation of learning cells for same-year students, and forming a partnership to assist each other with course content. It also includes collaborative work projects in different-sized groups, workplace mentoring, and community activities.

It is apt for teachers to guide the students in collaborating during learning to avoid losing focus, getting confused, and not achieving the reason for learning together. In contrast, effective learners among students may benefit sparingly when the method needs to be adequately planned (Ninio, 2016). Effective organization of peer dyads is capable of helping the students learn effectively from each other and create an opportunity to engage in more practices in addition to taking responsibility for their learning, which is not tenable in traditional teaching and learning methods (Smith, 2012; Andrews et al., 2019; Kumpulainen & Kaartinen, 2003). There is an increasing awareness of the importance of peer dyad as many countries employ it to anchor diverse contexts and subjects, though only sometimes used in an organized way, which makes the benefit of the method unrealistic to enhance the quality of education.

Peer dyads promote metacognitive strategy and develop skills that enable students to learn with each other (Ninio, 2016). The teachers can make learning less rigorous for the students to prepare for peer learning by assessing using formal and informal methods that can help them

understand their students' self-perception to encourage contribution to class activities (Harris & Meltzer, 2015; Andrews et al., 2019). They can resolve, justify, and respond to questions while seeking new information or alternative ideas using the peer-dyad approach to learning or teaching. In addition, the metacognitive strategy creates a platform for students to identify and understand the method that will work for them and aid their participation during peer learning and how to apply it for the benefit of the group members (Harris & Meltzer, 2015).

Peer dyads support students in engaging in social interaction and developing problem-solving strategies relevant to easy participation in the learning progress (Boud, 2001). Through peer learning, students collaborate and learn. However, the interaction during learning may only be productive to some students, based on each student's task level during the learning process (Andrews et al., 2019). Other challenges can arise when there are no collaborations among the students or when divergent strategies are employed, and verbal presentation may lead to a different level of understanding (Ryan & Ladd, 2014). To address this challenge, the students can use strategies that support learning activities by contributing to learning content that will benefit other students and achieve set learning objectives. Peer intervention is apt to develop students' cognitive skills when the teacher organizes it to serve its purpose (Kumpulainen & Kaartinen, 2003). In addition, it can help the students acquire the critical thinking skills needed to achieve learning goals. These include understanding and matching the students' capabilities and training them on the importance of peer learning to enable the group to harness the benefits of the exercise and achieve learning goals.

2.12.3 Internship

An internship is a mentoring program in which an expert guides someone with less experience through practical sessions to acquire more knowledge and become an expert. It is the

oldest form of One-on-one mentoring, tutoring, coaching, or apprenticeship between an expert and someone with more experience or expertise and someone with less experience or expertise. It emphasizes modeling and error correction by an expert through critical analysis of learning content or mentoring programs. The internship is a process of training where the intern can develop their future job performance essentially to acquire proficiency in the job. The main objective of the internship program is to achieve a desirable change in the behavior of a trainee. Hence, it is a ready tool for most organizations as training interns during internships improves knowledge and skills, which helps their performance turn excellent.

According to Zehr & Korte (2020), internships assist graduate or postgraduate students in developing their personalities through the experiences they acquire during the intern program while providing first-hand learning experiences. It seeks to bring relatively permanent change in an intern that will improve his ability to perform on the job and increase the knowledge and skills of interns for doing a particular job. Interns develop more skills, attitudes, and values about the job during their internship program by acquiring knowledge of job specifications and expectations. The internship program benefits fresh candidates and personnel serving in government organizations. It allows fresh candidates to experience the working conditions and requirements of today's professional business environment (Saleha Parveen, 2012).

In education, an internship is a learning process in training programs where the teachers undergo training that influences and develops future job performance to acquire knowledge that can aid proficiency in curriculum actualization and classroom activities. It is a training program for acquiring new knowledge and experiences through practical processes required to perform optimally. It is also a practical education, where teachers on interns are the student teachers. An internship program is an act of imparting, improving, or updating the knowledge and skills of a

student, which they learn in the form or theory, thereby helping to modify knowledge and skills, that is, what students know and how they will work (Zehr & Korte, 2020).

In an internship program, there is training for teachers to expressly convert their learning experiences into real teaching programs. It is part of the teachers' training program as a prerequisite for course completion. Skills developed by teachers during the internship program can be transferred to the student to support the achievement of learning outcomes. The internship is a form of the mentoring program where teachers are trained through practical sessions to certify their capability and how they can integrate theoretical knowledge into classroom experience is an internship (Zehr & Korte, 2020). An internship is vital to the teacher to break barriers in giving instructions and to create an impactful learning environment.

During the internship program, teachers gather direct experiences, which are reviewed and streamed in preparation for proper classroom experiences. It also provides the required knowledge the teacher needs to teach and have a firm grip on the subject through the help of school subject teachers and supervisors. It also enables the understanding of the mindset of teachers in training to determine how they integrate teaching and learning in classroom activities. It gives the student a greater understanding of professional demands and qualifications while permitting them to understand the connection between theory and practice. It enhances students' knowledge of their potential to reach the goals set for various professions (Saleha Parveen, 2012). It is a practical education program that enables teachers to acquire more knowledge that can assist in learning or sharpen needed skills, attitudes, and values to support job performance efficiency. Internship exposes the intern to new and direct learning experiences while bringing up new changes that can improve job performance. It enables the teacher to add value to teaching and learning, which in turn leads to a desirable change in the behavior of a trainee.

For an internship to be effective, getting feedback on the teacher's performance is apt to understand their capability and inherent behavior and the design of the teaching program for a better learning outcome. Teachers should be encouraged to reflect on what they learned during their teacher training program to understand better pedagogies and other teaching tools that are relevant and applicable. According to Samoei (2020), student teachers use current research knowledge to understand the theory and practice they acquire to enhance their teaching activities. Thus, internships allow them to engage in critical reflection to create meaning from their experiences while they attempt to discover their voices and identities as teachers. Internships can become effective when they provide student teachers with the foundation and essential skills needed to enhance continuous professional growth and development since their transition to a teacher is a continuous process that will require them to become professionals. (Samoei, 2020; Dominguez et al, 2019).

An internship requires a line of connection between being a student teacher and an experienced teacher to be effective. Zehr and Kort (2020) suggested in their research that during an internship program, students should map out connections between the classroom and the workplace to make developing and applying skills from one setting to the other seamless. Students require guardians to understand and identify their workload during an internship to create a positive mindset and prepare for their profession. When students do not have the size of their workload, they develop some level of uncertainty, which may affect their performance outside the internship program (Hodges, 2019). Adequate preparation of teachers on internship is apt for their academics and psychological performance to build their confidence that they can transition from student teachers to classroom teachers without difficulty. The student teachers should look for

opportunities to prove themselves and show that they have passed through internships (Kervick et al., 2020).

The internship aims to enhance teachers' critical thinking skills by offering diverse classroom experiences to refine their knowledge, skills, and dispositions developed during the program (Dominguez et al., 2019). Understanding pedagogies that support students' critical thinking can assist teachers in selecting and adopting teaching methods relevant to specific subjects or topics to achieve teaching and learning goals. It can assist teachers in developing and transferring skills to the students.

2.13 Barriers to learning Critical Thinking among students

Generally, critical thinking is the intellectual ability that propels to scrutinize and validate information through question and evaluation in other to arrive at evidence based decision or judgment. It has become a global phenomenal hence an increasing concern in educational sector, business and career development. It is an essential tool for individuals who are strategic about their thinking and concern about previous beliefs while assessing new, valid and evidence based information. According to Amrous and Nejmaoui (2016), there is a significant gap in the level of critical thinking in student though training them to think critically does not necessarily translate to their life success but it can serve as a guide because "it is clearly better than enduring the consequences of making bad decisions and better than burdening friends, family, and all the rest of us with the unwanted and avoidable consequences of those poor choices" (Facione, 2020, p. 2). In addition, It will enable them become knowledge inclined to vast information relevant to personal progress and social development. Though critical thinking is gaining much attention world over, a growing body of research (Akbari-Lakeh et al. 2018; Aliakbari & Sadeghdaghighi, 2013; Eze,

2022; Dwyer, 2017; Songsil et al., 2019; Stanovich, 2016) has identify some barriers impeding the development of this valuable tools among students such as: students' motivation and knowledge; students' conventional teaching method and assessment; Teacher Guidance and Feedback; lack of foundation for critical thinking and dearth in educational infrastructure.

Previous studies displayed that the teaching approach has great influence on what and how students develop critical thinking. Manan et al., 2021 opined that using traditional teaching methods such as lecture hinders how students think and reflect on what they learn since this teaching strategy does not often allow students to contribute or discuss course content and exchange ideas. This approach does not encourage students to think critically, retain information and rarely ignite them to ask questions either related or not to the course content. Zireva and Letseka (2013) argue that approaches lecture method that does allow students to participate in learning cannot encourage them to think critically because it is not stimulating or inspiring thereby discouraging intellectual engagement. A study conducted by Songsil et al. (2019) found that students who are exposed to more vibrant approaches display knowledge of critical thinking and participate more in learning activities. Where teachers engage in lecture method and others teacher-centred approaches which does not support guidance and feedback, developing critical thinking skills are hindered due to the lack of interaction between students, and their teachers. It leaves a huge impact on learners' self-esteem and motivation which negatively influenced their performance and learning progress. Several studies (Wambsganss et al., 2020; Richardson et al., 2007) confirmed that teacher and peer feedback is a significant factor that affects critical thinking development and learning achievement. It also has positive impact on students' deduction inference and evaluation skills.

Teaching students using teacher-centred method encourages rote learning and overdependence on teacher. Since students are not disposed to thinking about what they learn, they become very reluctant and dependent on their teacher to explain all their course content to them. It limits their classroom participation and prevents the improvement of social skills. It also makes students to be passive, less motivated and basically consumer of knowledge thereby impeding their development of critical thinking skills (Jamiai & El Karfa., 2022). Further findings suggest that students do not seem to focus on improving their critical thinking when they are unable to give critical opinion about new topic because they do not have pre-requisite knowledge to their learning content which is one of the most important element of critical thinking but are not disposed to developing their critical thinking skills encouraged (Geertsen, 2013; Glaser, 1984). Rote learning often thrives when the school curriculum is extremely loaded with limited time to teach all the content therein. Curriculum standard and learning objectives must align for students to analyze, evaluate and apply learning content in other to discourage rote learning. Teachers can leverage on flexible teaching strategies to demonstrate mastering critical thinking content knowledge.

Students are mostly inundated and dissatisfied with the barrier of learning without direct instruction to enhance their cognitive abilities as it result in lack of implementation of knowledge acquired in real-life situation. It is thus apt to emphasize on learning experiences that encourages practical exercises and deemphasize on theory based learning instruction to encourage active participation by students. Importantly, learning experiences should be support direct instruction of critical thinking and reasoning to develop their cognitive skills in other to relate students' learning to real-life situations (Kabataş Memiş & Çakan Akkaş, 2020; Songsil et al., 2019). Where students are not exposed to learning thinking skills through practicum, they develop their cognitive skills slowly even when they cover more content in their study Aliakbari & Sadeghdaghighi (2013).

Another major barrier is the mindset of students to resist critical thinking which could as a result of preconceived notion that critical thinking is abstract, difficult to learn or not relevant to them (Eze, 2022; Songsil et al., 2019). Though these entire notions can create a gap in students' learning experiences, creating an explorative environment to encourage display their curiosity through questions and active participation can help to change their mindset to develop critical thinking. With the notion that critical thinking is an abstract concept, providing concrete examples base on case study and real world situation and example could encourage students resonate their interest and change their mindset to learn critical thinking. Encouraging students in meaningful and engaging dialogue could assist teachers open up students thinking in various perspectives.

The diversity in the thinking styles of students is also a barrier that has made learning of critical thinking more cumbersome. While some students may prefer concrete information to think critically about their learning content, some students perform better when they engage in abstract thinking, while some are more active in visual learning (Songsil et al., 2019). Getting teachers to manage and give opportunities to all these categories of student to engage in critical thinking is a barrier which could also lead to assessment difficulties of all the students. The disparities in learning style can affect a fair and effective assessment of the various students' learning styles base on individual peculiarities (Wambsganss et al. 2020). Providing a clear criterion to ensure fairness to evaluate students' understanding and application of critical thinking skills may suffice by the teacher to manage this barrier.

While it is apt to leverage technology to support critical thinking, there is a barrier of students becoming complacent and too lazy to think about what they learn in this digital age. Students are exposed to information on various digital platforms which attract them to quick answers not requiring deep analysis, except they are guided on how to identify real information

from unsubstantiated ones (Jamiai & El Karfa, 2022). Students often encounter emotional barriers which affects the development of their critical thinking skills. Most students are conscious of the fear of performing poorly in classroom activities thereby avoiding asking questions or sharing opinion which are vital components of critical thinking. Emotional instability discourages students to take risk or engage in critical thinking for the fear of making mistakes or being condemned for wrong contributions though such activities are opportunity for learning and development of critical thinking skills (Wambsganss et al. 2020). It is apt for teachers engage in learning activities that promote approaches such as group discussions and group works to cultivate trust among students

2.14 Barriers to teaching Critical Thinking among teachers

A growing body of research (Facione & Facione 2001; Bezanilla et al. 2019; Dwyer 2017; Ennis 2018; Abrami et al. 2008, 2015; Cáceres et al. 2020) has identified the importance of enhancing critical thinking through instruction and evaluated the manner in which it is delivered. It includes conceptualization, beliefs, feasible time for its application, transferability and in recent time, its application by individuals in real-world settings irrespective of the previous knowledge on the concept (Dwyer, 2020). Barriers to critical thinking among teachers can be as simple as neglecting logical decision for emotions while making a decision. Some of these barriers that get in the way of thinking critically and are common among teachers and they impede critical thinking application though critical thinking instruction is designed in to enhance the likelihood of positive decision-making outcomes. Some of these barriers include inadequate skills and disposition; individual or group bias; misconception and misunderstanding; intuitive judgment; bias and emotion.

One of the barriers to teaching critical thinking is inadequate skills and disposition which are the two main components. Both skills and disposition are not clearly understood and wrongly identified by most teachers. While skills can be taught but not available to everyone, disposition can be acquired through self-actualization, inquisitiveness or open mindedness (Dwyer, 2017). Though teachers can assist students to learn critical thinking skills but students must develop disposition because it is inbuilt (Qing et al., 2010). Conversely, it is a major challenge to teach how to develop disposition though skills can be more flexible to teach or train (Quinn et al., 2020). Also, teachers and students can acquire skills on how to apply critical thinking in their teaching and learning experiences, the ability to being disposed to apply critical thinking to applying critical thinking is not automatic since it is not inherent on everyone (Qing et al., 2010). This has remained a main setback in the application of critical thinking in teachers' teaching experiences because disposition cannot be taught, hence inadequate in application.

Another barrier is misunderstanding and misconception on information which often lead to wrong decision making. Individual can only reflect on limited source of information available to draw conclusion because thinking is reflective. Most available information is not always adequate for reflective judgment to support epistemological understanding, though it is relevant to guide individual on situation where critical thinking may be required. Individual reflection on available information is a self-regulatory process of decision making which influences the way the reason (Dwyer, 2017; Stanovich and Stanovich, 2010). Being reflective mostly does not amount to taking decision that are automatically correct or critically inclined because reflective judgment is complex, consistent, circumspect and a slow aspect of critical thinking. Evolving knowledge, discovery and information often distort how we reflect on issues to apply critical thinking since thinking is completely reflective.

Most teachers are inundated by the challenge of Intuitive judgment in the teaching and application of critical thinking due to the challenge of quick assumption, prediction, reaction which does not allow cognitive development when we make stress free decisions thereby making results from the application of critical thinking less valuable. Individual develop cognitive fatigue when the ability to construct schemas is adaptive and prompt quick decision. It is a barrier to teaching critical thinking. Most times intuition fails because it is limited and mostly yields incorrect responses that lead to biases and error (Kahneman, 2011). Teaching how to apply critical thinking may lead teachers to become intuitive which may translate to wrong responses or decision. To be able to apply critical thinking, intuitive judgment must not be totally engaged as it could become a general disposition culminating into wrong decision (Stanovich, 2016).

Bias and emotion often influence the decision an individual make especially when they do not care about such decision or interested about being objective (Dwyer 2017). To care about objective decisions makes judgment and critical thinking less relevant in decision making since care often emphasize on individual personal life and make critical thinking application bias inclined. There are often tendencies for an individual to resist a change of mind when they are bias about an issue (Rowe et al., 2015) because of what they care about irrespective of available evidences. Emotion negatively impact decision making as it over rides the outcome of critical thinking (Kehneman & Fedrick 2002) especially the topic of application. An individual who apply critical thinking in all contexts may not necessarily translate to not being emotional especially where the individual is passionate about an issue. Conversely, being emotionally intelligence could help to moderate own feelings and guide relevant thinking and behavior as both emotional intelligence and critical thinking are positive tools against bias and emotional decision making outcomes (Akbari-Lakeh et al., 2018; Kaya et al., 2017; Yao et al., 2018).

Teaching students how to apply critical thinking can be less impactful where bias and emotion is eminent. Teachers are more disposed to bias and emotion when they emphasize less on the personal decisions they make before and after their encounter with their students. Such decisions laced with bias and emotion often influence students understanding of critical thinking especially when they learning activities emphasize more on teacher-centred approaches (Fung, 2017). Most teachers are often inundated by bias when they employ some student-centred approach such as group study. It occurs when students' makes a decision or respond to questions, not with critical thinking but based on the opinions made by their peers to avoid being left out of the group. This barrier has significant influence on students and reduces the effort they make to engage in critical thinking.

Another barrier to critical thinking among teacher is lack of knowledge about the meaning, importance and application of critical thinking mostly because they are not being taught how to teach critical thinking. Even when they are familiar with the concept of critical thinking in their education programs and the impact on students' learning experience beyond school years, most teachers have not received direct training in how to teach critical thinking (Cargas et al., 2017). It has been a major concern to most teachers who are becoming more conscious and supportive of teaching students how to think and apply it in their learning activities in and out of the classrooms. The dearth of not knowing how to teach using critical thinking has created a gap to teach students to access applicable learning experiences that will endure and valuable to their lives and their environment. In their study, Aliakbari & Sadeghdaghighi (2013) explained more than 60% of teachers submitted they do not have any knowledge of critical thinking or how to promote it, hence find it a herculean task to evaluate their learners. These teachers rely on lecture method in their teaching experience because they found applying change through implementing innovative

teaching strategies challenging though they were aware that teaching methods are influential in enhancing critical thinking and cognitive skills. All these barriers have made the teaching of critical thinking burdensome for teachers thereby making the encouragement in student ineffective.

2.15 Summary

This Chapter reviewed literature related to the thesis topic. It highlighted the theoretical framework and constructivism theory, which buttressed the thesis. Then, the definitions of critical thinking, knowledge of critical thinking among teachers and students, and the importance in the classroom are discussed. It also examined the different aspects of critical thinking found in earlier research and the barriers to teaching Critical Thinking among teachers. The next Chapter presents the methodology of this study.

CHAPTER 3 – RESEARCH METHODOLOGY

3.1 Introduction

This Chapter focused on the research methodological approaches adopted to investigate how critical thinking can be encouraged to enhance effective pedagogy relevant to teaching economics in Nigerian secondary schools. It emphasized how teachers can encourage students to develop critical thinking skills during learning processes and students' experiences cum outcomes when teachers influence their critical thinking skills. In addition, it presents the methodology of the thesis, a qualitative method that discusses and describes the methods and instruments for data collection. This Chapter explained the research method used in this study and highlighted the instruments for data collection, the sample, and analysis. It discussed the ethical issues related to the research and steps taken to ensure strict compliance with their considerations.

3.2 Research Approach and Design

In this research, the emphasis will be on a qualitative approach that is suitable and relevant to the topic of this study- Effective Pedagogy in Nigerian Secondary Schools: How can critical thinking be encouraged? It is expedient because the qualitative approach provides in-depth exposition and investigation to find new knowledge on issues or phenomena that lead to further knowledge. It goes beyond measuring variables with numbers and statistical procedures to analyze phenomena or problems like the quantitative approach (Creswell, 2005). Qualitative research allows researchers to acquire clear descriptions of findings while writing reports rather than generalizing the results. It pays attention to the trustworthiness of the research more than raising issues on the reliability or validity of the research report. With the qualitative approach, researchers

can collect data throughout this study to a saturation point where there is no new information for the data analysis. In addition, the collection of samples is for a specific purpose: to select the people to study and concretize the result of the research rather than the random selection process.

I adopt a qualitative approach to ask teachers questions about their teaching pedagogies and student participation during classroom activities to determine how critical thinking can be encouraged to enhance student performance (Syukri, 2023). Researchers use a qualitative approach to add value to the thesis by asking follow-up questions based on needs and providing the participants with sharing live experiences (Mushi, 2022; Dejonckheere & Vaughn, 2019; Annink, 2017). Qualitative research allows participants' opinions to be relevant and directly heard, thus offering advantages in understanding the context in which people talk (Hennink et al., 2019). Also, it provides information about how individual teachers interpreted and implemented the school curriculum, as well as providing an insight into students' experiences when they ask or respond to questions

Creswell (2005) viewed qualitative research as an investigative process that allows researchers to understand distinct methodological traditions of inquiry to explore a social or human phenomenon. Aspers & Corte (2019) and Kuluse (2021) defined qualitative research as a frequent or constant process often employed by the scientific community to research new areas of study in order to complement or reinforce early study. Qualitative research emphasizes understanding peoples' words, actions, and records while looking closely at them in their natural settings. During this process, qualitative researchers visualize and analyze the words and actions of the participants and report details of the information collected. In addition, I observed the patterns in the data and highlighted them in the participants' direct words. Qualitative research involves studying things in

their natural settings, interpreting participants' meanings, and collecting empirical material such as personal experience, observation, case studies, interactions, and visual texts significant to human life or society. It enables me to acquire clear information for research reports and avoid generalisation while paying attention to the trustworthiness of the research findings rather than raising issues on the reliability or validity of the research report (Merriam & Tisdell, 2016).

Qualitative research equips researchers to identify and present patterns discovered after close observation, careful documentation, and thoughtful analysis of the research data while considering the participant's experiences (Creswell, 2005). It gives credence to contextual findings rather than generalisation and seeks to bring out the meaning from core issues while observing related phenomena in all ramifications (Glaser, 1998). Since qualitative research is inductive and focuses on a specific problem of how critical thinking can be encouraged for an effective pedagogy by teachers, it is most suitable for this study. In addition, qualitative is appropriate to this study to show the direction of the result of the research and the meaning people attach to it.

This qualitative study investigated how teachers in Nigerian secondary schools can encourage critical thinking using suitable teaching methods to improve students' performance. Education research aims to acquire and bring up new knowledge and innovations relevant to educational development. These processes of education development often involve qualitative and quantitative research approaches. Other approaches educators adopt to unravel and gain insight into classroom problems include mixed-method and action research. Researchers often use either of these approaches based on the content of the study, sample, and other variables. The qualitative research approach is a word-based approach conducted in a natural environment to discover and understand social or human problems through information collected from the participants

(Creswell, 1998). It ignites the curiosity of researchers to scrutinize educational gaps, their causes, and the way out of the identified phenomenon. The quantitative approach systematically investigates social or human problems using numbers. This approach comprises tested and analyzed variables for statistical tools to determine the validity of what researchers predicts (Creswell, 1998).

All qualitative designs in research have their peculiar features. The selection of any design depends on its suitability to the content of the research topic. However, the case study design conducted in diverse ways through an emphasis on the uniqueness of the phenomena or individuals selected for in-depth study to provide information on them (Kendra, 2021) is relevant to the research topic due to the perspectives, content, and sensitivity to the review and implementation of educational policies. The design selection is to understand the methods of teaching the teachers employ for economics. It enables the acquisition of the student's responses to the methods selected and how to include the concept of critical thinking in the teachers' training curriculum to achieve instructional objectives. Researchers considered grounded theory, a design derived from data collected about a theory that is "grounded" in the data, which enables a researcher to use data collected during interviews or observation of participants' experiences to generate a theory. It systematically compares all the data collected from a wide range of participants to determine the relationship between the data for generating a new theory. Grounded theory was not chosen for this study because it can be very challenging for researchers due to the need to assess and analyze theories before developing a substantive theory Glaser (1998). Researcher identified ethnography but could not adopt it because it is a qualitative design that involves studying human society and culture and interpreting it through extensive fieldwork rather than the usual ways of data collection. I did not choose it because it can only allow me to use an observation period, which may be endless

since it is a continuous process that can make me active while taking extensive field notes and making contact with an insider to gather and describe information about the culture of a group of individuals.

Another design I identified in the course of the study but could not use is the Phenomenological design, which is a qualitative method that emphasizes how researchers consciously considers people's experiences on a phenomenon while putting aside personal experiences while the data collected are scrutinized from various perspectives to describe the phenomenon. I could not adopt the narrative analysis design because it uses stories, life narratives, and first-person accounts of experiences as data for research. It involves analyzing data through psychological, biographical, and discourse analysis because it is irrelevant to the research topic. Another type of qualitative design is the postmodern approach, which involves questioning certainties and assumptions in the world, such as employing scientific strategies to identify the truth based on the generalized data discovered. Though it challenges the form and categories of traditional qualitative analysis and raises salient questions, such as the validity of any study when traditional methods are not valid and how to make changes thereon, it is not relevant to the topic of the study.

I identified and adopted the case study design to explain, identify, and clarify any problem based on the research topic. The case study approach selects and analyses individuals, a unit, or a phenomenon based on their peculiarity for research purposes. It emphasizes the uniqueness of qualitative phenomena or individuals selected for in-depth study to provide information on them (Kendra, 2021). Researchers can use the case study design in qualitative and quantitative approaches, but it enables an in-depth analysis of the phenomenon selected when applied as a

qualitative approach. It is apt and allows thorough exploration of a situation or phenomenon for data collection using interviews and focus group methods (Gillham, 2000).

Researchers use case studies to answer how and why questions regarding an issue to investigate without having control over variables. This methodological approach aligns with the research intentions because it allows researchers to identify diverse processes while focusing on a specific situation (Bell, 2005; Kasokonya, 2007) ; Sofroneeva et al., (2021); Uusikartano et al., (2020); Vizcarguenaga-Aguirre & López-Robles (2020); Zhang & Wang (2022) defined a case study as the development of detailed, intensive knowledge about a single 'case' which explains the peculiar strategies related to real-life experiences using diverse available evidence. Hamilton (1980) and Duyckers (2020) defined a case study as a study that builds upon analyzing single settings or occurrences while treating each case as empirically distinct and, in contrast to survey analysis, does not automatically presume that different instances can be together to form a homogenous aggregate. Case studies are an essential source of data for researchers to take precedents from previous theories and influence the practice of such theories because of the educational setting, which is complex and diverse (Ozan Leymun et al., 2017).

In this particular research, the aim of the case study, conceptualized as classroom activities that included teachers and students, was to focus on how critical thinking can be encouraged for effective pedagogy in Nigerian secondary schools. Furthermore, I explored the pedagogy economics teachers in ten case study classrooms often adopt and the impediments that might interface whenever they, as implemented within the eight case study classrooms, might interface with how they apply critical thinking skills in the classrooms with the students. The research investigated the various instructional approaches that support critical thinking using 'real life'

classroom contexts. I developed detailed knowledge of teacher roles in using critical thinking to influence teaching and student experience and perception when critical thinking is used during classroom activities and affects their performance.

Though there are arguments that case studies need to be more generalized and that their efficacy is doubtful, their relevance in qualitative research must be addressed (Kendra, 2021). From this view, it is possible for a sample of cases to represent the expected diversity of the broader population. Accordingly, in my research, I have explored a small sample of ten case studies to develop rich data for the understanding of individual instances and their general relevance within the Nigerian context as it relates to the interpretation, implementation, and experience of how the school curriculum can emphasize on the importance of critical thinking to teachers and students towards achieving instructional goals.

The research questions for this study will investigate the effectiveness of teaching methods commonly used by teachers in Nigerian Secondary schools, especially in teaching economics at the senior secondary school level, and how critical thinking can be encouraged for better performance. Participants were from economics teachers and students at the senior secondary school level, and data collection included an interview with teachers and a focus group discussion with students.

3.3. Population and Sample of the Research Study

Sampling in qualitative research is as important as data collection and analysis methods often adopted. In a qualitative study, researchers use sampling techniques such as purposeful, convenience, quota, and snowball to recruit participants for data collection and analysis (Curtis et

al., 2000; Farrugia, 2019). Conversely, research topics and the nature of the study influence the choice of purposeful and convenience sampling, individually or combined. Researchers use purposeful sampling to recruit knowledgeable participants capable of providing the needed information on the research (Farrugia, 2019). It is to determine the participants based on the criteria they possess. Researchers use convenience sampling to recruit participants based on availability and accessibility to geographic locations and resources. Whichever sampling technique a qualitative researcher uses is determined by the sample size evaluated through saturation, which originates in grounded theory (Hennink et al., 2019). The grounded theory saturation relies on emerging theory rather than predefined features of the population, which comprises data collection, data analysis, and theory development (Vasileiou et al., 2018). Though saturation in grounded theory does not consider data repetition but moves beyond a singular focus on sample size to justify sampling adequacy, it is unsuitable for all types of qualitative research, like phenomenological research.

Taherdoost (2016) highlighted some stages apt for better data analysis and interpretation: (1) Clear Definition of Target Population- Population is the total number of people in a particular location at a period. The target population in sampling is the number of people selected to participate in the study out of the entire population in the target area. A good starting point is to identify the target population to have a specific data collection. (2) Selection of Sampling Frame- These are the specific criteria for the Sample out of the target population. These include age range, sex, demographic structure, academic qualification, and other qualities representing the sampling. (3) Choosing the Sampling Technique: This stage involves examining the various sampling techniques to determine the most suitable for the study. Since sampling in research is to infer generalisation based on existing theory, the choice of technique is apt. Researchers may adopt

probability (used for quantitative study) or non-probability sampling (Qualitative study). For non-probability or non-random sampling, a researcher can choose Quota, Snowball, Judgment, and Convenience. Taherdoost (2016) explained further that determining the sample size is appropriate for sample generalisation to avoid biases. Researchers determine the specific size to help during data analysis and assist in the moderation of the resources for the study (Sim et al., 2018). It leads to the stage of data collection and the subsequent assessment of responses. The sampled population's responses helped determine the number of original cases from the Sample and those that did not respond for reasons such as refusal, ineligibility, inability to respond, or not being accessible to researchers.

I meticulously selected a small number of participants from the same classes of sampled schools, ensuring a manageable size for in-depth observation. This thorough sampling process instills confidence in the reader about the research's validity and reliability. It allowed me to listen carefully to the teacher during the interview sessions and the student participation during the focus group to determine how critical thinking can be encouraged to enhance student performance. For this study, sixty (60) participants, comprising ten economics teachers out of thirty, and fifty economics students out of four hundred and ninety-one, from ten Secondary schools of the twenty-one (21) Senior Secondary Schools in AMAC, FCT, Nigeria, formed the sample for the research based on convenient sampling techniques and closeness to the Metropolis. Only economics students in the higher secondary school year 2, Senior Secondary School two (SSS2) classes in the Nigerian Educational system participated in this study. Interview sessions with the ten teachers, each from ten selected schools, allowed me take sample data of the pedagogies they use to impact knowledge on the students and to find out their opinion on the concept of critical thinking. Focus

groups with fifty students, five each from ten schools, were used to identify students' learning experiences when critical thinking is included in learning activities.

This study exempted students in the Senior Secondary school years 1 and 3 from participating in the sampling. The Senior Secondary year three students are in the final year classes and are engaged in tutorials in preparation for their final examination. In comparison, the Senior Secondary year one (1) students are new in Economics classes. They are newly being introduced to the subject for the first time. The decision to exclude these students ensured that the study focused on students who had a sufficient understanding of the subject and were not overly burdened with exam preparation. Table 3.1 provides an overview of each participant's school in the sample area, which comprised the number of students and classes in the whole school, the number of teachers, and the number of students in SSS2 classes.

Table 3.1

Participants' schools

School	1	2	3	4	5	6	7	8	9	10
Number of students	832	960	945	898	508	553	547	490	477	420
Number of teachers	52	59	56	43	51	44	55	47	43	52
Number of classes	28	36	36	34	24	28	30	32	24	31
Number of students in SSS2 classes	120	142	123	116	113	87	101	88	79	72

3.3.1 Selection of Teachers

This research was conducted during the first term of the 2022-2023 academic section with participants of ten Economics teachers from ten schools out of the twenty-one (21) Senior Secondary schools in AMAC, FCT. Participants were selected from current economics teachers with at least three years of teaching experience in the economics department. Seven teachers in this study obtained bachelor's degrees with honors in economics; two had no degree in education but in economics alone, while one had a degree in business administration. Notwithstanding the

qualifications of all the economics teachers, they offered their perspectives on various instructional approaches used for teaching the subject, the concept of critical thinking and individual strategies they use to implement them, and how they relate these approaches during classroom activities based on the central school curriculum applicable to all twenty-one (21) Senior Secondary Schools in the FCT. In addition, all these teachers are teaching more than just economics. They also teach subjects related to Economics, like business study and commerce. Table 3.2 provides an overview of each participant's teachers, which comprised the number of Economics teachers in the whole school and the number of participants.

Table 3.2

Overview of Teachers

School	1	2	3	4	5	6	7	8	9	10
Number of teachers	52	59	56	43	51	44	55	47	43	52
Number of economics teachers	3	3	3	2	4	3	4	3	2	3
Number of participants	1	1	1	1	1	1	1	1	1	1

3.3.2. Selection of the Focus Group Students

Students who participated in this research ranged from 15 to 19. The evaluation period of students was during the lunch break due to the non-availability of the convenient free period in the school's timetable. The number of participant students was fifty. There were five participants in each group. I consulted the vice principal academics of the sampled schools before selecting the participants for the focus groups, considering students who indicated their willingness to participate in the research. The selection process was designed to be as unbiased as possible, with the vice principal ensuring that a diverse range of students were included. I also emphasized to the students that those volunteering to be part of the research must be willing to talk about their classroom experience with their economics teachers and be free to provide a wide range of

perceptions during the focus group. Afterward, five Senior Secondary School 2 economics students were nominated for the focus group discussion. At the same time, their verbal consent was ascertained to indicate participation before issuing consent forms to them for their parents to approve and append their signatures. Table 3.3 provides an overview of the focus group, which comprised the number of economics students in the schools and the number of student participants.

Table 3.3

Overview of focus group participants

Schools	1	2	3	4	5	6	7	8	9	10
Number of students	438	320	345	409	285	239	355	205	286	334
Number of economics students in SSS2 classes	59	56	41	60	42	38	59	40	49	47
Number of student participants	5	5	5	5	5	5	5	5	5	5

3.4. Materials/Instrumentation of research tools

The data collection tools for this study are interviews and focus groups. The methods were chosen based on the research's aim, which emphasized investigating how critical thinking can impact effective pedagogy to improve the performance of secondary students in Nigeria. In addition, I adopted these qualitative methods to gather detailed data from the interview questions to reflect on the context of this research topic.

3.4.1: Interviews with teachers

Interview is a fundamental qualitative research method for methodological approaches and data collection. It exposes researchers to learn in detail about the participants' perspectives, experiences, beliefs, and motivations for the research sample (Cohen et al., 2013). An interview is a purposeful conversation between two or more people, usually directed by one person to acquire information from the other (Cohen et al., 2013). It is relevant in a study to help learn and

understand the participants' opinions and their experiences, beliefs, and motivations for this study. Qualitative researchers use this qualitative instrument to investigate and analyze the social aspects of the participants' lives by gaining insights into their past or current opinions (Gill et al., 2018).

Interviews can take the form of a face-to-face approach, which entails having direct physical contact with the participants. Digital methods are useable when researchers and participant are in different locations. There are measures that a researcher should take before conducting interviews, which include getting the participants' consent before the interview session to ensure accurate audio recording transcription and filing into a word-for-word transcript (data), analyzed according to the choice of approach a may decide. When a researcher and participant are in different locations, interviews can be face-to-face or digital. However, it is apt for researchers to seek the interviewee's consent for audio recording. This will help to get accurate information from the interview, which researchers will turn into a word-for-word transcript to analyze the data using the chosen approach (Gill & Baillie, 2018).

Qualitative researchers often engage participants using one-to-one, face-to-face interviews, which entail protocols such as mutually arranging a convenient place and time to conduct the interview session, signing a consent form, and audio-recording the interview (Troncoso-Pantoja & Amaya-Placencia, 2017). Aside from the face-to-face interviews, researchers can utilize digital technologies such as telephone interviews as an alternative to conducting interviews where there is a distance barrier. Telephone interviews can be less stressful for participants in managing the difficulties of moving from far locations for the interview session, and it gives researchers comprehensive coverage of participants irrespective of their locations. Though telephone interviews provide a researcher with extensive coverage of participants, the interviewer and

researcher must be able to see each other. Conversely, technologies have further demystified this challenge as other means of interviewing participants in far locations use online video calls, Skype, Zoom, and other technologically enhanced applications (Cohen et al., 2013). These applications would assist the interviewer in observing the non-verbal communication of the participants. To utilize these applications, participants may wish to remain anonymous. They will need to be computer literate and acquire the necessary devices and internet connection to engage in an interview this way. Also, interview transcription is unnecessary because researchers can save the written conversation after getting the participant's consent (Gill & Baillie, 2018).

There are some principles a researcher should note before conducting interviews for easy and comprehensive data analysis. It includes adequately preparation to act as the facilitator of the discussions, accompanied by a research assistant who operates and records information gathered during reflection meetings or focus group discussions. It is apt to decide and plan the appropriate interview time with participants. For instance, conducting focus group discussions should not affect the school timetable. To avoid participants getting bored and losing interest in the interview, the interviewer can extend the session to a reasonable period, which could lead participants to get bored and lose interest in the interview. In addition to planning a specific time for the interview, researcher agreed with the participants on a convenient and comfortable location, bearing in mind some degree of privacy with minimal distractions. Preparation of all participants before the interview date was constant to remind them of the time and location of the meeting and also to confirm their participation. There are set rules that participants must strictly adhere to enable the smooth organization of responses and discipline during the interview sessions. These rules include an agreement that only one person talks at a time and confidentiality in the content of the discussion to guide against disorderliness.

Interviews can be structured, semi-structured, or unstructured based on the purpose of the study. The structured interview method is to clarify a topic, though more is needed to acquire in-depth data about participants' experiences (Troncoso-Pantoja & Amaya-Placencia, 2017). It only allows the interviewee to be expressive or acquire data within the scheduled information. An unstructured interview is relevant when a researcher knows little about a topic and the data collected from the participants is through open questions. Semi-structured interviews enable researchers to ask predetermined questions, though the participants can discuss important issues (Annick, 2017). Researchers use structured interviews, like verbal questionnaires, to get clarification on a topic and to cover all questions based on the objectives of a study. It may need to be more reliable because it produces limited in-depth data about the experience of research participants. Questions are planned and prepared before initiating the interview and asked during the interview.

In contrast, researchers ask all participants the same questions in the same order formally, which often makes interviewees uncomfortable expressing their actual views or opinions on a topic (Dejonckheere & Vaughn, 2019). However, researchers can evaluate participants' responses objectively and fairly, making it more legally defensible since the questions posed to them are the same. A structured interview does not entail an open-ended question, and it prevents researchers from creatively developing or follow-up questions because it is wholly on planned and prepared questions for data collection. Also, inadequate time does not allow the research participants to express their true feelings and ideas due to the questions' format, the environment's formality, and the interruptions. These inadequacies make structured interviews an uncommon data collection tool among qualitative researchers, though it is easy to administer and analyze (Barrett & Twycross, 2019). Conversely, structured interviews assist a researcher in gaining an in-depth

understanding of respondents' thoughts, ideas, and points of view on a specific topic while creating the opportunity to replicate a discussion because all participants respond to the same question. A researcher can use the structured interview to identify participants with peculiar views that require more detail (Dejonckheere & Vaughn, 2019). It is straightforward to standardize and valuable for administration to large sample sizes to acquire easy and simple findings from a target population. Quantitative researchers use structured interviews to easily and quickly create, code, and interpret data using closed questions.

Unstructured interviews allow researchers to ask broad and opening questions about an unknown topic or where a researcher needs more information than the previous information. The interview is unprepared in advance, but the interviewer can interject and ask questions spontaneously in a free-flowing conversation. It exposes research participants to questions prompted by their responses during interview sessions. Unstructured interviews are personalized and casual, allowing participants to relax and express an honest, casual, and unprepared opinion (Dejonckheere & Vaughn, 2019). Unstructured interviews, in which the interviewer interviews without any (pre) planning, could be equivalent to unplanned conversations. This type of interview has some disadvantages. For example, it is not easy to ensure that the conversation will produce data needed for the research, and frequently, a second or third interview will be needed. Researchers need to lead the conversation to a point where they can extract the required data (Dejonckheere & Vaughn, 2019). Consequently, collecting data through unstructured interviews in qualitative research would be difficult and may not enable researchers to gain the desired information.

Semi-structured interviews are like natural conversations, more evident than questionnaires. They allow researchers to plan and ask predetermined questions while giving participants leverage to discuss issues they feel are relevant and vital to the interview topic (Troncoso-Pantoja & Amaya-Placencia, 2017). They combine structured and unstructured interviews and allow for a comparison of participants' responses. A semi-structured interview is a natural and flexible conversation relevant to qualitative researchers. It helps ask participants open-ended questions and follow them up with probe questions to enable them to explore participants' responses and the topic of interest. Semi-structured interviews in qualitative research blend structured and unstructured interviews because some questions are predetermined while others are not since a researcher can ask further questions that were not included in the planned and prepared ones (Neergaard & Leitch, 2015). Semi-structured interviews enable researchers to ask predetermined questions, though the participants can discuss important issues (Annick, 2017). It deeply explores the participants' experiences, beliefs, and thoughts. Qualitative researchers use semi-structured interviews to collect new data and explore the thoughts and beliefs of participants about a particular topic to collect qualitative and open-ended data through formal interviews. Using an interview guide, a list of open-ended questions on the topic of the study allows researchers and participants to discuss the topics of interest in more detail. Conversely, a researcher can expand the scope of the questions but only within the research topic whenever they feel appropriate.

Strength of semi-structured interview

Out of the three types of interview methods, I selected the semi-structured method because it gives no barrier to the views participants can express when collecting data for this study. However, there are drawbacks to the use of semi-structured interviews, such as the extensive and intensive time and labor required to get to a saturation point and the risk of subjectivity as a result

of its open-ended nature, which could result in me asking questions that can result in biased responses (Annick, 2017). There could be the challenge of validity because of the flexibility of the method, which could result in researchers deviating from the topic of interest and make comparing responses from participants difficult. There are salient advantages that prompted me to use semi-structured interviews, which include the ability to produce reliable and comparable data that offers the flexibility for researchers to ask follow-up questions, the open-ended nature, and the flexibility to ask probing questions that can give rich, detailed and extensive data; and the use of preplanned and predetermined questions to help research avoid distraction that can lead to deviation and emphasize on the topic of interest.

I chose semi-research interviews as the objective and scope of the study and decided that participants would be required to respond to open-ended, simple, and concise questions because they would have to explain in detail where there are gaps in teaching and learning experiences and solutions to such inadequacies. In addition, a semi-structured interview was chosen for this study to help me stay focused on the topic of interest and avoid deviating from the subject (Dejonckheere & Vaughn, 2019). I randomly identified and selected the participants from schools in the FCT (State) after considering that they use the centralized curriculum.

I adopted semi-structured interviews with the teachers to investigate feelings, behaviors, perceptions, attitudes, values, and beliefs that underpin ideas emerging from the interviewees. It became relevant because administering questionnaires to the teachers cannot provide the opportunity to get in-depth features such as feelings, behaviors, perceptions, attitudes, values, and beliefs useful for data analysis (Bell, 2005). The interview sessions with the teachers provided additional information on responses regarding the tone of voice or the facial expressions that are not visible in written responses. It gives the participants the confidence to develop and clarify their

responses and expand their ideas, feelings, insights, expectations, or attitudes (Opie, 2004). However, questionnaires do not provide these insights to researchers and often measure them at face value.

In addition, semi-structured interviews provided an advantage for interviewees to expand their responses and feelings because of their flexibility (Opie, 2004). It allows researchers to sharpen the interview sessions against the unrelated and aimless responses from the participants. The semi-structured interviews for this study are open questions on the research topic. It allows for flexibility on issues that may arise during the interview process and enables participants to express themselves more comfortably (Troncoso-Pantoja & Amaya-Placencia, 2017). It also helps build the participants' confidence to be more intrusive and allows researchers to gather comparable data using various subjects. It depicts how teachers understand critical thinking and its application to teaching economics. I cautiously avoided questions that could lead to particular answers during the interviews, which lasted 20 minutes with each teacher in the staff room during the school break.

The semi-interview sessions commenced with general questions on the teaching profession to gain the attention and full cooperation of the teachers. In addition, I designed specific questions related to the research areas to enable the teachers to respond and provide information about their teaching experiences based on the following areas:

- Professionalism and the use of appropriate and relevant pedagogy to teach economics

- Teachers' roles and duties during class activities

- Their understanding of critical thinking as a tool to influence effective pedagogy.

- Teachers' views on how critical thinking can be encouraged in teaching economics and their students' motivation.

3.4.2: Focus Group Discussions with Students

A focus group is a qualitative research method used for collecting qualitative data through group interaction, synergy, or cooperation on a topic determined by researchers (Gill et al., 2018). It is a group interview for generating data through communication between a researcher and participants. A focus group is a moderated discussion on a pre-defined valuable topic for exploring various perspectives, attitudes, behaviors, and experiences (Mishra, 2016). Focus groups can yield rich, in-depth data and illuminate agreement and inconsistencies between groups, where appropriate, but do not align with grounded theory or phenomenology qualitative methodology (Gundumogula, 2020). It can be used in isolation or in conjunction with other methods, such as interviews or observations, to help confirm, extend, or enrich understanding and provide alternative insights into the outcome of a study. Focus groups allow participants to engage in lively discussions to facilitate the collection of rich, meaningful data through social interaction. Focus groups enable group interaction among participants who are encouraged to ask questions, talk to one another, and exchange ideas without a researcher asking questions in turns (Liamputtong, 2011). The virtual focus group is also relevant to the research to minimize close contact with the students after the initial contact, where a researcher explains the purpose of this study to them (Gill et al., 2018). It encourages recording the discussion with the participants without transcription required during the discussion.

Mishra (2016) explained that a focus group is a method of collecting qualitative data that enables researchers to generate information on the opinions of each group member for a clearer

understanding. Becket al. (1986) and Branicki et al. (2018) defined a focus group as a discussion held in an informal way for selected people to gather informally to express their opinions on specific topics. Researchers design and plan focus groups meticulously to get the views of selected group members on an area of interest in a conducive and calm atmosphere (Krueger & Casey, 2000). Focus groups enable the generation of a large amount of data that concentrates on the topic a researcher is interested in within a short time. They promote spontaneous interaction among participants while allowing researchers to generate more data than one-on-one interviews (Gundumogula, 2020).

Focus groups encourage all members to participate in the discussion and not discriminate against any member, irrespective of their contribution during the sessions (Kitzinger, 1995; Beck et al., 1986). The focus group method allows researchers to scrutinize participants ' thoughts and feelings on the topic under investigation to explore and generate relevant information widely (Gundumogula, 2020). Furthermore, they are pertinent in encouraging participants to discuss freely related issues that are important to them (Kitzinger, 1995). Focus groups are majorly face-to-face methods of data collection that researchers can conduct online using suitable technologies like email, discussion forums, video conferencing, chat rooms, social media, and other digital platforms (Abrams, 2016; Branicku et al., 2018). However, the number of participants and their feelings when discussing sensitive issues in a group environment can induce the complexity of organizing, organizing, and managing a focus group.

Qualitative researchers often adopt face-to-face focus groups after considering the topic area, the level of commitment needed by participants, data saturation where necessary, the number of participants required, and the number of focus groups (Gill & Baillie, 2018). The standard group

size for focus group data collection is around six to eight participants, but it can work effectively with between three and 14 participants. Choosing a group that is considered too small may limit discussion, while a group that is too large will not allow proper group management and can become disorganized (Gundumogula, 2020). It is apt to over-recruit for a focus group of approximately two to three participants to create a balance and avoid any gap in the number of participants. Researchers should guard against potential power imbalance within the group that could hamper or hinder the ability of participants to speak freely and subsequently impact the quality of data generated.

To manage face-to-face focus groups for optimum data collection, two researchers, a moderator, and an observer, should conduct the process to easily monitor distinct features useful for data transcription and analysis, such as seating arrangement, non-verbal communication, and speaking order (Gill & Baillie, 2018). The face-to-face focus group's venue should be conducive and suitable without distractions that can affect the success of the process (Gill & Baillie, 2018). A researcher should also conduct a focus group at a time appropriate for participants to promote attendance. A researcher needs to establish excellent and clear communication skills with the participants before commencing a discussion to put them at ease and engage them in meaningful and honest data collection (Zakaria & Musta'amal, 2014).

To commence the Focus Discussion, I asked the participants to introduce themselves, clarify the research topic and expectations, and I listed the ground rules that must be strictly adhered to by all participants during the discussion. These rules include confidentiality of the discussion, only one person can speak at a time, all participants should have adequate opportunity to contribute to the discussion, participants should avoid unnecessary interruptions while someone

is speaking, participants should respect views of one another while challenging contrary opinions of others is appropriate, but ridiculing is not (Gundumogula, 2020). A moderator should guide and keep the focus group sufficiently focused by exhibiting good interpersonal skills where appropriate. Participants have the potential to feel comfortable and cooperative and freely express their candid opinions when the moderator displays an engaging demeanor and also refrains from the process dominated by any one person, ensures fair discussion of different opinions, and, if required, encourages reticent participants to contribute.

Strengths of the focus group I adopted the focus group discussion method to engage students in meaningful interaction and in-depth interviews on the topic of the study to stimulate spontaneous ideas and personal disclosures that might otherwise go unstated (Gill & Baillie, 2018). It creates a relaxed, supportive, interactive group environment conducive to discussing sensitive topics. It allows participants to exchange opinions about views relating to others, which may encourage them to reorganize their thoughts. Significantly, it assists participants to engage in critical thinking on how people think about the topic(s) they study and what influences their opinions that may impact decision-making (Gill & Baillie, 2018). I carefully selected it because it increases the likelihood of a wide range of attitudes, knowledge, and experiences during the group sessions.

I took cognizance of the challenges attributed to the focus group method, which included the limited time to discuss individual perspectives in detail by giving a maximum amount of information about a specific issue. It may lead to participants rushing through their perspectives, feeling they need more time or a chance to add to what they said earlier (Gill et al., 2018). There is a risk of a dominant voice, which may not allow the opinion of others or regulate contribution, thereby limiting diverse views that can enable rich data collection. There is also the challenge of

participants having a preconceived response on similar issues, which they adopt to respond to the discussion, thereby creating an inaccurate representation of how the group feels about the idea. Most focus groups are more expensive to execute when some participants expect to receive compensation for their feedback in some way. Some students need help to stay engaged in focus groups for an extended period, getting distracted and not expressing themselves coherently, leading to misinterpretation of responses.

Researchers use this qualitative method to examine and develop the opinions and beliefs of a group while allowing them to give various perspectives on the research topic (Liamputtong, 2011). Focus groups help researchers understand the participants individually and collectively by encouraging them to respond to direct questions used in surveys and questionnaires (Annink, 2017). It is often adopted to expatiate and differentiate what participants say from what they do while obtaining an in-depth understanding of their interpretations of the research study. A Focus group is relevant to this study to open up issues with the students while asking about their understanding of critical thinking and its relevance to their study. In addition, it is essential to identify the implications of critical thinking on the teaching methods teachers use.

I conducted the focus groups in the classroom context provided by the school management to minimize distractions, allowing researchers to explore the divergent views of the participants. The focus groups discussion which was held during the lunch break in the noon time, lasted an average of 40 minutes each and afforded researchers direct access to the participants to share their opinions conveniently. The data collected from the focus group complemented the data gathered through the question and answer session. Researchers designed the focus groups to enable students

to provide information about the topics they like in economics that may have prompted them to offer the subject. Focus group discussions with the students emphasized the following:

- Students' perceptions about their economics teachers and classes.

- Their attitudes towards different teaching methods they had experienced.

- Students' disposition of the various topics in Economics

3.5. Study Procedures and Ethical Assurances

Ethical practices in qualitative research are paramount as they demonstrate trustworthiness, ensuring the interpretation of qualitative research reflects the nature of the research (Lichtman, 2014). The ethical considerations process for this research was rigorous and followed the guidelines set by UNICAF University Research Ethics Application Forms, which included the survey process, data collection, and analysis during and after the interview. The UNICAF School of Doctoral Studies ethics committee filled out and approved the forms. Permission was also obtained from the Federal Capital Territory (FCT) Secondary Schools Education Board (SSEB) to access the sampled schools for data collection, further ensuring the research's integrity.

Before the data collection at the sampled schools, I explained the purpose of the research to the school management after presenting the letter of permission from the SSEB. I then gave all the students selected for the focus group discussion written documents that explained the purpose of the research, seeking the consent of the parent to participate in this study and the right to withdraw anytime they wanted. The students whose parents consented through signed permission were allowed to participate in the research. I also explained the purpose of this study to the teachers who participated in the sample before they filled out the consent forms given to them. Finally, I

gave all the participants codes to conceal their identities and assured them of the confidentiality of their responses.

During the data collection, the participants (participating teachers and students) did not experience any disruption to their schedules based on our earlier agreements that we should hold all the sessions without affecting the school's timetable. I interviewed the participating teachers during their free periods, emphasizing the importance of this study to their profession, personal life, the student, the educational system, and the nation. I also admonished them to give their honest views beyond their classroom experiences. I conducted the focus group outside school lesson periods to ensure students completed all lessons. I encouraged them to say their opinion with much confidence and no sense of guilt and be free to discuss personal issues they have with their studies, not necessarily in line with the views of their classmates.

I omitted the names of participants and their schools in the research to protect their privacy following the verbal request by the FCT Secondary School Board that a copy of the thesis will be required to take note of the findings and address relevant areas that may need urgent attention of the Board. All the data gathered from teachers and students were used only for the research and I retained them. I respected and complied with the time scheduled with all participants, thereby creating no room for coercion during the interview sessions and focus group discussion, which would have been an ethical issue. I rescheduled two interview sessions to a convenient time agreed upon by the teacher when they were engaged in official duty.

I ensured Transferability in this research because the findings were similar from one context to another (Gill et al., 2018). All the schools in FCT are under the same school Board, and all adopt the same curriculum, which is applicable and accepted by the sampled school. The

findings provided insight for more studies on the phenomena represented in the research (Shenton, 2004). It created an avenue for the FCT SSEB to emphasize critical thinking as it affects the teaching profession and the students' performances after secondary school experience.

3.6. Data analysis

Data analysis in qualitative research is a crucial step that helps identify errors and answer questions not captured during data collection (Miles et al., 2014). In this study, I adopted the thematic analysis approach, a widely used method by qualitative researchers. It is a valuable approach that allows for discovering peoples' views, opinions, knowledge, experiences, or values from qualitative data collected from samples (Caulfield, 2020). I adopted the thematic analysis approach to enable me identify patterns or themes to provide direction and links to vital facts related to the research question, thereby giving more meaning to the data collected. I also selected the thematic approach for this study due to its broad nature in analyzing multiple research questions using data collected through different qualitative tools like transcripts from interview sessions and focus group discussions (Clarke & Braun, 2013). Being a flexible and suitable qualitative research method for data analysis, it will enable familiarization, coding, generating themes, reviewing, defining, naming, and writing of identified themes suitable for data analysis. Moreover, thematic analysis is relevant when a researcher analyzes large or small sets of data supported by data collected (Clarke & Braun, 2013).

For the data analysis, I transcribed the audio recording of the data collected from semi-structured interview questions with the teachers and the focus group discussion with the students on personal experiences in critical thinking and experiences that encourage the development of Critical thinking skills. I consciously implemented a validity check on the reliability of the data

collection tool without any personal biases after my supervisor and one qualitative researcher in education reviewed the interview protocol to clarify the questions and their suitability to the interview objectives. In addition to this, i employed Percy et al. (2015) analysis steps for the data generated by familiarising myself with data by reading the data keenly while observing, identifying, and highlighting phrases, sentences, and words that are relevant and related to answering the research questions and concepts of critical thinking, effective pedagogy. I then took notes of the data collected, isolated and stored information that had no bearing on the research questions or the highlighted words or phrases. I reviewed the highlighted words, coded, sorted, and arranged them depending on related features to develop patterns based on predetermined themes that I clarified. I sorted the isolated themes to check for new ones that may come up while unrelated themes were removed, isolated, and stored away. I arranged the new themes in line with the related patterns of all the data analyzed and the patterns used to describe them and proceeded to analyze the previous theme to identify any new themes related to the research questions and critical thinking that may emerge during the data analysis until I got to the saturation point. After following these steps, I wrote a detailed analysis supported by relevant quotations that described the predetermined and new theme and synthesized them with the research questions.

3.7 Summary

This Chapter outlined the methodology used to examine the research questions. It explained the aim of this research in line with how critical thinking can be encouraged to ensure effective pedagogy in Nigerian secondary schools. The data analysis methods included participant selection and sample size, which were presented using interview methods with the teachers and focus group interview schedules with the students. These allowed the participants to provide

information about their experiences, the concept of critical thinking, and how it can foster effective pedagogy in Nigerian secondary schools. I considered all applicable ethical standards and strictly observed them during the participants' selection process, in addition to the data collection and interpretation highlighted and the informed consent from all participants signed and returned. Confidentiality and strict anonymity allowed me to gain the confidence of the participants to respond during the sessions. The next chapter presents the findings from the data analysis for this study, which determines how critical thinking can be encouraged to ensure an effective pedagogy.

CHAPTER 4 - DISCUSSION OF RESEARCH FINDINGS

4.1 Introduction

This study sought to investigate how critical thinking can impact effective pedagogy to improve the performance of secondary students in Nigeria. It sought to answer the research questions:

1. What pedagogies can teachers use to encourage critical thinking in students' learning experiences?

2. How do students respond when teachers use pedagogies to support their Critical thinking skills?

These questions were analyzed using a thematic approach, which involved identifying and analyzing recurring themes in the data to uncover how critical thinking can encourage effective pedagogy in Nigerian Secondary Schools.

4.2 Rationale for this Chapter

In collaboration with one experienced secondary economics teacher and ten senior secondary school two students each from ten Federal Capital Territory (FCT) schools, I embarked on a series of semi-structured interviews. These interviews and focus group discussions were not mere data collection exercises but platforms for participants to express and share their unique perspectives and experiences. Their questions and insights were not just valuable data points but key drivers that shaped the direction of the study, underscoring their crucial role in the research process. A basic qualitative methodology was used throughout this study with semi-structured interview questions for the teachers and focus group discussions for the students, providing a

foundation for the data collection process. These Semi-structured interview questions are expedient and purposeful for a clearer understanding of the participant's experiences (Merriam & Tisdell, 2016).

The data analysis from this qualitative study was not just a rigorous process but a comprehensive and meticulous one. It included coding themes and patterns of participant transcripts from the interview sessions and the Focus group discussion. This chapter not only explained and detailed the compilation and analysis of the data process, but it also ensured the protection of the identity of the participants throughout the discussion stage of the findings using pseudonyms rather than their names. I transcribed and meticulously checked the interviews to ensure the transcriptions were accurate before the review and analysis of each interview to find common themes. The next step was more than just the inclusion. However, the careful construction of a codebook to collate the phrases used to identify common themes that answered the interview questions as they relate to the research questions. This thorough data analysis process was crucial to test for the reliability and trustworthiness of the study's findings.

This study's implications are significant and potentially transformative to the education sector. It will not only identify the participants' direct words on their understanding of critical thinking but also underscore the need for curricular and pedagogical approaches reviews in economics to accommodate the development of critical thinking skills. This shift in focus could potentially revolutionize students' performance in economics as a subject while also contributing to the education sector's ability to produce a workforce that can develop a sustainable national economy. The evidence presented in this study demonstrated the trustworthiness of the compiled results and inspired hope for a more critical-thinking-focused approach to economics education.

4.3 Trustworthiness of Data

I established this study's trustworthiness by rigorously assessing various data sources' credibility, transferability, Dependability, and Confirmability related to the research. These strategies, commonly adopted by researchers, are relevant to this research as they increase the credibility of the result and considerably reduce researcher's bias (Creswell, 2013). Establishing trust in the research result is essential to check for trustworthiness in qualitative research (Merriam *&* Tisdell, 2016). Therefore, I observed all the highlighted trust strategies in this study by producing data that reflected these strategic areas.

4.2.1 Credibility

Credibility in qualitative research determines the truth or reality of the research findings. It is the close interaction of a researcher with participants and the comprehensive information gathered from them (Shenton, 2004). It includes all activities that will make findings and interpretations produced from data credible. Qualitative researchers are exposed to sustained engagement and interaction with participants to access more information relevant and influential to the research topic (Lincoln & Guba, 1985). The data collection process for this research spanned through twelve weeks. I was involved directly with the sampling collection process throughout the period, sustained examination of the interview processes, and conducted a check on the participants while avoiding any identification with the information collected as data, but reflected on personal perspective, the knowledge of the context, and consciously avoiding any bias. It included familiarization with participants through engagement before the interview sessions to gain their confidence. I also used the information from the participant for triangulation of the various perspectives of the participants through a participatory process to give a clearer understanding of the phenomenon under investigation supported the study's credibility. It is to

guide against biases and emphasize triangulation using more than one approach to researching a question and results in more rigorous data, thereby establishing credibility (Noble & Heale, 2019)**.**

I expunged some data irrelevant to the theme to avoid discrepancies or unsubstantiated conclusions. However, those not reflected were improved to identify the evidence abnormalities and authenticate this study. In addition to ensuring the credibility of the data collected, I validated the responses from the participants to avoid misinterpretation and misrepresentation of responses (Maxwell, 2013). Then, the auditing and debriefing with a fellow researcher and a professional educator to scrutinize and confirm that the process of data analysis and the conclusion were in tandem with data collection. These people offered local perspectives on the findings and helped to correct any possible biases. Finally, the participants were debriefed based on their responses to confirm the accuracy of the data collected using the emerging themes from the findings.

4.2.2 Confirmability

This qualitative research enhanced the confirmability by implementing some ideas for selecting and presenting the findings without personal biases eroding the analysis process. It is applied to show the extent to which the data is collected and interpreted concisely to reflect the opinions of participants rather than researchers' biases (Lincoln & Guba, 1985). All the notes taken and transcribed attested to the Confirmability of this study and other checks and feedback from supervisors, experienced qualitative researchers, and co-researchers in the same field. These checks or audit trails entailed carefully accounting for all raw data collected during this study, including independent coding of the interview to agree on the findings. The alignment of theory based on methodology helps to increase the confirmability of this study's results. The concluding part of this study will interpret the findings based on the theoretical research frameworks. The

small sample size justified the purposeful sampling and a uniform coding system that identifies each piece of data. It allowed interested readers to identify the source of quotes, interpretations, and research findings.

4.2.3 Dependability

The Dependability of this study is reflected in the similarity of results as it relates to Economics, a subject selected as a case study. Bearing in mind the relevance of Critical thinking to all other subjects, translating the result from this study to others is apt. It also showed how consistent the research findings were with the topic, the research questions, and other variables critical to this study. The Dependability of this study exposes the dynamism of data interpretation despite how rich and rigorous they can be (Creswell, 2018). The probability of researchers arriving at the same meaning from the same result may not be too realistic. Conversely, I used various approaches to research the questions and arrived at results in more rigorous data that influenced how dependable this study was.

4.2.4 Transferability

Readers often use transferability to conclude whether the context described in a research study can be transferred or peculiar to a study (Lincoln & Guba, 1985). It applies to most types of research, though it does not attest to broad claims, and it allows readers to connect this study with their experiences (Bassey, 1981). However, to give the reader an edge in comparison, a thorough description of the context and data collection enables precisions and thus determines the transferability of the result. In addition, transferability in qualitative research is the adaptation of research results to address a similar phenomenon, especially where there are no records of specific

contextual issues. Taking the size and uniqueness of any sample should help the transferability of research findings (Denscombe, 1998). Instead, consideration should emphasize apt and dynamic factors to aid policymakers in the relevant intervention. For example, I collected samples from only ten schools in the sample environment where school curriculums and all academic activities are centralized. Transferability based on this scenario is possible due to the positive dynamics of all the schools in the study environment, as they have a lot of unique factors in common. Therefore, readers can apply the result of this study to all the schools in the sample environment and beyond, enabling a seamless decision-making process and recommendations for relevant stakeholders in the review of the school curriculum to encourage critical thinking.

4.3 Presentations of the Findings

After collecting the qualitative data that spanned nine weeks between January and March 2022, the analysis of data began to identify the themes relevant to answering the research questions. I commenced the investigation on how teachers encourage students to use their critical thinking in the learning process through the various instructional approaches while emphasizing the teaching and learning objectives, Critical thinking skills, and abilities of the student. It then scrutinized students' experiences and how their teachers influence their Critical thinking skills, with cognizance of the barriers to critical thinking in the classroom. After the interviews, I arranged the transcripts according to the research questions and the responses from the participants. I coded the data, examined texts to identify common trends and themes from participants' responses, and then categorized repeated words and phrases into segmented related data and coded. This process was reviewed by checking participants' responses on how they relate to the research and removing

those irrelevant to the research question. Meanwhile, I emphasized related responses to the research purpose to avoid deviation.

4:4 Research question 1 - *What pedagogies can teachers use to encourage critical thinking in students' learning experiences?*

This section begins with demographic information about the ten participating teachers from the selected schools. The data from the interview sessions were divided into three main parts related to how teachers can encourage students to learn using critical thinking. The first part was related to teachers' knowledge about critical thinking, and the second explained how teachers apply CT to teaching experiences. In contrast, the last part identified how teachers can encourage CT in teaching and learning.

Teachers and schools represented will be referred to as 'T1', 'T2' etc. Teachers' demographic information is presented in Table 4.1.

Table 4.1

Teachers' Demographics (all female except where indicated)

Qualification	Age group			Years of Experience		
	35-44	45-54	55-63	4-14	15-24	25-34
BSc Ed	2	2		2	1	1
BSc	1			1		
M.Ed		2	2 (1 male)		1	3
PhD		1male			1	

Table 4.2 presents the themes derived from teachers' interviews and is grouped into three parts: teachers' knowledge of CT, the application of CT to teaching, and how teachers can encourage it in teaching.

Table 4.2

Teachers' Interview Themes

Themes	
What is the knowledge of critical thinking among teachers?	**Examples**
<u>Some teachers are not aware of the term 'critical thinking.</u>	T6: What is critical thinking? It is not in the school curriculum, but I will gladly understand. T7: If it is about how to think, then CT is tactically in the school curriculum. Though I need help understanding it clearly, our teaching plan has a column indicating questions and what the students should be able to know as learning objectives.
<u>Critical thinking is vital in Teaching.</u>	T1: Critical thinking is a fundamental concept that should be constantly supported globally by educationists. It should be part of the Nigerian school curriculum to stimulate students' cognitive development. T8: I understand critical thinking and use it to teach students. It is helpful, and I have made much impact in teaching economics. The students' performances testify to it, as most of my students freely engage in meaningful dialogue during and outside classroom discussions. Critical thinking is all about objective thinking. I encourage students to think about what they learn by paying attention to details and often encourage them to think about just everything!
Application of CT knowledge to teaching	**Examples**
<u>Critical thinking has various benefits.</u>	T4: Critical thinking can help students ask and answer questions meaningfully and objectively. It can expose students to seeing things from various perspectives before making decisions. It can also help the students think more and ask questions on grey areas of the topics they learn and how to contribute to knowledge. T8: Critical thinking is vital because students can use the skills in various ways and other subjects later in life after school. They can diversify and view issues from many perspectives before making decisions.

<u>Motivation is significant in students' active participation in learning.</u>	T8: I instruct students in the Division of Labour through role-playing and other methods that encourage critical thinking. I encourage students who participate more actively in class activities to step up and then discuss the significance of their contributions to learning. I encourage my students to participate in the debate using this strategy, which frequently results in improved exam scores. T9: I encourage pupils to consider all sides of an issue before deciding. As a result, their capacity to reason and participate in class discussions has increased.
<u>Student-centered approaches encourage critical thinking skills and motivate</u>	T5: Using student-centered approaches helps me to assess students' capability and level of learning quickly. T7: I am a fan of the brainstorming method of teaching. For example, the school schedules a free class for revision exercises at the end of the session in preparation for the assessment. I sometimes use this free class to organize quizzes to stimulate thinking and control the class while students achieve learning goals.
<u>Student-centered teaching methods can be challenging to plan and exhausting to implement.</u>	T9: I put more effort into using student-centered approaches than I did into using teacher-centered approaches. I realized that when I use the student-centered approach, I have to guide the students on what to do and how to stay on the right track. T2: I prefer using the student-centered approach to get the student to participate actively in learning, though it delays teaching, and I spend more time making the students think. On the other hand, I sometimes use the lecture method, which is teacher-centered, when there is limited time. I observed that students did not participate much whenever I used this method, even when I tried to simplify the topic.
<u>Teaching analytical thinking and making informed decisions are crucial in critical thinking.</u>	T4: I make the students think by allowing them to speak objectively about whatever they feel like saying and then ask more questions to ignite their thinking capability further. T8: We should emphasize the salient points the students should know and encourage them to ask questions based on them. When introducing new topics to the students, such as inflation, a topic we learned after engaging them in a market survey, we encourage them to expand their scope and not to narrow their thinking but to avoid biases before responding or asking questions.

<u>Encouraging students to ask or respond to questions is vital for their critical thinking.</u>	T3: I acknowledge students who raise their hands to respond to questions. It helps me to know that the students are attentive and think about what I teach or hear. T7: When students respond to questions that do not relate to what I teach, I realize that the topic needs to be clarified. So, I explain or ask them what they know about the topic.
How teachers can encourage and teach Critical thinking.	**Examples**
<u>The dialogue approach encourages critical thinking.</u>	T1: I often encourage students who are very active to lead the classroom dialogue. This encourages other students to think and share their opinions, too. For example, when I had to teach the topic 'budget,' I informed the students to read about it while preparing for the following lessons. During the classroom activities, I opened up a dialogue on what the students read about the topic while stimulating them on what they should dialogue about. T3: I use the discussion method to get the students talking and make the class lively, especially to prepare them for the end-of-session assessment.
<u>Students develop Critical thinking skills using relevant learning tools.</u>	T7: I use teaching aids a lot. I improvise and also encourage the students to improvise. I observed that whenever I encourage students to improvise with any teaching aids, they often think and participate in the learning activities. T9: Whenever I use teaching aids, students participate more in classroom activities. They look at issues from various perspectives and express their thoughts.
<u>Teachers stressed individual learning throughout classroom activities.</u>	T4: I give time for students to reflect on the lesson but allow only a few of them to respond or ask questions due to time constraints. T6: I encourage students to study individually to explore other learning methods. I can also use the individual study to expose students to study beyond the learning content and expand on related information that may not be in the initial learning content. T4: Students can acquire new knowledge that can be used beyond their current level of education and aid their

<u>Students think more deeply and engage in the learning process in groups.</u>	development for future pursuits. Through group work, the students bring up unique ideas through thinking while we guide them to ensure that their contribution is relevant to the learning content. I also encourage group work to build the capacity to engage the students with one another for an effective and result-oriented learning experience. T6: We need to coordinate the students, mainly because we observe that they need to get used to working together. Students should learn how to work in groups to express themselves confidently. If the students work together, they exude confidence in their thinking, interaction, and achievement of learning goals. Group learning helps the students gain thinking skills they can apply to other subject areas and future academic progress.
<u>There are problems with time management when trying to encourage critical thinking skills.</u>	T7: The minimum time I have to teach some topics forces me to use methods that are not student-centered. These methods require time for the students to think about what they learn. T8: A significant challenge I have observed about how I can encourage the students to develop critical thinking skills is that the school time schedules need to be revised to accommodate more time that can allow students to think.
<u>School Management should equip teachers to develop critical thinking skills.</u>	T4: School management should organize periodic lectures and seminars on how teachers can develop their critical thinking skills. How do we teach what we do not know or understand? T6: The teacher training curriculum should emphasize the importance of critical thinking and ensure that teachers are trained to develop their critical thinking skills.
<u>Teachers face challenges when using student-centered approaches.</u>	T3: I can hardly cover the school syllabus every session due to the limited schedule for every topic and subject. Creating time for the students to think about what they learn is often impossible. However, the school management can introduce critical thinking into the school curriculum to address the challenge of time constraints so that students can learn more and faster. T7: Achieving teaching and learning objectives has been a significant challenge, even when we ask questions at the end of each topic. With critical thinking, we must start teaching the students how to engage this vital learning skill. Conversely, the school should take measures to introduce critical thinking to the

	students early, particularly those from the lower classes. The students would be able to develop the skills early enough for a better educational achievement of their future goals.

4.4.1 **What is the knowledge of critical thinking among teachers?**

Teachers' perceptions of critical thinking were different in many ways. Seven out of the ten teachers interviewed acknowledged that they do not understand critical thinking or its importance in education. Although they spoke passionately about their profession and how they strive to achieve teaching and learning goals, the teachers look forward to introducing interventions such as critical thinking to improve their engagement with their students.

Some teachers are not aware of the term 'critical thinking.'

Most teachers interviewed pointed out that Critical thinking is new in the school curriculum. They stated that they were hearing the term '*Critical thinking'* in education for the first time, and it was strange to them. They could only define it in the literal sense.

T1: Critical thinking is new in the school curriculum. I do not know anything about it.

T2: I have never heard of critical thinking in education. It is new to me. I did not come across it during my teachers' training program.

T3: I need to understand what it means. I do not consider it when planning my teaching. It would be nice if I understood it and could include it when planning my lessons.

T4: It is not in the school curriculum, and though I have read about it in educational journals and at an "Innovative in Teaching" seminar, I did not pay much attention to it.

T6: What is critical thinking? It is not in the school curriculum, but I would gladly like to understand it.

T7: If it is about how to think, then CT is tactically in the school curriculum. Though I need help understanding it clearly, our teaching plan has a column indicating questions and what the students should be able to know as learning objectives. Does that sound like critical thinking? If it is, then it is a good one. I am interested in learning more about it.

T9: I do not know critical thinking, but I can define it as the ability to think very well.

After explaining the meaning of critical thinking, the teachers surprisingly stated that it is similar to what they have in their teaching plan, the aspect in which students can ask or respond to questions. They stressed that there is no standard procedure for asking and responding to questions and measuring the students' understanding of the topics the teacher teaches. The teachers explained that critical thinking would be an essential intervention in the school curriculum and an upgrade to the previous ways of measuring teaching objectives.

T2: 'Critical' means more than average or to look at things carefully.' It is 'the ability to look at something clearly and then decide on it.'

T3: I can say 'critical is something significant,' 'thinking-ability to reason, ' and' critical thinking is the ability to think importantly' or 'very well.'

T4: Ah…... critical thinking is critical thinking. It will help the students participate actively and meaningfully in classroom activities. I want to read more about it! It will help my students perform better and make my teaching practice seamless.

T6: I always ask the students to think about what I teach them and what they are learning. Thinking is a part of learning. My students are active when they think about what they

learn. I think I like critical thinking. Conversely, I need to know more about it, particularly how to teach my students how to think.

T7: It will be good to introduce critical thinking to the teachers so that they can use it to teach. If all teachers understand the concept and how to include it in their teaching plan, it will help the students to learn it.

T9: Critical thinking will help me achieve my teaching goals promptly and achieve more.

Critical thinking is vital in teaching.

Teachers who understood critical thinking acknowledged its importance to teaching and learning. They identified the need for teachers and students to learn about critical thinking to develop thinking skills. The teachers emphasized that developing and teaching students how to think can be realistic and achievable if teachers understand the concept and can teach the students how to think.

T1: Critical thinking is a fundamental concept that educationists should constantly support globally. It should be part of the Nigerian school curriculum to stimulate students' cognitive development.

T3: It is appropriate to train teachers in critical thinking to develop the skills and guide the students to think about what they learn.

T4: Policy makers and school curriculum developers in Nigeria should expedite policies that make critical thinking prominent in teachers' training curriculum and all levels of education, from primary schools to tertiary.

T5: I consider CT personally because I read about the concept in some educational literature. It has helped my selection of teaching approaches and encourages my students

to think before responding or asking questions. With my knowledge of critical thinking skills, I covered a lot of the learning content.

T8: I understand critical thinking and use it to teach students. It is helpful, and I have made much impact in teaching economics. The students' performances testify to it, as most of my students freely engage in meaningful dialogue during and outside classroom discussions. Critical thinking is all about objective thinking. I encourage students to think about what they learn by paying attention to details and often encourage them to think about just everything!

T10: It is a skill that students should have. CT is a concept that entails being able to think about issues with consideration of the available evidence and then make decisions without any bias in our thoughts. Teachers should understand the importance of critical thinking in making teaching and learning meaningful and impactful. Critical thinking is vital while laying out teaching and learning objectives.

4.4.2 Importance of Critical Thinking to Teaching

Knowledge of critical thinking helps teachers develop the skills and apply them to teaching. Most teachers shared their experiences engaging students in learning and achieving teaching and learning goals. They referred to how important the development of critical thinking skills can be in helping them engage students in thinking about what they learn, participating in classroom activities, and achieving learning goals seamlessly. They mentioned that developing critical thinking skills motivates students to learn and succeed in and outside the classroom.

Critical thinking has various benefits.

Teachers mentioned that students needed to develop critical thinking skills early in their school careers to guide their decision-making in the future. They identified that teaching students

to think from the proper perspective leads to deviation from opinions that can circumvent their focus and guide them to have a more precise state of mind. Furthermore, teachers identify that developing critical thinking can make students innovative and proffer solutions to long-term challenges within their domain and beyond. Finally, three teachers identified their roles as facilitators of critical thinking skills in the students. Hence, it is apt to consider training and retraining the teachers to guide the students from the cradle.

T4: Critical thinking can help students ask and answer questions meaningfully and objectively. It can expose students to seeing things from various perspectives before making decisions. It can also help the students think more and ask questions on grey areas of the topics they learn and how to contribute to knowledge.

T6: When students do not participate in classroom activities, it shows a gap between them and the teacher. Critical thinking is vital to bridge this gap and aids in lively and full participation in classroom activities. In addition, critical thinking is essential for students because it allows them to gain skills that can be applied in other subjects and later academic quests.

T8: Critical thinking is vital because students can use the skills in various ways and other subjects later in life after school. They can diversify and view issues from many perspectives before making decisions.

Teachers mentioned that they encouraged students to ask and answer questions whenever possible. They observed that students make valid contributions to classroom discussion, improve their performance assessment, and achieve learning objectives when they think about what they learn. In addition, the teachers discussed that through praise, students could feel more confident and increase their interest in learning.

T6: I observed that when I have time to ask students what they have learned, they think more, and I can explain further and give more insight into the topics. I also gain from students' responses, especially when they give responses on areas related to topics outside my teaching plan.

T8: When students give wrong answers to questions or ask questions irrelevant to the topic under focus, I explain more using approaches that can help them think about what they learn. Students show much confidence and interest in learning more when I emphasize their contribution.

*T*eachers agreed that Critical Thinking makes teaching and learning more enjoyable and fascinating. In addition, it encourages most students to participate in learning and increases their performance. T4 described how critical thinking could influence their teaching plan and explained that teaching the students to think about what they learn will make teaching and learning meaningful and more enjoyable.

T6: A part of teaching measurement is to have an objective that students understand what they learn at the end of each lesson. Previously, we asked students questions, not minding how they arrived at the answers they gave as far as it is correct, even when they did not think about them. With critical thinking, the teacher and the students will put in more effort to think about what they do, analyze, and evaluate before the conclusion. It may seem like a long process, but teaching and learning will be engaging. If we teach students how to think, we get various contributions.

T8: Teaching students how to think will help them concentrate and learn faster. The era of rote learning will be gone, and the students will be more conscious about what they learn

and how to put it into practice whenever needed. Also, classrooms are more active, with most students willing to contribute to learning.

T9: Teachers' consciousness of the inclusion of building Critical thinking skills of the students will change the narratives from the use of only traditional teaching methods to the more engaging methods that would involve the teacher and the student's full participation.

Motivation is significant in students' active participation in learning

Teachers identified that motivation is vital in developing critical thinking skills in students. They shared that motivating students to think will reflect their performances, grades, and participation in and outside the classroom environment. T8 explained how she used different approaches to teach new topics to motivate all students to participate in classroom activities.

T6: When students are motivated, they respond more to questions and even ask questions about what they learn and what they think about what they learn.

T8: I use role-play and other critical thinking-supported approaches to teach Division of Labour. In classroom activities, I call on active and non-active students to take a role and explain its importance to learning. This approach motivates the non-active students to think and contribute to the discussion, often increasing their performance during assessments.

T9: I motivate students to view issues from various perspectives before contributing during classroom activities. It has boosted their ability to think and contribute to classroom discussions. When students do not think before responding to questions from other perspectives, classroom activities become less engaging and inactive.

T10: Students are motivated when fully involved in activities that captivate them. Hence, they contribute to achieving the lesson objectives. I encourage them to participate in

classroom activities and guide them whenever they make mistakes. It has motivated them and increased their performance and grades.

Student-centered approaches encourage critical thinking skills and motivate students

While most teachers discussed student-centred approaches, some discussed using teachers-centred approaches, while others used a combination of both approaches. Some teachers said they must consider a student-centered approach when planning their lessons. Most teachers emphasize the student-centered approach as the focal point in learning while the teacher is projected as an anchor to guide the student through learning. They agreed that it is more result-oriented and positively impacts students' thinking abilities. The teachers also shared that selecting the appropriate pedagogy can help teachers have a firm grip on teaching and learning activities and achieve set objectives.

T1: Students are always active whenever I use student-centered approaches. They ask and respond to questions and look forward to discussing more with their peers.

T2: I achieve my teaching goals by engaging the students in interactive sessions. I encourage them in dialogue to make them contribute to learning. It is a student-centered method that makes teaching easy and fast for me, and I have complete control of the classroom activities.

T3: When we use student-centered pedagogies, we introduce teacher-centered approaches to augment them and achieve instructional objectives. Meanwhile, we should ensure that we speak less and allow the students to participate more to discover themselves. Whenever we engage the students more in classroom activities, the classroom will be more engaging, and it will reflect in their grades after their assessments.

T5: Using student-centered approaches helps me quickly assess students' capability and level of learning. I allow students to express their thoughts about the learning content and ask questions about grey areas to help them understand.

T6: Student-centred pedagogy stimulates the students to think. I often consider it while planning the lessons to achieve set learning goals within the time scheduled for a specific topic. I encourage students to develop their critical thinking skills by giving them enough time to think and share their opinions on topical issues during classroom activities.

T7: I am a fan of the brainstorming method of teaching. For example, the school schedules a free class for revision exercises at the end of the session in preparation for assessment. I sometimes use this free class to organize quizzes to stimulate thinking and control the class while students achieve learning goals.

T8: I use a student-centered approach when planning my lessons because most students like participating in learning. I introduce the game method for abstract subjects to attract the students to learn. However, I often ensure that my students do not lose focus on the learning content while using this approach in order not to cause distractions.

T10: I use dialogue to encourage students to participate in classroom activities. To encourage students to contribute, I ask questions and encourage them to think before responding. Most non-active students perform better whenever I dialogue with them. Though initially reluctant, they gradually respond and contribute to learning activities.

Student-centered teaching methods can be challenging to plan and exhausting to implement.

Most teachers shared that they are more familiar with the traditional or teacher-centred teaching approach, which has been the norm after their pre-service teachers' training period. They

expressed that most students only like to talk if the teacher or their peers encourage them, often leading to a loss of time and sometimes low classroom activities. Teachers find the student-centred approach exhausting, making classes noisy if unplanned.

T1: I do not use any student-centered teaching method because of the time required to help the students think about what they learn. It will make me work behind schedule, and covering up will be difficult before the assessment.

T2: I prefer using the student-centered approach to get the students to participate actively in learning, though it delays teaching, and I spend more time making the students think. On the other hand, I sometimes use the lecture method, which is teacher-centered when there is limited time. I observe that students do not participate much whenever I use this method, even when I try to simplify the topic.

T5: Whenever I use any student-centered teaching method, I spend more time giving students instructions and directions on what they should do during classroom activities. Though it is always very stressful, and the students often do not finish the learning content, their performance during assessment is consistently above average. Students who do not participate in class activities often record improved performances.

T8: The student-centered approach is very flexible for teaching topics that require more students' participation in learning but requires more time to get them thinking and participating. This slows down my teaching pace because I require more time to allow all the students to think and understand the learning content, ask or respond to questions, and contribute.

T9: I put more effort into using student-centered approaches than I did into using teacher-centered approaches. I realized that when I use the student-centered approach, I have to guide the students on what to do and how to stay on the right track.

Teachers in schools 4 and 8 observed how interesting some student-centered approaches can be in helping students learn more. However, the preparations required to engage the students can be complicated and exhausting.

T3: All the students enjoy and participate more whenever I use the game method, though it requires more time to achieve set goals

T4: I use quizzes and games to stimulate students' thinking, though they are not too easy to use because students often get distracted if they are not well-guided during learning activities.

T8: When I needed to teach a market survey topic, I got a game program that explicitly explained the topic. Getting the students to understand the concept of market survey was not too difficult, but using the game was exhausting, though the students were eager to use it.

T10: The school management spent a whole session planning an excursion to the Ministry of Finance for logistics reasons. The students prepared and planned for the excursion, but many could not embark on the trip because we only got a few slots for some of the students from the ministry. We took some photos during the excursion, and I used them to teach related topics.

Teaching analytical thinking and making informed decisions are crucial in Critical thinking.

Based on the minimal knowledge of critical thinking and its importance to achieving teaching and learning goals, engaging the students to develop critical thinking is apt to harness the benefits of acquiring the skills. Students would remain active and willing to learn when allowed to think and share their experiences. They would be conscious of their contributions to learning and engage in critical thinking to do or respond to issues from an informed perspective.

T1: Students' participation during classroom activities is subject to the roles they are allowed to play and their level of involvement. We should guide the students to avoid jumping to conclusions but look at things from various perspectives.

T4: I make the students think by allowing them to speak objectively about whatever they feel like saying and then ask more questions to ignite their thinking capability further.

T6: Students can be encouraged to listen carefully to information and process it before asking or responding to questions. They should always check their opinions and be sure of what they can confirm before making contributions.

T9: I motivate students to view issues from various perspectives before deciding. It has boosted their ability to think objectively and contribute to classroom discussions.

The teachers expressed that teaching the students to personalize what they learn and explain in their own words without deviating from the concept of what they learn has helped their performances in economics since topics in economics are practicable. In addition, they indicated that teaching the students to differentiate facts from opinions and always to substantiate what they think would help to sharpen their critical thinking skills.

T5: We can guide the students to think critically by telling them that whatever they say must be substantiated. Hence, they need to think about identifying facts and opinions and

then be able to differentiate between both. They should always compare issues before responding to any questions or making contributions.

T8: We should emphasize the salient points the students should know and encourage them to ask questions based on them. When introducing new topics to the students, such as inflation, a topic we learned after engaging them in a market survey, we encourage them to expand their scope and not to narrow their thinking but to avoid biases before responding or asking questions.

T9: I consider whatever the student says and make meaning out of it all while encouraging them to share their opinion.

Encouraging students to ask or respond to questions is vital for their critical thinking.

Allowing students to bear their minds and freely ask questions objectively is a strategy that can encourage critical thinking. Teachers emphasized that students should always be encouraged to be good listeners and be prepared to ask questions wherever they are confused or for clarification. Most teachers acknowledged that it is essential to introduce new topics with questions to enable students to think and know how to respond. Introducing topics with questions helps teachers gain students' attention and prepare them for what to expect during classroom activities.

T3: I acknowledge students who raise their hands to respond to questions. It helps me to know that the students are attentive and think about what I teach or hear.

T5: Whenever I want students to contribute to classroom activities, I ask questions and encourage them to think before responding.

T6: I ask questions before the lesson to stimulate students' thinking and ensure they remain on alert with minimal distractions during classroom activities.

T7: When students respond to questions that do not relate to what I teach, I realize that the topic needs to be clarified. So, I explain or ask them what they know about the topic.

T8: Teachers can encourage students to think and participate actively in classroom activities by asking them to express themselves about a new topic. Using questioning helps students pay close attention to salient points and encourages them to engage the teacher to emphasize grey areas more.

T5 and T8 shared that teaching students how to ask questions coherently and articulately by taking note of salient points relevant to the topic under discussion is vital. A well-constructed question often indicates how the teachers or students thought about the topic they asked. Therefore, there is a need to emphasize how to ask questions to get the correct response.

T5: We should emphasize the salient points the students should know and encourage them not to narrow their thinking but to expand their scope and avoid biases before responding or asking questions.

T8: Whenever I ask questions, I acknowledge the students who indicate and raise their hands to respond. It often shows that the students are attentive, even when their responses may not be suitable. Therefore, I used that medium to explain further and rephrase their questions. During most classes, I also ask questions during the lessons to make the students think and remain on alert with minimal distraction.

T10: The school curriculum emphasizes that teachers should ask students questions after each lesson but does not indicate how they can develop questioning skills that enable students to think critically before responding to their teacher.

4.4.3 How teachers can encourage and teach Critical thinking

The role of the teacher is crucial to encouraging students to think critically about what they learn and need to know in and outside the classroom. Teaching students the importance of thinking critically and relating it to their studies and personal lives will impact their performance and level of participation in learning. Most teachers observed that classroom activities become more exciting and participatory when students are taught and encouraged to think critically. Also, it can help students view issues from different perspectives before making decisions or forming opinions about any issue.

Teachers identified that students could be encouraged to think through constant dialogue and the creation of enough time for them to think about what they had learned. They also identified group learning as an opportunity to encourage students not active in classroom activities to relate with their peers. In contrast, individual learning allows students to commit to their studies alone. However, some challenges can impede the students from thinking about what they are learning. It includes the lack of basic knowledge on developing critical thinking skills in teachers, time constraints to allow students to think due to congested school timetables and curriculum content, and a need for more school facilities and teaching and learning tools.

The dialogue approach encourages critical thinking

Some teachers who use dialogue as an approach to teaching critical thinking gave some guidelines on how the students should be encouraged to engage in dialogue always by asking them questions intermittently while teaching economics. They shared that dialogue attracts students' attention to the lesson, helps them think, and contributes to classroom discussions. Teachers expressed that dialogue prompts students to think around learning objectives and aids them in participating in classroom activities. However, teachers should guide students to avoid deviating from the learning content. Teachers who do not engage their students in dialogue pointed out that classrooms are not often lively, and

student's participation in learning is not always encouraging. They stated that starting a conversation with the students ignites students to think and contribute to classroom discussion.

> T3: I use the discussion method to get the students talking and make the class lively, especially to prepare them for the end-of-session assessment.

> T4: Teachers should be able to coordinate classroom discussions using good questioning skills to engage the students in meaningful dialogue. Also, students should only be left alone to dialogue if the teacher has laid a good foundation for discussing the topic. This foundation should be relevant so students will not deviate from learning content or give wrong information or assumptions during the dialogue process.

> T9: Teachers' roles are crucial in guiding students against escalating the dialogue process into an argument. The teacher should also lead the students through creative and purposeful interaction that reveals unregulated thought and avoids imposing opinions on others.

Teachers observed that planning a lesson to engage in dialogue with the students or allowing them to discuss the lesson with each other makes them think widely about it. They also explained that introducing a topic with discussion often encourages the students to think and participate in learning.

> T6: I introduce a topic by guiding students from the beginning to learn how to achieve set objectives by engaging them in dialogue. It makes them stay alert during classroom activities while contributing and expressing their opinions.

T1 and T10 shared that students must appreciate themselves as peers and understand that they can learn from one another. Teachers should guide very active students not to take absolute control of the dialogue but to allow their peers to contribute. In contrast, the teacher contributes to buttress what they discuss for clarification.

T1: I often encourage students who are very active to lead the classroom dialogue. This encourages other students to think and share their opinions, too. For example, when I had to teach the topic 'budget,' I informed the students to read about it while preparing for the following lessons. During the classroom activities, I opened up a dialogue on what the students read about the topic while stimulating them on what they should dialogue about.

T2: We can involve the students in classroom activities through experience sharing. Allowing the students to share their experiences ignites them to think about what they plan to say.

T3: I always advise the students to read their notes and come up with questions for classroom discussion. Those who follow my instructions often ask questions and participate in classroom discussions and activities. For instance, when I taught my students about the division of labor, I asked them to read their notes and think about how it can be applied in a manufacturing company.

T6: The students can be encouraged to listen carefully to information and process them before asking or responding to questions. They should always check their opinion and be sure of what they can confirm before making contributions during dialogue.

T9: I organize quizzes to stimulate the students' dialogue with one another. During quizzes, students participate and think about the answers to basic questions while contributing to the learning process.

T10: I open a dialogue with the students to clarify and explain salient points and introduce new ideas that encourage students to think about what they learn. Most of the times, some of my students respond immediately, while some who listen to such dialogues think and attempt to contribute to the discussion.

Students develop Critical thinking skills using relevant learning tools

Most teachers shared that selecting the appropriate pedagogies and providing teaching and learning aids, among other factors, influences how students think and study independently to achieve learning goals. In addition, they identified the importance of using teaching tools and the need to improve them for better learning outcomes. These tools help stimulate the students to think about what they see in the classroom or when they go on excursions. Introducing learning tools such as hand-made materials makes learning attractive and encourages students to discuss what they observe.

T2: I use relevant and attractive teaching tools to make students think, discuss, and develop their perceptions of a topic.

T3 and T5: We use teaching tools relating to the topics we teach in the classroom to stimulate thinking, especially abstract topics.

T7: I use teaching tools a lot. I improvise and encourage the students to improvise whenever the school does not provide for it. I observed that whenever I encourage students to improvise any teaching tool, they often think and participate in the learning activities.

T9: I often improvise when school management does not provide teaching tools such as drawings of Nigerian currencies while teaching money and banking. I also encouraged the students to be innovative and ask questions for further clarification before they improvise any teaching or learning aids when I taught them the theory of production. Most of the student drew some products that were influenced by their demands.

Teachers observed that students learn and participate in classroom activities when teaching and learning tools are introduced during classroom activities, mainly when the topic is abstract or seems vague.

> T3: I emphasize approaches that captivate and motivate students to learn and contribute to learning. For example, when the topic is abstract, I use teaching aids and involve the student more in learning. I once made a large drawing of the national currencies and encouraged the students to draw a smaller version.

> T4: Most students who hardly contribute to learning often express themselves whenever the teacher uses teaching tools.

> T6: We help students develop their thinking skills by guiding them to improvise instructional tools for teaching or learning. When I taught the division of labor theory, I introduced some tools, such as farmers' implements, to the students and guided them to draw and identify the essential parts.

> T7: I now know better how to make the students improvise some instructional tools when I observe that they learn better whenever I use them to teach. They can think of and construct some instructional tools employed for learning. This enables the student to participate fully in learning activities.

> T10: Since the teaching and learning tool assists students in thinking about what they learn, I allow them to describe how they can think about what they learn and improvise related tools to express their thoughts about the learning content.

Most teachers acknowledged that students are eager to learn whenever teaching and learning tools are available. They shared that the students are always active and think more about the tools they see before responding or asking questions.

T4: Students are motivated when they get fully involved in activities that captivate them. Hence, they contribute towards achieving the objectives of the lesson. To get them involved in the improvisation of aids, I allow them to describe how they will perform the task and guide them through it.

T8: I know better that I can make the students improvise some instructional tools. They can think of and construct some instructional tools employed for learning, enabling the student's full participation in learning activities.

T9: Whenever I use teaching aids, students participate more in classroom activities. They look at issues from various perspectives and express their thoughts.

T10: Students express willingness to improvise teaching and learning aids when they think about related topics. Most aids improvised by students show how they think about the topics while expressing their cognitive skills.

Some teachers stressed that a lack of teaching and learning tools can impede students' encouragement to think critically and develop their critical thinking skills. The teachers mentioned that school management should provide the needed tools, while the teachers should improvise and complement when the tools are inadequate.

T7: Aside from developing a curriculum that supports critical thinking skills, the need to provide teaching and learning tools is a significant challenge for encouraging critical thinking skills. Teaching some topics without instructional tools often distracts students and causes them to lose concentration during learning.

T8: Students think and participate more when the classroom is active. I also enjoy using instructional tools to stimulate them on topics that may not be attractive to them. However, there are often no learning tools to ignite the students' thinking. Hence, I explain the learning content to the students and try to stimulate them to think and participate in learning using any available relevant tools.

T9: Where school management cannot provide the necessary instructional tools to support the development of critical thinking, they should organize training on how teachers can improvise tools to assist the teaching and learning in thinking critically.

Teachers emphasize individual learning during classroom activities.

All the teachers agreed that there are links between critical thinking and individual learning. Each teacher articulated their role as a significant factor in influencing and anchoring this link. They expressed that students should learn to study alone and think about what they learn.

T4: I give time for students to reflect on the lesson but allow only a few of them to respond or ask questions due to time constraints.

T5: I like to ask the students individually probing questions about what I have yet to teach in the classroom. This enables students to think about what to say and respond to my question.

T8: Though we do not teach the students how to think, I ensure they think before they talk or respond to questions. I often allow the students to think about what I teach even while the lesson is ongoing.

T10: I often encourage the students to think and consider other options before concluding and giving an answer or asking questions

Teachers emphasized guiding students when studying individually to avoid deviation and ensure they think about what they learn. T5 and T8 mentioned that they guide and encourage students to evaluate and synthesize what they learn to understand and make decisions.

> T5: I use the individual study method a lot. I always teach students to evaluate the credibility and accuracy of the information they have or read. This helps the students determine whether their thinking is false, biased, or unsubstantiated.

> T8: I often encourage students to study alone to thoroughly understand learning contents and add more to the knowledge they acquire in the classroom. I also teach the students how to evaluate and integrate what they learn when they study individually with existing knowledge to form new pieces of knowledge.

T2, T4, and T6 shared that assigning individual assignments based on classroom activities or experience gained during an excursion or field exercises could help the students develop critical thinking skills, especially when they have basic information on a topic and decide to read and add to what they already know.

> T2: I often assign individual assignments, such as engaging the students in a market survey on the topic of 'inflation' in economics, to gauge how they understand the topics I teach and how they can think about them.

> T4: To assess the level of students understanding after embarking on an excursion, I ask them to write out their personal experiences and compare them with what they know previously about the topic learned during the excursion.

> T6: I encourage students to study individually to explore other learning methods. I can also use the individual study to expose students to study beyond the learning content and expand on related information that may not be in the initial learning content.

Through group learning, students think more and participate in learning

Teachers mentioned that students could think about what they learn when they work in a group. Group thinking encourages the students' participation towards the group's success. Teachers shared that guiding the students is essential to ensure everyone's participation and avoid a few taking over the group without recourse to others. They shared that students naturally enjoy interacting within and outside the classroom and strengthening their cognitive development. However, the role of the teacher is apt to stimulate the students to think and contribute to group work or discussion.

> T7: Organizing group work is significant for stimulating the students' thinking, though allowing students to participate in the group work alone without the teachers' contribution may derail the purpose and outcome. Sometimes, they need assistance organizing their groups to determine the starting point, the planning stage, and the concluding part to avoid derailment.

> T6: We need to coordinate the students, mainly because we observe that they need to get used to working together. Students should learn how to work in groups to express themselves confidently. If the students work together, they exude confidence in their thinking, interaction, and achievement of learning goals. Group learning helps the students gain thinking skills they can apply to other subject areas and future academic progress.

> T4: Students can acquire new knowledge that can be used beyond their current level of education and aid their development for future pursuits. Through group work, the students bring up unique ideas through thinking while we guide them to ensure that their contribution is relevant to the learning content. I also encourage group work to build the

capacity to engage the students with one another for an effective and result-oriented learning experience.

One teacher shared that to ensure that all students benefit from learning, the teacher can use peer-led dyads to bridge learning gaps among students and motivate all the students to participate in learning.

T5: Whenever I observe a student who has difficulties with a topic, I ask a confident student to help out, and I attach an incentive as a reward for the confident student. I remember when the school organized the Year Two competition after a visit to the Central Bank of Nigeria. Two students who participated and asked questions during the program represented my class. They coordinated the preparation sessions while I engaged all students to participate actively.

There are problems with time management when trying to encourage critical thinking skills

Teachers observed that developing the student's critical thinking skills would guide the teachers' choice of pedagogies and address the problem of time management.

T1: I can manage the time allocated whenever I understand the teaching approach that enables students to think about what they learn.

T5: Students need time to think about what they learn, but I have to teach quickly to ensure I finish the topics within the allocated time.

T8: A significant challenge I have observed about how I can encourage the students to develop critical thinking skills is that the school time schedules need to be revised to accommodate more time that can allow students to think.

Teachers shared that the school management allocated forty minutes to each topic, often insufficient time for students to think about what they learned.

> T3: The forty minutes I have to explain learning content are not always enough for me to allow students to think and ask questions. I often have a few minutes left to ask questions and respond to them before the end of the lesson.

> T7: The minimum time I have to teach some topics makes me use methods that are not student-centered because they require time for the students to think about what they learn. Sometimes, I needed to ask students salient questions about what I teach, but they were often slow to respond.

> T9: Whenever I allow students to express themselves during classroom activities, they perform better, but I do not always finish teaching the topic due to inadequate time.

> T10: I manage time and allow students to think about what they learn by asking them questions as assessments during classroom activities and homework.

School Management should equip teachers to develop critical thinking skills

The teachers acknowledged that critical thinking is essential, but they had no training in developing the skills to help them teach the students. They expressed that their lack of critical thinking skills has negatively impacted the methods and approaches they select to explain learning content to the students.

> T1: The school authority must teach us all that we need to know about critical thinking so that we can help the students.

> T2: The school management should periodically train the teachers in critical thinking so that we can encourage the students to think critically about what we teach them.

T3: My lack of understanding of how to teach students to think about what they learn affects my choice of teaching method.

T4: School management should organize periodic lectures and seminars on how teachers can develop their critical thinking skills. How do we teach what we do not know or understand? When we understand the concept of critical thinking and become critical thinkers, it will be easy for us to teach our students how to think.

T6: The teacher training curriculum should emphasize the importance of critical thinking and ensure that teachers are trained to develop their critical thinking skills. Teachers must receive basic training and participate in additional training programs during their teaching experience to enable students to become critical thinkers.

T9: I want to understand more about critical thinking to teach the students how to think. The more I understand the meaning of critical thinking and how to teach it, the more my students' participation and performance in classroom activities will increase significantly.

Teachers explained that understanding critical thinking is very important for them in planning their lessons and guiding the students to think and develop the skill. They shared that their knowledge of critical thinking skills will influence how they plan their lesson and assist students to be critical thinkers.

T2: When teachers are trained to be critical thinkers, they can teach students to be critical thinkers more quickly than when they do not understand the concept of critical thinking.

T8: I read some literature and articles on critical thinking, and it has helped me teach students how to think about what they learn and make informed decisions about various issues.

T10: My knowledge of critical thinking assists me in expanding my teaching scope to enable students to understand learning content clearly. It makes teaching exciting and classroom activities very participatory. It also helps me plan and manage my lessons within the time scheduled for each lesson.

Teachers face challenges when using student-centered activities

Teachers mentioned reviewing the school curriculum to help students develop critical thinking skills, as no learning content supports critical thinking or provides for teachers to teach students how to be critical thinkers. All the teachers emphasized the importance of training in teaching students to think. Therefore, reviewing the school curriculum and regular in-service and pre-service training of teachers will encourage the students to be critical thinkers.

T5: Though we ask students questions when time permits, we need basic training to ask them questions and teach them how to respond. This will significantly help classroom management, allow students to understand the learning content, and allow them to participate actively in classroom activities.

T7: Achieving teaching and learning objectives has been a significant challenge, even when we ask questions at the end of each topic. With critical thinking, we must start teaching the students how to engage this vital learning skill. Conversely, the school should take measures to introduce critical thinking to the students early, particularly those from the lower classes. The students would be able to develop the skills early enough for a better educational achievement of their future goals.

The teachers observed each student's peculiarity as a challenge when choosing critical thinking tools. For example, T4 reported instances where some students struggle to learn due to domestic challenges, which slows their learning pace and the achievement of the teaching objectives.

T4: I get disappointed and frustrated when I have to choose a suitable teaching method based on the socio-economic challenges of some students who can hardly think, concentrate, and participate in classroom activities. These students hardly contribute to learning and often cause distractions.

T7: You sometimes want to stimulate the students to think by giving them some problems to solve, but you need to relax due to the non-availability of time and other distractions, such as noisy classroom environments. Generally, most schools in Nigeria have limited classroom spaces, and classes are only sometimes engaged simultaneously. You can bring some aids to the classroom to stimulate the students to think, especially topics that may seem not too fascinating.

Teachers observed and identified the challenges of flexibly planning school hours and incorporating diversity in teaching to meet individual student needs and sustain engagement in learning.

T2: The school timetable needs to be more relaxed and not choked up. I often teach three or more classes daily and have to juggle through them all. It sometimes affects how I control class activities. I am often burdened with how to engage all the students to understand my thinking within the limited timeframe.

T3: I can hardly cover the school syllabus every session due to the limited time scheduled for every topic and subject. Most school timetables are very loaded, thereby not creating time for the students to think about what they learn, which is often impossible. However,

school management can introduce critical thinking into the school curriculum to address the challenge of time constraints and allow students to learn more and faster.

T9: The school timetable has no space to guide the students in thinking about what they learn. There are no breaks between classes for students to prepare for new lessons. Teachers maneuver from one class to another within the limited time to take up other classes.

4.4.4 Summary of Research Question 1

All the participants identified that critical thinking is essential in educational development and a tool to bridge the gap created by a changing global trend. They stressed that their experience as critical thinkers would impact their ability to build the students into more extraordinary critical thinkers. The participants emphasized various methods they can adopt to encourage students to think objectively about what they learn to achieve learning objectives. They commented on the adequate preparation while introducing or using student-centered approaches such as group and individual work to develop the thinking capability of the students.

However, the teachers identified some challenges that can impede the encouragement of the students to develop critical thinking skills, such as a curriculum that needs to support critical thinking. Teachers observed that most school curricula in Nigeria do not support the development of student's critical thinking skills, suggesting that teachers should ask and respond to questions after each lesson. Also, they identified a dearth in the provision of teaching and learning aids as a challenge to developing critical thinking skills, noting that such tools often captivate and encourage students to think about what they see and can contribute meaningfully to learning.

4.5. Research Question 2 - *How do students respond when teachers use pedagogies to support their Critical thinking skills?*

The demographics of the students that formed the focus groups are shown in Table 4.3

Table 4.3

Focus group demographic information

School	1	2	3	4	5	6	7	8	9	10
Participants	5	5	5	5	5	5	5	5	5	5
Gender	2M	1M	1M	1M	2M	3M	1M	2M	2M	3M
	3F	4F	4F	4F	3F	2F	4F	3F	3F	2F

Several themes on practical instructional approaches and critical thinking were evident in students' focus groups during this session. These themes were formed based on ideas that students frequently reported. Table 4.4 shows the coded references from each focus group. The ten focus groups were assigned letters from 1 to 10, while the numbers after indicate the frequency of quoted references discussed in each focus group.

Students indicated their interest in talking about how important the study of economics, one of the social science subjects in secondary school, is to them. However, they expressed their dismay at how they were taught and their performances. They expressed disappointment in their teachers' instructional approaches and preferred more concrete learning that allows more participation from the students than the teachers.

Table 4.4

Themes derived from students' focus groups.

Theme	Students Coded references	Example
Questioning helps students think about what they learn.	2(i), 3(i), 4(i), 5(iii), 7(i), 8(i), 10(i)	2/Bayo: I learn new things when my teacher introduces a topic with a question. I think about what to say when I have enough time to respond to questions.

		8/Zara: I enjoy questions that do not require me to respond with a 'yes' or 'no.' I prefer questions that make me answer the way I understand the topic. It makes me think and explain the topic as I know it without restricting me to what I learn in the classroom alone.
Thinking is crucial to improving students' performance.	1(i), 2(i), 3(i), 4(i), 8(i), 9(ii)	2/Theo: I think a lot about how my teachers involve me in classroom activities, even when unfamiliar with the topic. Thinking helps me to be less distracted about what I learn. 4/Mary: I respond well to questions when I think, and my teacher is always impressed with my contribution.
Dialogue is a powerful tool for developing critical thinking Skills.	1(i), 3(i), 4(ii), 5(i), 6(i), 7(i), 8(i), 9(i), 10(i)	5/John: I sometimes like to dialogue with my friends more than my teachers. I think freely and contribute more to the discussion. Dialogue with my friends can be more relaxing than with my teacher. 3/Debby: Although I do not particularly appreciate discussing with my classmates, I am also uncomfortable talking with my teacher. However, I think a lot about our discussions after our stay together. It helps me during the assessment period as I recollect most of our discussions.
Individual study activates students to think about what they learn.	2(i), 4(i), 5(i), 6(i), 8(ii), 9(ii), 10(i)	2/Theresa: I do not have enough time to study independently for personal reasons. Sometimes, my classroom is always noisy, thereby discouraging individual learning. 9/Adebola: When I study alone, I think about what we learn in the classroom. I also think about other things that could be more relevant to the topic and some questions I would like to ask the teacher.
Group work encourages students to think.	1(1), 2(i), 3(i) 5(ii), 6(ii) 7(ii), 8(i), 9(I)	1/Shola: Most of the time, I do the main task in the group work as the head of the class, and I still get the same grade as those who did not make any significant contribution to the success of the group work. This makes me feel sad sometimes and discourages me from looking forward to working with some students who are less committed to the group.

		5/Jafar: I perform better with students of the same academic standard. I contribute to classroom activities but often get bored when most group members do not contribute to learning. The group should be formed based on the academic level of members.
Opinion sharing activates students to think about what they learn.	2(ii), 4(ii), 5(i), 6(i), 8(ii), 9(ii), 10(ii)	4/Ben: During classroom activities, our teacher allows us to share our opinions about any topic……... 9/Bisi: Opinion sharing has helped me to improve my performance and has broadened my knowledge beyond what I learn in the classroom because it allows my teachers to correct me and put me in the proper perspective.
The shared experience of field trips encourages thinking.	3(i), 5(ii), 7(ii), 8(ii), 9(ii)	5/Ahmed: I played the country's Finance minister role after a field trip to the Ministry of Finance. My teacher asked the students to discuss what we learned during the trip and relate it to the ministry's role in budget planning. The field trip we had helped me act as the Finance minister. 9/Adebola: After an excursion to the Central Bank of Nigeria, I heard my parents discuss the challenges of the economic crunch and how it affects their purchasing power. Also, my teacher taught us about inflation after an excursion to the Ministry of Finance, and I related it to what I had heard earlier. We were all asked to discuss its effect on us and how the government can curb it. These topics have remained with me ever since.
Students think when they reflect on what they learn.	1(i), 3(ii), 5(iii), 7(iii), 8(ii), 9(iii)	4/Kemi: I am always happy to reflect on learning content, especially when I can relate it to what I already know. It helps me recall information whenever I need it for assessment, contributions, or responses in the classroom. 8/Zara: I enjoy thinking and reflecting on what I learn. When I reflect, I perform better and can compare what I learn with what I already know.

Students think more about what they learn during quizzes.	1(i), 3(i), 4(iii), 5(i), 7 (i), 9(i), 10(i)	3/Joan: We look forward to doing quizzes. We only do quizzes when we are preparing for an assessment. Quizzes help us think about what we learn and understand clearly.
		5/Ahmed: I answered a question, and there was a significant disagreement, which led all my classmates to pause and give various insights into what they felt should be the answer. My teacher gave us enough time to think about the question and made numerous suggestions, leading us to the correct answer. We spent some time trying to determine the answer, and I learned some new things about the topic based on the various suggestions from my classmates. The quiz session broadened what I needed to help me understand the subject.
Large class sizes and noise are challenges that negatively affect students' thinking.	1(ii), 3(i), 4(i), 6(i), 7(i), 8(ii), 9 (ii)	5/Maina: We would like to concentrate, but our classrooms are always noisy. If we learned in a less noisy classroom environment, we would feel better and be able to think about what we learned.
		8/Titi: A small classroom population is easy for teachers to control, though I gain more insights from a large population because of students' diverse contributions. In a large classroom, I listen to many contributions that enable me to think about what I learn from my classmates. It gives me many opportunities to ask many questions about the many contributions others made and gather more information relevant to the topics we learn during classroom activities. However, the noisy nature of the classroom does not enable me to enjoy learning activities because most of my classmates who are willing to learn are often discouraged by the activities of other class members.

Unsuccessful groups do not let students develop their critical thinking skills.	1(1), 3(1), 5(i), 6(1), 7(ii), 8 (i), 9(ii).	1/Shola: Most of the members of my group are very active. We argue about everything, and every member is out to show what they know, not minding to learn from each other. We seldom gain from each other because we are never patient to listen to one another. I am not happy being in the group with the class representative. She always wants to impose herself on the group even when his contribution is unrelated to the discourse topic. 3/Ayodeji: My teacher's presence during group work can positively affect the group output. It makes every member work together and contribute without rancor or strife. Where members are not cooperative and need to reach a consensus, the teachers can intervene and redirect the line of discourse.
The lack of teacher-student interaction discourages students' critical thinking abilities.	1(i), 2(ii), 3(i), 4(i),5 (iii), 6(i), 7(i), 8(i), 9(i), 10(i)	6/Kate: How do I express my opinion when the teacher talks all alone without asking the students questions or allowing them to comment? It has affected my interest in the subject, one of my favorites in the lower class. The teacher should allow students to talk and make the classroom more interactive. 10/Favour: I am always excited and inspired to learn more whenever I see tools to learn in the classroom. When my teacher introduced the topic 'elasticity of demand and supply' in the classroom, I could not comprehend it. However, when my teacher introduced a teaching tool, I understood the topic and performed well during my assessment.
Students contribute more to learning when teachers use teaching tools.	3(ii), 4(ii), 5(i), 6(ii), 7(ii), 8(ii), 9(ii), 10(iii)	7/Bashir: I enjoy learning whenever there are learning tools to work with and be guided by my teacher. It helps me to think about what to say and how to contribute to the classroom activities. 10/Dan: Instructional tools help me add value to learning and understanding new areas. They also assist me in asking questions about the learning content. I enjoy having more contact with the learning tools to add value to what I learn and prepare for class assessments. Learning tools help me be committed to learning activities relevant to classroom activities.

Questioning helps students think about what they learn

Students expressed that they valued questioning during their study, mainly when their teacher used it to introduce. They shared that questioning allows them to settle down to think and learn quickly. Most students also indicated that how their teacher asks questions and introduces particular topics sets the pace for learning, even when such topics seem too abstract or uninteresting. In addition, they always look forward to a good start-off from their teachers through simulation exercises with questions and answers or short illustrations that can make them think.

2/Theresa: I like it when my teacher writes about a topic and asks me to say what I know about it. It makes me think, and I always have something to say. Then, my teacher makes corrections, asks more questions, and explains the topic if I need to be corrected.

3/Debby: Whenever my teacher asks questions that I understand, especially those with examples, it makes me think and respond with examples.

5/Jade: My teacher asks many questions while introducing a new topic and encourages us to ask questions whenever we need clarification. These questions often allow me to concentrate and contribute during classroom activities

7/Simi: My teacher likes introducing new topics by telling short stories and asking questions about such stories, revising the last topic, and asking questions. I learn better with this method. I remembered some of these stories during the assessment, which helped me think about the learning content.

10/ Diana: My learning experience is fine when my teacher asks questions, and I can respond. I learn better when my teacher explains the topic clearly and asks questions to know if the topic is clear to us.

Most students shared that questioning is essential to setting the pace for active learning. They expressed that they quickly lose interest in the lesson when their teacher introduces a topic and does not ask them to say anything about it or allow them to ask questions. Students explained that they are always alert and think about the topic whenever teachers ask questions before, during, and after a lesson.

2/Mayor: I think about what and how to ask questions whenever possible. I also pay attention and remain active whenever my teacher asks questions.

4/Mary: My teacher does not always ask questions at any point of teaching. It makes me disconnect from whatever my teacher says. I lose focus on the topic quickly because I do not always understand what my teacher teaches and cannot ask questions.

5/John: My teacher creates a good learning atmosphere for me to think by asking many questions and responding to the ones we ask. Most of these questions stimulate us to think and participate in classroom activities.

8/Zara: I enjoy questions that do not require me to respond with a 'yes' or 'no.' I prefer questions that make me respond the way I understand the topic. It makes me think and explain the topic the way I understand it without restricting me to what I learn in the classroom alone. I remember when my teachers told me to tell the class all that I knew about taxation and its importance to the government. I explained the meaning of tax, why the government collects tax, and its importance. I could talk about what I know about taxation because I read about it after we went on an excursion to the tax office.

Students perceived that responding to questions helps them think, solve problems, and respond to given tasks. Therefore, they suggested that teachers ask more questions before, during, and after

each topic to help them respond to challenging situations. They added that questioning aids them in solving problems.

> 3/Sholape: Thinking about questions encourages me to solve problems. If the teacher gives me tasks to solve, my ability to think critically helps me solve the problem.

> 5/Maina: Whenever I respond or ask questions, I can solve problems. It boosts my self-confidence, and I strive more to get good grades. Solving problems significantly makes me think and boosts my academic progression.

Thinking is crucial to improving students' performance.

Students discussed thinking as something they do often, especially when they see or hear things that fascinate them. They described thinking as observing and getting precise information or finding meaning in an issue, sometimes to form a new opinion or maintain what they know based on conviction. Most students expressed that thinking is apt for learning and helps increase their performance and grades.

> 8/Gbemi: When I think about what to say, I feel more confident talking and expressing myself with my classmates. Therefore, my participation in the classroom helps to improve my performance.

> 3/Terry: Thinking helps me improve my grades, especially when my teacher asks us to discuss a topic. When I think about what we learn, my classroom participation level helps me during the assessment because I often remember most of what I say during classroom activities.

Students' disposition showed that they like it when they think before responding and contributing to learning. They talked about how thinking affects their response to questions and helps them

concentrate during classroom activities. They expressed that thinking is vital to help them retain what they learn.

I/Audu: When I think during classroom activities, I concentrate and participate more. I am always happy and active. Thinking helps me to participate actively in all classroom activities, such as group work and quiz

2/Theo: I think a lot about how my teachers involve me in classroom activities, even when I am unfamiliar with the topic. Thinking helps me to be less distracted about what I learn.

4/Mary: I respond well to questions when I think, and my teacher is always impressed with my contribution. During a lesson on Money as a means of exchange, I contributed to classroom discussion by telling my classmates how I made money during the last vacation and bought some books with the money.

8/David: Thinking helps me retain more information. I also remember what I learned during class assessment when I remember what my teacher explained.

9/Habeeb: I like thinking about what I learn and relating it to what I have read. When I do not think, I do not make meaningful contributions. This affects my grades and makes me sad.

Dialogue is a powerful tool for developing critical thinking skills

Students agreed that interactive learning could support the development of thinking skills. For example, they shared that during dialogue with other students, they think about the topic of discussion and respond. In addition, they noted that dialogue allows them to contribute to and share opinions with their peers. They also shared that they are happy to think, respond, and participate actively in learning whenever their teachers engage them in dialogue.

1/Joy: I like to dialogue with my teacher and classmates when I have an idea for the discussion or when the teacher explains the topic clearly. I would not say I like it when my teacher does not allow me to ask or respond to questions. Dialogue with my teacher gives me confidence and reminds me of all the topics we discuss.

4/Kemi: When I am with my classmates, I think a lot and have the confidence to talk about things I know. I also listen to hear what others have to say.

4/Tajudeen: I enjoy dialogue with my teacher and other students. It helps me learn new things from them. I always note everything we discuss and think about it to help me form an opinion. The notes I take often help me during revision exercises, especially the examples my teachers give whenever we dialogue with her.

5/John: I sometimes like to dialogue with my friends more than my teachers. I think freely and contribute more to the discussion with my friend because we can use our lunch period to discuss some topics and freely say what we think about them. Dialogue with my friends can be more relaxing than with my teacher. I am always not too accessible to discuss with my teacher because she is always in a hurry to round up the topic and leave the classroom

Some students indicated that when they dialogue, their ability to think improves tremendously, and their performance during classroom activities improves tremendously. In addition, most students shared that when they think before engaging in dialogue, they often add value to the topic of discussion, especially whenever their teachers lead or guide the dialogue.

3/Debby: Dialogue has helped me increase my classroom participation. It has helped me to think carefully and critically before I say anything. Even with my friends outside the school environment, I engage in dialogue after thinking of what to say or how to say it.

7/Bashir: I enjoy talking with my teacher. It helps me think about what to say and how to contribute to discussing the topic. I like it when my teacher leads the discussion. It allows me to think about his point before I make my contribution.

10/Dan: Most of the time, when I dialogue with my teacher, I add value to the topic. I also use what we discuss to revise and prepare for class assessments. Dialogue helps me to be committed to the discussion and relevant to classroom activities. It has helped me improve my communication skills because I have to think before contributing to any discussion.

In the focus groups, most students considered dialogue a significant support for bringing students not active in classroom activities to the limelight and aiding their confidence building for a better learning experience.

3/Debby: Although I do not particularly appreciate discussing with my classmates, I am also uncomfortable talking with my teacher. However, I think a lot about our discussions after our stay together. It helps me during the assessment period as I recollect most of our discussions.

8/Hakeem: When we dialogue, I think a lot and become more vocal and responsive to discussions. I am active and engage my peers in meaningful discussions about my opinion. When I discuss with my teachers and peers, I gain more information to make informed decisions.

9/Habeeb: Though I wouldn't say I like participating in classroom activities, my teacher's discussions with my peers always make me think. During a dialogue with my teacher on the new Accountant General of the Federation, my teacher emphasized that the minister studied Economics at the university as his first and Accounting as his second degree. That

discussion made me more interested in studying Economics and becoming my country's future Accountant General.

Students in schools 6 and 10 mentioned a wide gap between the active and less active students, which can hinder interactive learning strategies. A teacher can use this strategy by assigning active students to help those who are not so active.

6/Adaobi: Sometimes, the teacher assigns a student who understands a topic very well to help those who do not. The teacher often assigns some students to lead discussions when the time allocated for some topics has been exhausted, and there are still some sub-topics to cover. I remember being selected to lead a discussion session towards the end of a lesson. Though I did not prepare for the session, I thought about what I had learned about the topic and was able to discuss it with my peers.

10/Favour: I am inspired to learn more whenever I dialogue with my teacher. It helps me to broaden my scope on topics I do not understand and learn faster than when I dialogue with my friends. However, I am more comfortable with my friends because I can freely share my thoughts and speak more straightforwardly than the teacher.

Individual study activates students to think about what they learn

Most students explained that individual learning is essential and stimulates them to think, mainly when the teacher introduces new topics and explains the learning objectives. In addition, students talked about performing better when they have the time to engage in individual study.

8/David: In economics, studying alone is rewarding once the teacher has explained the concept you need to know, along with some examples for proper guidance. Also, it is more

enjoyable after an excursion to places relevant to what we learn. Individual study helps me concentrate and prepare for my assessment.

8/Zara: Studying alone helps me think about most of our classroom activities and recall most of the examples my teacher gives while teaching. It also helps me read ahead of my teacher and participate in classroom discussions. However, whenever I have other personal things on my mind, I easily get distracted and lose focus.

9/Adebola: When I study alone, I think about what we learn in the classroom. I also think about other things that could be more relevant to the topic and some questions I would like to ask the teacher. Studying alone helps my grades a lot. It makes me recollect many points that were not mentioned in the classroom.

In a predominant theme found in schools 5 and 9, students expressed that they learn new things constantly and quickly because their teachers engage them often in individual study. A student expressed her satisfaction with studying individually when she has the textbooks to learn with or when the teacher requests that they embark on individual study before going on an excursion to learn in advance about what they expect to see during the excursion.

4/Tope: I like it when my teacher asks students to explain what they have learned individually. It lets me let other students know that I study independently and comply with the teacher's directives. I am always confident and happy to stand up and tell my classmates what I learn when studying alone. I remember when my teacher asked me to tell the class what I read about an assignment. My teacher applauded my efforts and gave me a small gift. The next class witnessed more of my classmates who studied individually indicated their interest in telling the class what they learned during their study.

2/Theresa: It helps me to be confident about sharing what I learn, primarily when the teacher refers to my contribution during the lesson. I raised a point from what I learned while studying alone, and my teacher acknowledged it and even explained it further. My teacher's reaction has prompted me to engage more in individual study, and some of my close classmates are seeing reason to study alone, too.

5/Jafar: Whenever I study alone, I think a lot about the topics I have learned in the classroom. I also contribute to classroom discussions when I think about studying alone. I gain new insight into more topics and develop more confidence in my knowledge.

Another student pointed out that she preferred to study individually because she gained so much and was less distracted. Some students explained how individual study has helped them tremendously succeed academically.

6/Nneoma: I enjoy studying on my own. It helps me to think about what I read, and I can explain it in my own words.

9/Bisi: Individual study has helped me to improve my performance and has broadened my knowledge beyond what I learn in the classroom.

10/Lulu: I study alone often, and it gives me insight into the topic I learn in the classroom. It helps me to connect what I read in class with what I study individually.

Group work encourages students to think

Most students value working in groups because it enables them to discuss things and supports them in positively influencing the success of group work. Conversely, poorly organized group work could be demoralizing and disappointing and adversely impact the quality of learning output. In addition, a lack of student cooperation often affects the group's success.

2/Theo: Group work sets the pace for every member to think and contribute to learning.

3/Ayodeji: I greatly enjoy group work, mainly when our teachers help us plan it. Most things I remember during classroom assessments are those we discuss during group work

5/Jafar: Group work can be interesting because you must think about contributing to the group work.

7/Simi: It helps to increase my understanding of new ideas, and I gain more from the contributions of my teacher and classmates.

6/Toro: The composition of the group is fundamental to me. I do not particularly appreciate when some members feel or think they are better than others. It distracts me a lot and makes me lose concentration. I think group work should not be composed of only people who are very smart or not too bright alone. I am more confident and think often whenever my group members participate in our group assignment.

6/Kate: I wouldn't say I like group work because it can be very noisy, and some students do not cooperate with the other group members. Our last group work was not well organized, as some of my classmates were too domineering and did not allow some group members to contribute or share their opinions. It affected our output and grades even when I was willing to contribute meaningfully to the group assignment.

Some students raised the issue of equal grades for all members, even when some did not participate or barely attended the group work. Students opined that teachers should be present during group work to observe and grade students based on their input to the group's success.

1/Shola: Most of the time, I do the main task in the group work as the head of the class, and I still get the same grade as those who did not make any significant contribution to the

success of the group work. This makes me feel sad sometimes and discourages me from looking forward to working with some students who are less committed to the group.

8/Titi: Having the teacher around could allow all the students to participate maximally without leaving the task to only a few group members. I do not particularly appreciate it when the teacher is far from us. Most students who have a role to play often relax and leave their responsibility for other students to handle.

10/Favour: I would like to suggest that teachers grade members based on their level of contribution to the group. During our last group work, some of my classmates deliberately did not contribute but got the same grade as those who participated actively. This would make every member of the group work and learn together to achieve success.

At schools 5 and 8, the focus group emphasized the organization of the students in each group. The students condemned the unbalanced selection of group members. They expressed that such segregation can only create a wide gap in classroom activities and breed mediocrity among students.

5/Jafar: I perform better with students of the same academic standard. I contribute to classroom activities but often get bored when most group members do not contribute to learning. The group should be formed based on the academic level of members.

7/Risi: I feel more comfortable with my friends in my group; even when I do not learn much, I can think of what to contribute to the group discussion.

9/Adebola: I like to think a lot during group work, so I will not be a spectator. Whenever members contribute to learning, I think of what to say. I also remember most of the things we discussed during the assessment period.

Opinion sharing activates students to think about what they learn

Students articulated that they think more when the teacher allows them to share their opinions during classroom activities. They talked about learning how the teacher advises them to think about their responses before answering questions or sharing their opinions.

> 2/Ago: I like to think about what to say before sharing my opinion. This has helped my performance in classroom activities. Whenever I speak without thinking, I always make mistakes and give responses that may need to be corrected. Also, when I do not think before I respond to a lesson, I lose confidence in myself and my performance.

> 10/Nduka: Before responding to any question, I like to think about various things related to the question. This helps me articulate my thoughts and gives me the confidence to share my opinion with my classmates and teacher.

A student from school 4 stated that she often expresses her opinion on topics she thinks about and understands.

> 4/Ben: I like answering questions on topics I understand based on my opinion. This often earns me commendations from the teacher. For example, during the introductory economics class, I talked about the effect of food shortages on the economy. I could articulate my opinion because I watched a documentary on food shortages and discussed it with my friend. I think about this topic so much.

Most students explained that speaking based on their experience is essential and stimulates them to think more, mainly when the teacher explains new concepts and the learning objectives. They talked about better performance during classroom activities whenever they had enough time to share their opinions on what they learned.

8/David: I am always happy to express myself based on what I think about the concept of a new topic and when my teacher asks me to say what I understand about the topic. I sometimes give examples of what I can relate to the topic. It helps me to recollect salient points during assessment tests

8/Zara: My teachers always allow us to think and share my opinion about most classroom activities. It helps me to read ahead and prepare to participate in classroom discussions.

9/Adebola: When I share my opinion during classroom activities or learning, I think about what we learn in the classroom. I also think about other things that could be more relevant to the topic, such as some questions I would like to share more opinions on with my teachers and classmates. It gives me so much confidence whenever my teacher recognizes my opinion.

In a predominant theme found in schools 3 and 8, students expressed that opinion sharing helps them to express their thoughts and themselves clearly. They shared that the input of teachers ' opinion sharing is vital to help students think more and participate more in learning. A student expressed her satisfaction with opinion sharing when she is allowed to think or when the teacher requests that they read a text and explain it in their opinion.

4/Tope: I like it when my teacher asks students to explain what they understand about some highlighted text during classroom activities. It allows me to let others share what I know while I also share with them

2/Theresa: It helps me to be confident to share what I learn and know. I am always enthusiastic to learn more whenever my teacher acknowledges my opinion in the lesson.

5/Jafar: Whenever I share my opinion, I think a lot about the topics I have learned in the classroom. This helps me perform better during class assessments because I always think

and remember my opinion. I also contribute to classroom activities whenever my teacher asks us to speak on specific topics.

Some students pointed out that they preferred to express their opinions because they gained so much when they listened to their teachers and classmates. They shared how expressing their opinion has made them think and learn more about their peers.

6/Nneoma: I enjoy sharing my opinion. It helps me think about what I read, and I can explain how I understand it. My teacher always allows me to share my opinion, which has helped some of my classmates who were unwilling to share theirs. It has also helped me build confidence and represent my class during inter-class activities.

9/Bisi: Opinion sharing has helped me to improve my performance and has broadened my knowledge beyond what I learn in the classroom because it allows my teachers to correct me and put me in the proper perspective.

10/Lulu: Whenever I express my opinion, I gain more insight into the topic I learn in the classroom. It helps me to relate what I read in class to what I think about the topics we learn.

The shared experience of field trips is crucial to developing thinking skills.

Students were happy to share their experiences when they went on field trips. They expressed how they remember and enjoy discussing their learning during field trips. In addition, most students shared that whenever teachers asked them to identify some things during economics classes, they often related and gave examples of their field trip experiences.

Students in several focus groups indicated feeling relaxed and happy during their learning activities outside the classroom, which helps them think widely. They talked about being able to think about what they see and enjoy listening to information about what they have learned in the classroom.

3/Joan: I like learning outside the classroom. I enjoy going on excursions to see things differently and add to the knowledge gained from the textbooks or what my teacher explained in the classroom.

7/Andrew: I like it because it is exciting and informative, though it can be stressful if not properly organized. We had a long day when we went to a factory to see the production process of biscuits. The movement from one factory area was stressful and did not make the exercise enjoyable. Most of my classmates could not explain our activities in some areas visited.

8/Titi: It creates an opportunity to ask many questions, and you do not need to study a lot because you can see most of the information you need all around you. I confirmed some of the information I got from my teacher and textbooks. It was so fascinating seeing things the way they are

9/Adebola: After an excursion to the Central Bank of Nigeria, I heard my parent discuss the challenges of the economic crunch and how it affects their purchasing power. Also, my teacher taught us the topic of inflation after an excursion to the Ministry of Finance, and I related them to what I had heard earlier. We were all asked to discuss the effect on us and how the government can curb it. These topics have remained with me ever since.

9/Maryam: I like going on excursions. It is more interesting than being in the classroom.

In addition, the students indicated that they received much support from the teachers before, during, and after the excursion, enabling them to learn quickly with limited time.

5/Jafar: We go on excursions, and my teacher often asks us to note what captivates us during the visits and discuss it during classroom activities.

8/Gbemi: My teacher often allows us to think about and discuss important things we observe during fieldwork. Thinking about so much information available to me has been so enjoyable. After each excursion, I look forward to the class assessment, which enables me to showcase what I have learned during our fieldwork.

Students shared that teachers allow them to play roles based on what they observe during an excursion. They explained that teachers often request that students think about what they learned during an excursion and explain it during classroom activities. For example, a student referred to a lesson when the teacher asked them to talk about what they heard from the nation's annual budget news and relate it to their visit on an excursion to the Ministry of Finance. Another student relayed her experience when they visited a manufacturing company, and they played a role in the topic 'Division of Labour.'

5/Ahmed: I played the country's Finance minister role after a field trip to the Ministry of Finance. My teacher asked the students to discuss what we learned during the trip and relate it to the ministry's role in budget planning. The field trip we had helped me act as the Finance minister.

7/Bashir: I will never forget a short drama on "Division of Labour" after an excursion. My teacher asked us to demonstrate what we observed and then dramatize it. Most students maintained their pseudo-name for a long time (long laugh). I will remember this experience for a while, even as I replicated it at home with my siblings.

Students think more when they reflect on what they learn

Students expressed their enthusiasm when reflecting on what they learned. They stated that reflection helps them to think and identify various aspects of learning. Having time to reflect on

what the teacher teaches gives a better understanding of what they learn and how to apply them when needed.

> 1/Vivian: I like it best when I reflect on what I heard from the teacher in the classroom or during an excursion. Specific topics become clear when I do this.

> 3/Ayodeji: Reflecting on what I learn assists me in thinking and giving meaning to the topics my teacher explains. It also gives me various dimensions of ideas that I can expand while thinking.

> 4/Kemi: I am always happy to reflect on learning content, especially when I can relate it to what I already know. It helps me recall information whenever I need it for assessment, contributions, or responses in the classroom.

> 7/Simi: Whenever I reflect on learning content, I think more about what I know and want to know. Reflecting on what I learn helps me broaden my horizons and makes me a better student among my peers. It also helps me improve my grades and level of sound discourse with my friends and classmates.

Students talked about the teacher explaining the topics clearly to help them reflect and progress in learning. They mentioned that when they read their notes and textbooks in combination with the teacher's classroom explanation, the application of knowledge becomes seamless when they reflect.

> 1/Joy: I like to listen to my teacher and classmates. It helps me reflect on the learning content and their contribution to our learning topics.

> 4/Kemi: When I am with my classmates, I think a lot and reflect on what they say. Afterward, I gained more confidence in expressing myself and talking about what I know.

4/Tajudeen: I enjoy reflecting on my teacher's explanations of abstract topics. The more I reflect on them, the more insights I gain, and I learn new things.

5/John: I like reflecting on classroom activities whenever I am at home. It helps me recollect and think about everything we learned in the classroom. I also come up with new ideas during reflections, which make me think deeper beyond what we learn in the classroom. Reflection can be relaxing because it helps me think about what I learn with fewer distractions.

9/Kunle: When I reflect on what I learn, I can think and respond to classroom activities.

10/Lulu: For example, when I remember some of the examples given by the teacher and compare them with the illustrations from the textbooks, gaining more knowledge becomes easy.

Students think about what they learn during quizzes

Students pointed out that quizzes could be fun and make them think about what they learned. They indicated that whenever the teacher organizes a quiz, students show interest in participating and getting involved in learning. Students expressed that it involves thinking a lot, though it is more relaxing and enjoyable when they think and learn simultaneously.

1/Coreen: Thinking fast before responding to questions makes quizzes very interesting. The faster I think and write, the better for my team.

3/Ayodeji: Getting our teacher to organize quizzes is always interesting. Most questions affect what we learn in the classroom and serve to revise the topics learned. We think a lot before responding to questions. Organizing class quizzes without our teacher's contribution often ends in chaos because of various accusations and counter-accusations.

5/Jafaar: Quizzes often create apprehension in the classroom, but giving the correct answers makes it interesting. It helps the student to identify and emphasize their strength and weaknesses. For instance, I could identify some topics I need to improve

7/Tayo: I like participating in quizzes only when my teacher organizes and coordinates them. When students organize it, it is always full of confusion and arguments. I only learn a little whenever my teacher is not part of it.

9/Habeeb: Most students who are not active during classroom activities are lively whenever the teacher organizes a quiz. This group often strives to respond to questions and participate actively.

Students in several focus groups shared that they feel more relaxed and happy whenever their teacher organizes quizzes for them because it helps them think widely about various topics and recollect most topics they learned in the past. They talked about their ability to think and learn new things while noting unclear areas.

3/Joan: I like participating whenever my teacher organizes quizzes for us. It allows me to understand some previously treated topics in the classroom.

7/Andrew: I like it because it is exciting and informative, though it can be very noisy and rowdy if not adequately organized by my teacher.

8/Titi: It helps me understand some topics more and allows me to recall them during an assessment. It also helps me score very high grades on objective questions.

9/Adebola: After a quiz organized by my teacher before an assessment, I went through my notes to highlight some crucial points I did not consider before the quiz. I also listened to my teacher's explanation after each question we got wrong. It helped me prepare for my

assessment and recorded a much higher grade than ever. A quiz helps me note essential points in each topic and areas of emphasis by my teachers.

9/Maryam: I like quizzes a lot. They are more interesting than the usual classroom activities and allow me to express myself. I am more relaxed and attentive during quizzes because they help me recall many essential points in some topics.

In addition, the students indicated that they relate more with their classmates during the quizzes and get more precise explanations from the teachers whenever they deviate from the learning content. They expressed that most questions raised during quizzes are often featured during the assessments.

5/Jafar: My teacher often asks us to take note of some points we often view as irrelevant and read them up later at home. My teacher also explained some areas where we argue about the correct answer to gain more insight. The quiz helped me to avoid deviating from learning content and gave me direction on essential points in a topic

8/Gbemi: Quiz creates a bond among class members. When my teacher paired me with a new classmate during the quiz, I listened carefully, and we thought about our questions and shared ideas, which helped us answer our questions correctly.

Students shared that teachers allow them to explain what they learn after the quiz to make corrections and further explanations. They explained that teachers often request that students think about what they learned during quizzes and allow them to explain during classroom activities. For example, a student referred to a question raised during a quiz where the teacher asked to give an example different from what they learned in the classroom. Another student relayed her experience when they could not finish answering all the questions for the quiz because they could not agree on the answers.

5/Ahmed: I answered a question, and there was a significant disagreement, which led all my classmates to pause and give various insights into what they felt should be the answer. My teacher gave us enough time to think about the question and made various suggestions, leading us to the correct answer. We spent some time trying to determine the answer, and I learned some new things about the topic based on the various suggestions from my classmates. The quiz session broadened what I needed help understanding about the topic.

7/Bashir: I will never forget a quiz session where we argued about our teacher's answer to a question. Most of us thought the question was related to a topic we already learned, but it was content my teacher used as an example during classroom activities. We gave various answers to the questions but could only agree on them once my teacher explained and gave more clarifications. The session made my classmates think about the questions even after the quiz exercises, which lasted many days.

Large class sizes and noise are challenges that negatively affect students' thinking

Students stressed that noise is a significant distraction to thinking and has discouraged them from thinking about what they learn in the classroom. They attributed this factor to the high population of students and teachers in the classroom. Some students pointed out that sometimes the teacher needs to be more mindful of the noisy environment but continue teaching regardless of whether the students are learning. Therefore, most students may avoid attending classes or remain there without engaging in learning.

1/Audu: The teacher does not regard the noise as a distraction. Most of the time, the teacher talks and assumes we are listening while more than half of the students do whatever they want. It is a set-back in learning and affects our grades

1/Joy: The class is always too large for the teacher to manage appropriately. Most students need help to learn and make meaning from what the teacher teaches.

4/Kemi: Most of the time, the teacher controls the students against noise making, but noises from other classes often affect my learning. Nobody used to like this.

6/Nneoma: We only struggle to make meaning out of what the teacher explains, while those who can read individually find a way to help themselves. The noisy environment has encouraged me to study individually to complement whatever I gain from classroom activities.

8/Zara: The classrooms in my school are tiny, and there are a large number of students. They are not conducive to learning activities. Learning is not constantly engaging because most students are not always comfortable. Also, there is so much noise that thinking is almost impossible.

Students were happy to share their experiences when the class size was small. They expressed how interested and actively they are in participating in learning and contributing to classroom activities. Students shared that teachers have better control of the classroom population by making everyone think and participate in learning. In addition, most students shared that teachers can identify all the students and take note of their strengths and weaknesses. Students in several focus groups indicated feeling sad and unable to think and learn more in a large class because of distractions and loss of concentration. They talked about being unable to think about what they learn due to noisy classrooms and the inability of the teacher to control the large population.

3/Joan: I like learning in a small population of students. It helps me to concentrate and think about what I learn, and I gain more while interacting with my classmates

7/Andrew: I like small classrooms more than large ones because there are few distractions, and we identify ourselves while contributing to learning.

8/Titi: A small classroom population is easy for teachers to control, though I gain more insights from a large population because of students' diverse contributions. In a large classroom, I listen to many contributions that enable me to think about what I learn from my classmates. It gives me many opportunities to ask many questions about the many contributions others made and gather more information relevant to the topics we learn during classroom activities. However, the noisy nature of the classroom does not enable me to enjoy learning activities because most of my classmates who are willing to learn are often discouraged by the activities of other class members.

9/Adebola: I observed that a large classroom population significantly distracts learning. I prefer to stay close to the front roll to gain from the lessons because students far away from the front roll get distracted easily because they hardly listen to my teacher's explanation on the topic we learn. I also observed that my performance could have improved in a large class due to a lack of assimilation of the learning content.

9/Maryam: I am comfortable learning where there is no noise. A noisy learning environment makes assimilation tricky for me, as I lack concentration and the ability to think.

Unsuccessful groups do not let students develop their critical thinking skills.

Students expressed dissatisfaction over having many groups in an exact location, which often leads to distractions. Some students said that group work in such conditions hardly yields

positive results. Keeping a reasonable number of groups in a classroom would enable each group to work better with fewer distractions.

6/Abu: I do not particularly appreciate it when there is much noise in the class. I need help thinking or contributing to learning.

7/Simi: The noise from the other group distracts me. I cannot cope with noise, and my thinking becomes complex.

9/Kunle: To reduce interactions and disturbances, it would be appropriate to have fewer groups in a classroom or, better still, demarcate the classrooms.

Some students raised the issue of wrong grouping, where teachers place only active students in the same group and the non-active to their fate. They observe that the non-active barely engage in meaningful discussion and often gain anything significant to make them think about what they learn as a group. Students opined that teachers should mix the students so that the active students can influence the non-active to think and contribute to learning.

1/Shola: Most of the members of my group are very active. We argue about everything, and every member is out to show what they know, not minding to learn from each other. We seldom gain from each other because we are never patient to listen to one another. I am not happy being in the group with the class representative. She always wants to impose herself on the group even when his contribution is unrelated to the discourse topic.

3/Ayodeji: My teacher's presence during group work can positively affect the group output. It makes every member work together and contribute without rancor or strife. Where members are not cooperative and need to reach a consensus, the teachers can intervene and redirect the line of discourse.

5/Jafar: Although I perform better with active and intelligent group members, I get distracted easily because some students like to impose their thoughts on the group.

7/Risi: I am very comfortable having my friends in my group because I am more relaxed and can think of what to say without feeling that what I am saying is not essential or makes no sense.

8/Titi: My group members are not active. We do not achieve more in our learning activities because most group members always wait for whom to speak first, and we do not take note of those who do not make any contribution. I only appreciate it when I am in a group with active classmates. They make me think about what to contribute during group learning, and things are fascinating for me. However, they always disagree and need clarification whenever the teacher is not in the classroom to guide our discussions.

9/Adebola: I often think during group learning with very active group members. Whenever I am with non-active group members, I relax and do not always think of what they say. There are no contributions that can make me think or respond.

The lack of teacher-student interaction discourages students' critical thinking abilities.

Another student complained about being unable to think due to time constraints and the non-interactive disposition of the teacher during teacher. Students condemned the limited time available for question and answer sessions. They commented that there are questions to ask during and after lessons, but the time allocated to the lesson is only sometimes sufficient for them to think deeply and respond correctly. It often leads to the teacher asking them to read their books to respond to their questions.

I/Audu: I need more time to think during classroom activities. The time is only sometimes enough to think and ask or respond to questions.

3/Ayodeji: I like to think about what we learn, but the time available is sometimes enough. So, I use my free time to read more and meet with friends to exchange ideas. In addition, I use the free period to read past questions on topics we have learned and prepare for the following lessons.

5/David: There is no time to think. We only copy notes after the teachers' short explanations, and there is often no room for question-and-answer sessions.

9/Habeeb: Sometimes, we all give wrong answers to questions our teacher asks us because we need more time to think. When there is time after the lesson, we answer the teacher's questions without asking anyone.

6/Kate: How do I express my opinion when the teacher talks all alone without asking the students questions or allowing them to comment? It has affected my interest in the subject, which is one of my favorites in the lower class. The teacher should allow students to talk and make the classroom more interactive.

Students expressed that they valued interacting with their teachers during their study, especially when their teacher introduced topics that would make them think. They shared that interaction with their teachers will allow them to settle down to think and learn quickly. The students explained how their teacher asks questions and introduces particular topics to set the pace for learning by getting them to talk more and contribute to learning. Students acknowledged that they look forward to interacting with their teachers to create a bond that can make them think and participate actively in learning.

2/Theresa: I like participating in learning when my teacher discusses the topic and allows me to say what I understand. It makes me think about what to say and contribute to classroom activities. Interacting with my teacher gives me the confidence to know what to say and relate it to learning content. It also allows my teacher to give me more information to help me understand the learning content.

2/Mayor: I think a lot about what and how to ask questions whenever my teacher engages me in extensive interaction about the topic. I also pay attention and remain active whenever my teacher asks questions.

5/Jade: Interacting with my teacher during classroom activities makes me think and gives me clear insight into the learning content. My teacher interacts with me to encourage me to ask or respond to many questions during classroom activities.

8/Zara: I enjoy interacting with my teacher, especially when I answer questions requiring me to think and explain a topic. I do not like answering questions that do not require me to respond with a 'yes' or 'no,' but I enjoy responding to questions that make me think and explain learning content.

Students expressed that they quickly lose interest in the lesson when their teacher introduces a topic without asking questions or allowing them to say what they know about it. They condemned the teacher taking complete charge of all the classroom activities without allowing any input from the students. Students also shared that they dread sitting in the classroom without contributing to learning because they need to think about what they learn, and their efforts do not yield many responses. The reason is because they need something to think about the lesson.

4/Mary: My teacher only sometimes asks questions at any point in the lesson. This disconnects me from what my teacher says. I quickly lose focus on the topic because I only sometimes understand what my teacher teaches, and I cannot ask questions.

5/John: My teacher does not create a good atmosphere for me to think about what I learn because I need the opportunity to ask or respond to any questions. I do not ask questions because I do not know what and how to ask. I look forward to the end of the lesson because I gain little from my teacher's explanation, which is always unclear.

7/Simi: Lack of interaction makes learning very dull. I do not think about my teacher's explanation whenever there is no connection through interaction. My teacher often likes to talk alone without asking questions or allowing us to ask questions whenever we do not understand the topic we are learning.

10/ Diana: I do not have a good learning experience whenever my teacher does not ask questions or allow me to ask or respond to any question. I get easily distracted and do not connect to the lesson, even when I try to think about what my teacher has to say.

Students contribute more to learning when teachers use teaching tools

Some students highlighted the challenges of the need for textbooks and other learning tools. They shared that they encounter some setbacks whenever they want to access more information to help them think about what they learn due to the non-availability of textbooks, especially when they have assignments to do.

3/Ayodeji: I like to think about each lesson for the day whenever I get home, but I do not have access to textbooks to get more information to add more value to learning,

7/Simi: I learn more whenever there are learning aids, but we do not always have anything to learn with.

6/Kate: I need help getting textbooks to study independently and finish my assignments faster. Also, there are no learning aids during class activities that help me learn faster.

Students agreed that introducing teaching and learning tools could help them develop their thinking skills. For example, they shared that they think more about what they learn whenever their teacher introduces teaching and learning tools to expatiate the topic. In addition, they observed that learning tools allow them to understand learning content and contribute during classroom activities.

1/Joy: I like to observe the teaching and learning tools my teacher introduces. It gives me a clear understanding of the topics and assists me in contributing to classroom discussion.

4/Kemi: When I am with my classmates, I think a lot and have the confidence to talk about things I know whenever instructional tools are available for learning.

4/Tajudeen: I enjoy learning whenever my teacher comes into the classroom with teaching and learning tools because it helps me learn new things while adding to what I already know.

5/John: I like using teaching tools to support my learning because they allow me to think freely and connect my knowledge with my teacher's explanation.

Some students indicated that classroom activities are more exciting and interactive when teachers introduce teaching and learning tools to learning. Also, students improve their ability to think and their performance. They also relate well with their peers for optimum performance.

7/Bashir: I enjoy learning whenever there are learning tools to work with and be guided by my teacher. It helps me to think about what to say and how to contribute to the classroom activities.

10/Dan: Instructional tools help me add value to learning and understanding new areas. They also assist me in asking questions about the learning content. I enjoy having more contact with the learning tools to add value to what I learn and prepare for class assessments. Learning tools help me be committed to learning activities relevant to classroom activities.

In the focus groups, most students considered learning tools significant in capturing and helping students who were not active in classroom activities contribute and build their confidence for a better learning experience.

3/Debby: I appreciate using learning aids because they make learning more enjoyable. I can always recall what I learned, particularly during the assessment period when my teachers use teaching tools during classroom activities.

8/Hakeem: I often think and respond to questions whenever my teacher introduces instructional tools. This encourages me to participate in all classroom activities and gives me more insight, enabling me to make informed decisions about what I learn. Looking at the learning tool provided by my teacher encouraged me to learn and contribute better to learning.

9/Habeeb: Learning tools help me to think and learn fast, especially when the learning content is abstract. Whenever my teacher links the tools with learning content, I easily recall and think about what I learned.

Schools 8 and 10 students shared that their learning experience differs when their teacher uses instructional tools. They expressed that the performances and grades of all students during an assessment are always better than when their teacher does not use any of the learning tools. Most students also shared that classroom activities often extend beyond the scheduled time because they engage their teacher more in the lesson for further clarification.

> 6/Adaobi: I perform better whenever my teacher introduces teaching or learning tools during learning. It gives more meaning to learning and makes my teacher explain and link the lesson for clear understanding.

> 10/Favour: I am always excited and inspired to learn more whenever I see tools to learn in the classroom. When my teacher introduced the topic 'elasticity of demand and supply' in the school, I could not comprehend it. However, when my teacher introduced a teaching tool, I understood the topic and performed well during my assessment.

4.6 Summary of Research Question 2

Evaluation of the themes related to practical instructional approaches and critical thinking skills suggested that students have various experiences when their teachers influence their critical thinking skills. Students talked with much excitement about the teaching methods of their teachers and the effects on their academic achievement. They explained how they learn new things quickly based on how the teachers introduce new topics with questions. Students described their experiences when they learned as a group and individually and the effects of thinking on their academic achievement. They observed that though group work enables thinking, it can negatively discourage students from thinking critically when shoddily organized. At the same time, an

individual study can suffer setbacks due to a lack of essential learning tools such as textbooks, inadequacies of the teacher, and other social factors.

Generally, students articulated that opinion-sharing and question-and-answer sessions during classroom activities make them think and contribute to learning. They expressed that the role of teachers in guiding the students to gain more knowledge outside the classroom experience is apt for confidence building and thinking widely before responding to or asking questions. Students expressed that thinking is crucial as they learn, though they often do not ask questions or respond to any by the teachers due to the limited time scheduled for each lesson. They also identified the challenge of noisy classrooms, which affect clear thinking. Conversely, they shared that thinking ignites problem-solving skills, which helps their academic progression.

Students in several focus groups suggested that the school timetable should be accommodating enough for them to reflect on what they learned, as they preferred to have enough time to think about what they learned. They identified that creating time to reflect on their knowledge can help them apply it to their thinking. Students indicated that they enjoy participating in quizzes and suggested that they should be regular in their learning activities, excursions, and fieldwork. They stated that quizzes enable them to think more about what they learn in summary and prepare for assessment beyond the classroom experience.

4.7 Evaluation

Findings showed that students in school one wanted to learn when the environment was conducive, and they valued the teaching methods used by the teacher. They expressed that they always look forward to a learning atmosphere where they can interact with their teacher freely while asking and responding to questions. In addition, students appreciated the individual help

provided by the teacher in the form of dialogue. However, they complained about the limited time to participate actively in classroom activities. Students also expressed that they enjoy group work with their mates because it helps them think and learn fast. Results from the school one teacher's interview showed that the teacher needs help understanding the concept of critical thinking. However, the students claim they ask questions after each class whenever time permits. The teacher explained that they sometimes ask and respond to students' questions based on teaching objectives to determine if they understand the lesson. They also noted how students responded during classroom activities and compared it to their performances during the assessment. The teacher complained that there is limited time to engage the students in group learning or excursions because the school timetable is loaded, and it is essential to cover the syllabus before assessing the students' performance.

Students in School 2 shared how they have learned much content quickly due to their teacher's captivating teaching methods. They expressed that the teacher uses different techniques that explain learning content better and faster, which makes them perform above average and score good grades during assessments. They, however, stated that the school environment is not just conducive for them to think about what they learn as they are often distracted by noises from other classrooms, which leads to a loss of concentration. Students observed that their teachers do not suggest that their teachers rarely use teaching tools, even when they need help comprehending the lesson. They suggested that teachers should allow them to go on excursions to learn more about some topics they have read. Students also strongly support the idea that their teachers will enable them to engage in individual study while the teacher corrects them wherever they make mistakes.

The teachers' interview session showed that critical thinking is relevant, but how to use it for teaching students needs to be clearly stated in the school curriculum. They suggested that

including critical thinking in the school, curriculum can influence the teaching method they choose if the environment is more conducive for the students to think. They also admitted that group work and individual study are relevant methods to help students think about their learning. Teachers observed that whenever there is time to allow students to express them during classroom activities, they perform better and get good grades during assessments.

Students' focus groups in school 3 revealed that most lessons followed the same pattern with one teaching method only relevant to some topics. They shared that they do not engage in group work or are encouraged to study individually. The students must interact more strongly with the teacher, who is constantly hurrying to finish the lesson and proceed to other classes. The students in School 3 appreciate the importance of thinking and being allowed to participate actively in learning. They discuss their major challenge of the inability to ask questions in the classroom due to limited time to think about what they learned and what they need to ask. The students revealed that their teacher gave them long notes to write without explaining the content. Most significant for this class was that the teacher needed to engage the students in methods that could make them think and participate actively during classroom activities. Students felt that they could have learned more from their teacher due to a lack of interaction that could make students think and contribute to what they learned.

The interview sessions showed that critical thinking is a new concept to the teacher until I explained its meaning and importance. The teacher then explained that asking students questions during class activities can make them think and participate actively in learning. They also observed that teaching tools stimulate students to contribute to learning, as they always concentrate more during classroom activities and ask questions. Finally, the teacher acknowledged the importance of asking questions to assess students' understanding of the learning content but admitted that

knowing how to ask questions that can ignite students is very important and should be encouraged.

Students' focus group discussions in school four showed that most classes needed their teacher to engage them to participate more in classroom activities, essentially whenever they go on excursions. The students often learn based on the teacher's instructions in preparation for the routine assessment. They are very independent and engaged in unguided group work without support from the teacher, but they support their learning through the Internet and other resources outside the classroom environment. There is strong evidence that students enjoyed working in groups, as they pointed out that they can think and participate more in classroom activities whenever they engage in group work. The students agreed that group work is a powerful method their teacher uses to engage everyone in the classroom to think and participate in learning. Students criticized the non-availability of learning tools, mainly when the lesson was unclear. They agreed that they use teaching and learning tools to support their classroom activities and engage them in thinking about what they learn. Students criticized the structure of the school timetable, which only accommodates the required time to learn based on the subjects and topics that need more lesson periods.

Conversely, the teacher pays attention to learning outside the classroom through excursions and fields that allow the students to think and ask questions to learn more. They acknowledge the importance of group learning and individual study as relevant teaching methods to assist students in thinking about what they know. The teacher complained about a lack of instructional materials and very busy and loaded school timetables to give them more time to engage the students in learning. They also acknowledged the importance of interacting with the students to assist their thinking and contribute to learning, but time allocated is a significant barrier.

In school five, the students agreed that quizzes help them think when their teacher organizes them. They condemn some learning content that does not support thinking and when the teacher does not entertain questions or ask questions. The students shared that they enjoy interacting with their teacher, especially when introducing new topics when they think about what to say and contribute to learning. The students acknowledged the importance of working in groups and how conducive it can be when the teacher explains the learning content beforehand. The teacher agreed that students gain more during group work, though she mainly uses a teacher-centered approach because it is faster and helps to manage time to finish the topic before the end of the period. The students shared that they think and learn more whenever their teacher introduces learning tools during classroom activities. They suggested they can be adopted to regulate time since it helps them learn faster. They expressed that interacting with their teacher helps them to analyze what they think, enabling them to ask and respond to questions freely while gaining more insight into the topic they are learning.

The teacher valued each student's contribution during group work but was always anxious that concluding the lesson scheduled for the class was always challenging. They explained that individual learning is also vital to engage the students in thinking about what they learn. However, the time to review the learning content with the student and the need for introductory textbooks are significant challenges. Teachers expressed disappointment in being unable to interact more with the students due to lack of time. However, they identified the benefits of one-on-one interactions for thinking and learning. They also shared their wish to engage the students to study individually but observed that more time may be needed to review what the students think about their study.

Findings from school six suggested the need to consider critical thinking more, as students only think whenever they have enough time for class activities. The students appreciate learning more whenever they have time to reflect on the lessons they learn. Findings suggest that learning occurs when the students work in groups and participate in a quiz or excursion. The teacher allowed students to take note of salient points during group work and later helped them avoid deviation from the learning content. Findings also show that student performance increased whenever they engaged in group discussion because all the students often participated in learning. While the students acknowledged and identified the benefits of group work, they were usually disappointed when the teacher could not guide and support them to maximize its benefits. As a result, it leads to difficulties in thinking and affects proper time management, which often impedes better performance.

Results from the interview show that the teacher in this school needs to engage the students adequately in learning, though the students are eager to think and learn more. For example, the students often need clarification about what they discuss or learn whenever the teacher is away. However, they often need a significant response from the teacher to guide and avoid deviation from learning content. The teacher in this school acknowledged that student-centered methods are fascinating and essential to assist students in thinking about what they learn. The challenge of time often discourages them from using it. The teacher explained that she uses teacher-centered approaches to finish the lesson on time and then engage the students in question and answer sessions, often needed to make the students think about the lesson. The teacher wished the school timetable was flexible and the school management engaged the teachers in training and re-training in tune with changing trends in the teaching profession; teachers' teaching strategies would change to enable students to learn more.

There was a substantial clamor for more time to think about lessons learned by teachers and students during classroom activities in school 7. While the teacher admitted little or no knowledge of critical thinking and its benefits for enhanced learning, students opined that when they have enough time during classroom activities, they learn better and engage with their teacher more. This result supports the idea that good time management using the appropriate pedagogies is apt for the teacher to engage the students in learning.

Results from the students seemed to support the idea that learning thinking and learning cannot be placed in a teacher-directed environment as it is dominated solely by teacher talk and theoretical lessons without any opportunities for students to engage in group work, interaction with their teachers, and other student-centered approaches. Students could only listen and take notes on the learning content whenever possible. Conversely, when the teacher's choice of pedagogy does not support the topics, it leads to poor time management and non-achievement of teaching goals. Students stated that full participation in classroom activities stimulates thinking and responding to or asking questions but face difficulties thinking when there is limited time and consequently record low participation in class. Therefore, they had no support for teaching methods that did not allow them to participate in classroom activities.

In addition to these suggestions, the teacher in this school emphasized training that supports the development of critical thinking skills for proper engagement of the students. The teacher acknowledged that the advent of intent has exposed the students to more knowledge, and the need for teachers to guide the students on how to think about the information they have is apt. For example, most students are always enthusiastic to engage in group work because it allows them to express themselves based on their knowledge. It is apt for teachers to guide and correct them

against misinformation or disinformation of learning content in order not to influence other group members.

The teacher in school eight understood the concept of critical thinking, as was reflected in the focus discussion sessions with the students who actively engaged me during the focus discussion session. The result from the discussion showed that students interacted freely with their teacher and their peers during classroom activities and had the opportunity to ask and respond to questions. They enjoyed working in groups and learning outside the classroom mainly because the teacher often taught them what to expect and think from various perspectives before responding to or asking questions. Students discussed the difficulties with time management on some topics that influenced their understanding of an abstract topic, sometimes leading to their below-average performance. They wished they had more time to think about their learning content, particularly during group learning when they are allowed to contribute to the topic of discussion. Students shared that they enjoy how their teacher introduces topics to them and how they take turns to express them, giving various perspectives on what they can think and share with their teacher.

The result further showed that students work alone when they know how to think and participate actively due to the choice of teacher's pedagogy. The perceptions of pedagogy revealed that students felt the teacher valued their responses during classroom activities and their efforts to think during the lesson. The teacher in this school understands the importance of developing students' critical thinking skills by using approaches that can stimulate them to think about the learning content. The teacher expressed that students learn more in a teacher-directed environment even when they emphasize student-centered approaches because it enables her to help students, praise them, and encourage them to think before expressing themselves. The teacher in this school stressed how successful lessons can be with fewer students while describing the difficulties of

maintaining discipline in a large class, negatively influencing the teacher's feelings about the profession.

Students in school nine identified the teacher's role in guiding learning activities and how important it is for the teacher to engage and stimulate them to think. They observed that they recorded low performance when the teacher needed to adequately engage them in learning activities but always asked them to write notes without explaining the content. The student focus group in this school engages students in a variety of self-help, including organizing quizzes using previous question papers, surfing the Internet on grey areas in their learning content, and organizing group discussions to acquire more knowledge outside the teachers' minimal efforts. Strong evidence pointed out that students would like to work in groups, interact with their teacher, and go on excursions, but the teacher was only sometimes available to engage the students. In addition, lack of cooperation between students and too much noise in the classroom influenced group work negatively. The students agreed that individual learning is good and can assist them in learning more, but the input of their teacher is vital to guide and support them in thinking about what they know. Students felt that they could learn a lot from their teacher, and their opinions were valued if they were adequately engaged and encouraged by their teacher. Responses from the teacher showed a need for more knowledge of critical thinking. The teacher admitted frequent absences from class, attributed inadequate time to teach, and gave students notes to jot down simultaneously. However, they observed the zeal in the students to think about what they learn individually and have the potential to perform better when guided to think about what they know or have learned. The teacher advocated for providing teaching and learning tools to stimulate thinking and help manage the time scheduled for each class. In addition, the school management

should organize periodic training for the teachers to keep them abreast with the innovations in teaching.

Students in school ten expressed satisfaction with the teachers introducing new topics, making them think about and look at the subject from diverse perspectives. They observed that the introductory part of the lessons often captivates them to engage in thinking and ask and respond to questions. However, the students shared that they only think about the topic if they can contribute to learning, affecting their performance during assessment. The perceptions of pedagogy statements revealed that students felt the teacher valued their contributions during classroom activities and considered their efforts during the lesson. Students discussed the difficulties with lesson time management, which influenced their understanding, and fear of poor performance often affected their class participation. A dominant theme in students' discussions was constant dialogue and interaction by the teacher with the students, which stimulated the students to think and participate actively in classroom activities. In the interview, the teacher expressed the importance of engaging the students to think about what they learned and other relevant content that influenced their perspectives about their study. In addition, the teacher shared that successfully planned lessons with corresponding approaches can stimulate students to learn during classroom activities when they have adequate time to think. They emphasized how students perform better when they engage in group and individual study whenever the teacher guides them to avoid deviation from the learning content.

4.8 Research Question 1 - *Q1 What pedagogies can teachers use to encourage critical thinking in students' learning experiences?*

4.8.1 What is the knowledge of critical thinking among teachers?

Educators at all levels have been concerned about providing qualitative assessments of students' experiences and progress over the decades. Many schools must give visible evidence that learning is taking place and that students' involvement is participatory. Though measuring and evaluating learning outcomes is complex, using skills such as critical thinking produces better results in assessing students' performance in the classroom and beyond (Paul & Elder, 2006). Unfortunately, most students do not practice these skills because many teachers only have a minimal understanding of critical thinking and how to develop students' skills. Studies showed that many teachers lack basic knowledge of critical thinking and how to incorporate it into their lesson plan, thereby making encouragement and development of the skills in students a herculean task (Abrami et al., 2008; Larsson, 2017; Edwards, 2023). The involvement of schools and curriculum developers in the development and improvement of critical thinking in students is apt if schools can infuse the concept into the curriculum of all subjects and at the early stage of learning is relevant (Dekker, 2020). Teachers have essential roles in developing critical thinking in students, as studies have shown that teachers who have the training to teach critical thinking are more effective in encouraging and developing it in students than teachers without such training (Abrami et al., 2008).

Teachers acknowledge the importance of teaching critical thinking to students and are aware of critical thinking skills that they can utilize to guide the students. They expressed that they can use personal efforts to teach students without taking cognizance of developing critical thinking skills in students. It implies that most teachers need to gain proper knowledge about critical thinking, how to implement it, and how to teach students to be critical thinkers. Teachers identified barriers that impede the use of critical thinking despite its benefits, such as inadequate time, lack of knowledge of critical thinking and its advantages to achieving learning goals, a need for more

teaching and learning tools, and poor educational infrastructure. Teachers can address these challenges by encouraging students to engage in individual study by accessing the internet for more information given to the students during classroom activities. It will help students reflect on topics they know and what they get from the internet. However, teachers should guide the students in understanding what they get from the internet to stay consistent with the topic of interest.

Time constraints are another challenge that has hindered teachers from covering specific outcomes that leave little time for more practice to teach critical thinking skills. It is an indicator that teachers need training before teaching critical thinking, as they will learn how to plan their lessons, train their students, be critical thinkers, and overcome barriers to teaching critical thinking. Teachers should focus on developing a positive attitude about critical thinking and infusing it into their teaching content to develop students' skills. This emphasis on critical thinking is not just a pedagogical strategy but a necessity in preparing students for the complex challenges of the real world.

In response to the first research question, findings reveal that teachers have different perceptions of critical thinking. Only three of the ten sampled teachers had an idea of critical thinking and included it in their teaching. However, most teachers expressed that critical thinking is new and has no bearing on what and how they teach, although they are willing to understand critical thinking and how it can help achieve teaching goals. Meanwhile, those who understood the meaning of critical thinking mentioned how it had impacted their teaching and enabled the achievement of teaching goals, though there were challenges. They suggested strategies that developing critical thinking skills in learners is vital to resonate in their lives what they learn all through their academic years and life outside school. Most teachers unfamiliar with critical

thinking acknowledge that they must understand it and develop self-esteem to encourage students to develop these skills. They agreed that the main obstacles were the need for more knowledge of critical thinking, difficulty in evaluating learners, and knowledge of how to promote critical thinking. They also agreed that self-esteem will enable teachers to demonstrate their efforts, which will help students aspire and become successful in their academic pursuits (Phillipson & Wegerif, 2017). Although they knew teaching methods are influential in enhancing critical thinking and cognitive skills, teachers resisted implementing innovative teaching strategies, for it was challenging to apply new teaching practices.

Teachers who understand the importance of critical thinking to achieving learning goals expressed that students must learn to be critical thinkers before they can apply the skill to learning content; hence, teachers should encourage them to think about what they learn by praising them explicitly. It will help the students to understand what factor supports their learning experiences and link them to prior learning (Kendra, 2021). For example, a teacher shared that teachers should always allow students to think about what they learn before giving and allow them to engage in learning conversations with each other. They can develop critical thinking skills in students by encouraging them to think and dialogue together.

Teachers can allow students to think deeply to facilitate dialogue by allowing each student to give feedback to others before giving them feedback. It is apt for teachers to model their thinking to develop critical thinking skills in students (Fung, 2017). Teachers should share what they imagine, their creativity, and their thinking skills to nurture the students into critical thinkers. They should remember that students' choice of response is not correct or wrong when supported by logical reasoning. They should also let the students know their feelings and thoughts about the

learning activities to assist them in making contributions to the discussion in the classroom and encourage them to share their thinking (Mandal, 2019). Teachers shared that they can use questioning to allow students to think about their thinking and give them a better understanding of the learning process and their self-reflections as learners. It will also help students become more willing to reconsider and revise their thinking. A teacher shared that previously, they asked students questions, not minding how they arrived at the answers given as far as the answers were correct, even when they did not think about them. With critical thinking, the teacher and the students will put in more effort to think about what they do, analyze, and evaluate before the conclusion. It can motivate students to be innovative and develop skills valuable for a lifelong experience (Maheshwari, 2017; Bapoğlu-Dümenci et al., 2021).

In an economics classroom, students can think, respond to questions, solve problems, and contribute to learning activities with genuine answers. This active learning environment accelerates students' learning and enhances their efficiency. The key to this enhanced learning lies in incorporating curricula that present learners with problems they can resolve; we can foster a culture of critical thinking (Motala, 2021). This approach, if adopted by teachers, could significantly enhance students' thinking and contribute to their learning, such as developing problem-solving skills, thereby improving the quality of learning in Nigeria. Teachers' perceptions of critical thinking showed that most of them had the same perceptions of the importance of critical thinking as a tool that motivates learners to think critically and is necessary for writing, reading, and speaking. Training of teachers to teach students critical thinking skills will assist them to evaluate arguments. Two teachers disagreed that it was not their responsibility to teach students how to think critically in the classroom. In contrast, four of the teachers were sure that it was the teachers'

responsibility. Three teachers acknowledged the importance of teaching critical thinking in economics and all other subjects.

In contrast, five of them needed to be sure of the importance of critical thinking to learning. The rest of the sample agreed that critical thinking is necessary for teaching economics. The results from the study showed that all teachers accept that critical thinking skills are essential for students and accepted the idea that critical thinking will make learning Economics less cumbersome.

The results from this research also indicate that teachers' knowledge of critical thinking could be more optimal and still need to influence the capacity of the students to develop critical thinking skills. It shows that teachers refrain from engaging in activities that improve the quality of learning by developing critical thinking skills. This study further indicates that 70% of teachers have never considered the concept of critical thinking in their teaching plan and during classroom activities. However, students are very interested in thinking about what they have learned. Only 30% of teachers have heard or read about it based on their educational qualifications and personal interest in activities encouraging an active classroom environment. Burak Ayçiçek (2021) shows that teachers with higher educational qualities develop more educational qualities to engage students in skills that enable learning experiences beyond classroom activities. In Nigeria, there were efforts to improve the quality of learning by teachers, ranging from periodic reviews of the nation's curriculum in line with global trends and economic development (Okunnuga, 2020; Ogunode & Adah, 2020). The problem that still embodies the low quality of learning is the teachers' ability to package learning with an innovative, creative, practical, fun, 21st-century craft model. Teachers are still comfortable with using traditional approaches that do not factor in the need to motivate students to learn and potentially develop them to be critical thinkers. Further,

Oleabhiele and Oko (2018), in their research, show that the learning process of most secondary schools in Nigeria is still a mere transfer of knowledge that does not support independent learning.

Results from this research found that most teachers do not consider the learning capabilities of the students and often do not allow them to express themselves during classroom activities. However, they make provision for measurement and evaluation after each lesson. Most teachers need to carry out the learning process practically and implement the development of critical thinking skills, thereby emphasizing teacher-centered approaches, which cause the learning process to be monotonous and tend to bore students quickly. Teaching is still a transfer of knowledge and has yet to put students as the learning center. This situation should impact students' participation in all classroom activities to advance their thinking ability. Also of great importance and concern is the evaluation activity, which only emphasizes the achievement of the cognitive realm without considering the psychological assessment of the impact of learning on the students (Abrami, 2015; Norfuad & Suriansyah, 2019; Igwe, 2020; Haber, 2020).

Curriculum developers and policy formulators recognize the teacher's role in shaping the learning process to meet the demands of 21st-century education. As defined by Albergaria-Almeida et al. (2011) and Wayne Ross & Gautreaux (2018), critical thinking involves developing analysis, synthesis, and evaluation aspects of learners. Therefore, teachers must emphasize lesson plans that support these cognitive levels to encourage students to think critically about their learning content. Developing a critical thinking-based lesson plan in the learning process can make its application seamless and easily adaptable for learners.

The findings of this research further indicate that more secondary school teachers in Nigeria need help understanding or to have an idea about critical thinking. Some teachers

interviewed assume that critical thinking has nothing to do with classroom activities or the development of learners. Other teachers assume that critical thinking is a mere method of learning. Because some teachers still partially understand critical thinking, Nigerian teachers need deep training to understand and introduce how to incorporate it into the learning process for their benefit and the students in particular. Research by Worley & Worley (2019) explained that teachers' knowledge of critical thinking skills influences their lesson plans and teaching approach. The learning activity may fail to be successful.

Moreover, Cáceres et al. (2020) mentioned that planning will determine the quality of learning and aid more classroom participation by students who can think, ask and respond to questions or make corrections. Besides that, Miri et al. (2007) suggest that the level of critical thinking skills of each teacher does not meet the expected criteria because of their different educational backgrounds attributed to their form of education and the curriculum development of the university they attended. Teachers whose educational background supports the development of critical thinking often plan successful lesson presentations in the learning activity to help students engage in critical thinking, which is one of the essential skills for a successful education in the 21st century. Based on this, students should show a good learning experience to contribute positively to societal problem-solving and innovation. Schmaltz et al. (2017) and Askshir & Kadir's (2017) research show teachers' perception of reforming teaching and learning in recognizing global recognition as either positive or negative. Teachers acknowledged positive perceptions as a push to change teaching and learning strategies from the traditional to modern approaches, which conform to the digital era.

In contrast, the negative perception considers maintaining the status quo and the traditional approaches without any reference to new ideas or strategies despite the noticeable glaring changes (Motala, 2021). This research shows that more teachers have realized the importance of critical thinking but need more time to be ready to make changes or improve their performance in the learning process. However, some previous research (Abrami et al., 2015; Aouaf, 2023) shows that more teachers need help applying learning activities based on a lack of basic training in developing critical thinking. Also, more teachers are considering using critical thinking to deliver their lessons but acknowledge that the school curriculum needs to be more explicit about developing or using the skill for evaluating and assessing the students. It is similar to the results of this research, which shows that teachers are only ready to engage in critical thinking if they have training on how to use or develop it. However, they believe in implementing critical thinking in teaching and learning to achieve better outcomes. Conversely, acknowledging the importance of critical thinking in life should assist teachers in building themselves to reform and innovate their teaching and learning strategies towards developing positive perceptions that can foster their desire to support new curricula that encourage the development of critical thinking skills (Tunjungsari & Takwin, 2021; Haber, 2020; Aouaf, 2023; Motala, 2021).

Moreover, to further realize the importance of critical thinking and encourage students to develop the skill, teachers need to teach the skills to students by changing the traditional learning methods, which support teachers-centered approaches to innovative learning methods, which support students-centered approaches (Fung, 2017). The innovative method uses constructivism, which allows students to explore their problem-solving abilities (Bruner, 1960; Kurt, 2021). Some of the approaches highlighted by Abrami et al. (2015) are individual learning, dialogue, Authentic or Anchored Instruction (Applied problem solving, Case studies, Simulations, playing games,

Role-play), and Mentoring (One-on-one teacher-student interaction, Peer-led dyads, and Internship).

Results also indicate that most teachers interviewed need to learn that teaching and learning based on critical thinking for the students can use other learning models such as group discussion, quizzes, organizing excursions, and many more. The result is related to the teachers' knowledge about critical thinking reflected in the interview conducted with the teacher. Most teachers need to learn precisely how to use the approaches highlighted with critical thinking in their teaching habits because they shared that they do not have any training about them. However, they are primarily conversant with the traditional approaches, which are mainly teacher-centered. Besides, they may need more in-service training programs to get more information about learning models.

Conversely, measuring teachers' knowledge of various learning approaches cannot be used as a standard for their successful teaching of critical thinking when they do not understand when and how to use them to improve their critical thinking ability; hence, they should emphasize the approaches and use them liberally for better teaching and learning experiences (Brau, 2018). This research shows that most secondary school teachers in Nigeria need to learn how to teach critical thinking activities, as most teachers only mentioned something about critical thinking once I prompted them. Findings also show that more teachers need clarification about making lesson plans, learning activities, and evaluations that support the development of critical thinking skills. It indicates a gap between their knowledge of teaching critical thinking and their knowledge of activities that support students in developing these skills. It also shows that the pedagogical and professional knowledge of the teachers on the application of the concept of critical thinking in the learning activity still needs to be improved, in addition to teachers' minimal ability to evaluate and

improve students' critical thinking. It is expedient for teachers to understand how to measure how students engage in critical thinking to know whether they can achieve purpose quickly. Also, teachers can use tests and assignments constructed with critical thinking to rate students' understanding of learning content to analyze and evaluate their skills. Based on the analysis of the response from teachers' data, findings reveal that teachers' understanding of critical thinking and how to assess students' critical thinking ability could be much higher. Teachers' responses suggested that they appreciate the importance of developing critical thinking skills as a teaching tool to achieve teaching and learning outcomes.

This study has shown that the level of critical thinking among Nigerian senior secondary school students could be much higher using a representative sample from the Federal Capital Territory (FCT), Abuja. It calls for concern if Nigeria is desirous to advance in economic development. Every country can only develop economically and industrially with its people having low critical thinking capabilities. In addition, critical thinking and its indicators showed a significantly positive relationship between teachers' and students' teaching and learning experiences. This result is heart-warming in that an increase in critical thinking will lead to a corresponding increase in achievement in economics, catalyzing economic and human resources development. Thus, the assessment of students in Nigeria should emphasize genuine performance rather than focusing on lower-order thinking, which only supports didactic education. It implies that the Nigerian education system needs to shift from a didactic education to a critical-thinking education formation. It is apt because didactic education favors maintenance of the status quo, passive recipient of information, rote learning, and remembering facts rather than critical-thinking education formation, which encourages critical thinking, problem-solving, creativity, open-mindedness, and reflective reasoning. Based on this submission, teaching students to analyze,

evaluate, infer, and engage in deductive and inductive reasoning is significant in senior secondary school students' achievement in economics. Furthermore, teachers' knowledge about the importance of critical thinking in teaching, learning, and understanding economics in the classroom is relevant to predicting students' achievement. Students with high critical thinking capabilities can make rational judgments about personal and live productively and creatively in Nigeria.

4.8.2 What are the pedagogies teachers use to teach critical thinking to students?

In Nigerian education policy, the goal of secondary school education, a vital aspect of the Nigerian educational system, is to prepare students for self-discovery and actualization in higher education (FRN, 2014). To achieve this goal, the government emphasizes individual human capital formation and capacity building of teachers. Nevertheless, there have been some fundamental challenges, which include poor funding, which affects teachers ' training, salary, and welfare packages; review of education policy based on environmental factors; lack of continuity in commitment to policy implementation; political instability; poor policy formulation, poor relationship between policy designer and policy implementer which has impeded the growth of the sector (Ogunode & Adah, 2020). This gap prompts the need to adopt new strategies to aid the sustainability of teaching and learning outcomes with modern innovations.

The evidence from this study suggested that strategies such as critical thinking are essential tools for achieving teaching and learning objectives. Findings indicated that though teachers understood how relevant measurement and evaluation are to teaching and learning, they must consider learning goals, topics, students, available resources, and other factors before, during, and after teaching activities. Most teachers often adopt a more teacher-centered pedagogy, allowing them

to control the learning process using lecture, rote learning, and call-and-response (Westbrook et al., 2013). They are conversant with these approaches, not minding the subject or topic of learning that may be generic or content-based to enable the students to think about what they learn. For example, while teachers use a less student-centered approach, they retain control over classroom activities and cover up their schedules even when the students do not comprehend or participate in learning. The results of this study showed that teachers could encourage and teach students to think critically using teaching approaches that support critical thinking, such as the dialogue approach, individual study, group learning, quizzes, simulation, one-on-one interaction, and peer-led dyad that encourage critical thinking.

Most teachers interviewed sparingly engage the students in group learning or collaboration using gaming, quizzes, and peer-led approaches. Students in the focus groups reinforced that teachers in this study generally did not agree that they could apply some of these student-centered approaches in the economics lessons. For example, students shared that they would have liked their teachers to engage more in approaches that support students in thinking about what they learn and interacting freely during classroom activities. They asserted that group learning, one of such approaches, facilitates the development of critical thinking since every member of the group's contribution is appropriate. Hence, they engage in thinking to participate and contribute to the discussion. The broader body of literature has pinpointed the importance of collective learning, which encourages students to sit, plan, and work as a group towards achieving a common goal (Nezami et al., 2013). For example, Phillipson & Wegerif (2017) found that it supports the constructivist theory, which allows students acquisition of new information or knowledge from peers and the recall cum retention of learning content that increases performance for the achievement of a practical learning attitude.

Teachers' knowledge of critical thinking is essential for engaging and encouraging students to develop this skill. It is beyond having confidence in learning content without understanding how to assist students in thinking critically about the content rather than having domain knowledge expertise. Most teachers acknowledge that they understand most of the topics and lessons they teach but often need clarification when students need to meet expectations in their assessment or express themselves clearly about their lessons. Teachers' ability to consider alternative viewpoints and argue with evidence while guiding against reasoning that cannot be substantiated can form habits they can nurture throughout their lifetime while consciously teaching, assisting, and encouraging students to tow the same line of reasoning (Persaud, 2018). Teachers reflecting critical thinking traits in their teaching will encourage students to be critical thinkers, which also shows in what they learn and assists them in solving real-world problems and developing new interests they can use for a subject they may previously have seen little use. There is a general fact for educators that students must become critical thinkers to reflect the status of a valid learner.

According to Facione (2011), education is an act of learning to think. Any education that does not support students' thinking does not reflect current and future use. It is apt to apply critical thinking in the classroom, enabling and encouraging learners to speculate, criticize, and form conclusions about their knowledge and the information they will acquire. Teachers can activate and increase critical thinking in their students by engaging in activities that can influence and improve their teaching methods to encourage such thinking. For teachers to build students into critical thinkers, students must be eager to be knowledgeable and inquisitive about new topics and situations and be able to link what they already know to what they are learning so that they can predict similar subjects. Teachers can develop students to be critical thinkers by encouraging them to formulate reasonable assumptions and base their ideas on solid foundations by analyzing

different ideas thoroughly without prejudice. Developing students to be critical thinkers should assist students in thinking deeply about a concept while considering other alternatives that can assist them in asking thought-provoking questions to support logical explanations and creatively devising strategies to correct their weaknesses.

Despite various challenges beyond teachers' ability to apply critical thinking to learning, there are strategies teachers can employ to encourage and promote critical thinking among students. Teachers should allow students to think and not be quick to help them find solutions to issues they have to think critically but rather assist and encourage them to find possible solutions to what they are trying to unravel. Teachers can apply critical thinking to what students learn by allowing them to brainstorm and analyze what they are learning while supporting them with questions that can assist them in thinking beyond their prior knowledge. Research by Phillipson and Wegerif (2017) emphasized that teachers should ask students straightforward questions that ignite them to think about what they know to form a new opinion. Teachers must encourage students to connect to real-life situations and identify excellent patterns that can boost their critical thinking skills—asking students to always look for connections with what they know and new knowledge to help them think further and decide on what they learn.

Applying critical thinking to the learning experience requires teachers to guide students in comparing and contrasting any issue to get them to think critically. It will make them closely examine the features they can identify to make informed decisions. Critical thinking is relevant during group activities when students learn and work together to achieve the same purpose. It can get students to expose and process their thoughts about what they learn as a group while they solve problems collectively. Teachers can create a lively classroom environment to connect, encourage,

and assist students in being critical thinkers and making thoughtful judgments in all aspects of life. Students are eager to learn more whenever the environment is conducive and lively for meaningful learning. Teachers, as the facilitator of learning and successful student engagement, can use open-ended questions to encourage students to participate actively in learning.

Abrami et al. (2008) posited that infusing critical thinking into learning activities requires a deep, thoughtful, and precise understanding of the subject matter by the teacher and the students to utilize and develop critical thinking skills. Teachers should prepare students to engage in education deeply rooted in thinking and action and encourage them to think critically to acquire new knowledge needed to be relevant in the 21st century and contribute to their world. Teachers can assist students in learning, thinking skillfully, making thoughtful life decisions, solving problems creatively, and becoming adept at thinking things through in diverse disciplines. They should deviate from didactic learning experiences and restrict students' thinking to questions that do not require them to think critically. Such a teaching approach limits students from expanding their thinking skills to successfully solve a problem that connects them to real-world experiences. Nigerian secondary school teachers can apply critical thinking to students' learning experiences by encouraging them to integrate what they learn to create and evaluate information to solve problems that can influence their decision-making (Abrami et al., 2015). Teachers should teach and guide students to think, engage, and practice independent learning to help them build critical thinking skills. To apply critical thinking skills to the student's learning experience, teachers should take cognizance of barriers that can impede the encouragement of students developing skills such as preconceptions and personal beliefs and how to teach learning content, put it into practice, and develop appropriate, engaging, activities they can integrate into learning.

The interview results of teachers show the need to engage students in individual study to prepare them ahead of lessons and encourage active participation in classroom activities. This individual study is a task and a pathway to personal growth and development. To build individual critical thinking capabilities, teachers can give topics for students to study in preparation for activities such as debates, which is a great way to evolve students' skills as they have the opportunity to prepare and back up their contributions to classroom activities with relevant points and facts rather than facts that cannot be substantiated. It will also teach students to think of the other side's arguments and present their arguments in the most convincing way possible since they will be debating with other people who need to understand other opponent opponents to counteract their views. Conversely, teachers should choose topics that are interesting to the students for better engagement in critical thinking. They should also ask regular questions and be allowed to ask questions about anything while being open-minded to captivate their interest in learning. Research shows the importance of questioning in making students think and participate actively in learning while teachers measure their level of understanding. (Hemming,2000) advocated using questioning as a crucial tool during group discussions to encourage students to brainstorm, participate, exhibit, and develop their critical thinking skills.

The dynamism of the classroom environment through the convergence of students from different backgrounds with various abilities and personalities requires creative and innovative teaching strategies to meet student's individual needs (Persaud, 2018). The need for refocus produces positive students about what they learn and can think critically about them. Persuad (2018) suggested some strategies teachers can employ to build students' self-esteem by encouraging their development of critical thinking skills. They include strengthening learners' engagement capability in the classroom. Self-esteem is what learners feel they are and what they

consider themselves to be. Teachers should help students aspire and realize that success lies in their effort and not ability. Hence, they must be persistent in achieving whatever they aspire to achieve. They should recognize and commend students' performance while giving feedback on their learning efforts. Commending good work enables teachers to understand what factors support students' learning and help them improve their learning (Fung, 2017).

Teachers should encourage dialogic strategies to engage students to think and allow them to build on the responses of others to make informed decisions they can substantiate. They should encourage students to engage in learning conversations by facilitating dialogue chains and allowing students to respond and contribute to each other contribution. Teachers should nurture students as creative, imaginative, and critical thinkers by sharing their creativity, imagination, and thinking skills with their students (Al-Ghadouni, 2022). It will add value to classroom discussions while encouraging students to express their thoughts and develop them to be critical thinkers. Teachers can use questioning to encourage students to scrutinize their thoughts and expand on previous knowledge. Metacognitive questions are apt to expand students' learning process scope and content, encouraging them to reflect and engage in critical thinking.

Teachers face the challenge of having meaningful interaction with their students, a crucial aspect of which is student feedback. Whether through questions, contributions, or evaluations, this feedback can motivate and influence students ' performance and progress in their learning activities. It is a testament to their voices being audible and their opinions matter. One student noted that due to time constraints, teachers often need to allow them to ask questions or contribute to learning. Another participant also stated that since their teachers do not give them time to think about their lessons, most of the students do not participate during the lessons. However, some

prefer to search for information to enhance their learning, while other students say they often do not know what to do. According to a study by Wambsgans et al. (2020), students develop sound reasoning to infer and evaluate issues when they give feedback. Teachers should get students ' feedback to maintain an excellent link for communication. To address the challenge of not getting student feedback, teachers should create time to dialogue with the students and encourage them to engage in individual study on new topics for the following classroom activities. Teachers must ensure that feedback may only be helpful if students have prior knowledge or an idea of the learning content. Critical thinking enhances the students' background knowledge, so they can only build on their knowledge to create new ideas or information. It is in line with the previous study of Glaser's (1984) studies, which stated that how students think or their ability to solve problems depends significantly on what they already know.

Teachers can engage students to develop their critical thinking skills by emphasizing student-centered approaches, which allow students to be independent rather than rely on them. Findings from this study showed that most lessons are teacher-dependent with less explanation of learning content, thereby creating a wide gap between the teachers and the students. This wide gap creates a barrier against interactions that can lead to any engagement between the teachers and the students and over-reliance on whatever the teachers on impact them, thereby leading to rote learning (Wilberding, 2019; Weston & Clay, 2018). The interviews with most teachers revealed that developing critical thinking skills is achievable by improving education infrastructure in terms of relevant curriculum and education systems from the basic level to the tertiary. The Nigerian curriculum should emphasize critical thinking for students from the primary classes and teachers from their training programs, thereby making the awareness of the concept more manageable in secondary school education when students should have developed the skills from their primary

education. Hence, it is apt to introduce critical thinking to students from primary classes for an easy transition to secondary school. In the same light, most teachers expressed that the lack of formal training during their teacher's training program on teaching and encouraging students to become critical thinkers by developing critical thinking skills was a significant challenge (Stronge, 2018). They observed that poor understanding of critical thinking would make its introduction to students easier. Hence, teachers must be critical thinkers who understand the concept and how to infuse it into their teaching activities before encouraging students to develop the skills and be critical thinkers.

4.8.3 The way teachers encourage and teach Critical thinking

The teacher's knowledge of critical thinking portends their ability to teach the students how to think. It is not asking students questions that cannot challenge them to think about what they learn only but to engage them to look at issues from various perspectives before responding or asking questions. According to Van Gelder (2005), students develop a disposition for critical thinking that affects not only specific subjects but spreads across other aspects of their lives and develops towards applying it to their work (Qing et al., 2010). Larsson (2017) added that developing these skills helps students understand the concept and structure of critical thinking, which extends far beyond classroom activities to promote consistent and deliberate use essential for transfer. For emphasis, Abrami et al. (2015) suggested that critical thinking should be taught at the pre-teacher training level, not in a specific context but generic to develop students ' skills to achieve teaching and learning objectives. This suggestion is expedient because teachers need to be more knowledgeable about the importance of critical thinking, how to encourage it, and how to teach students to develop their skills. Conversely, the teacher as a mentor should be trained at the

pre-teacher training level to understand and identify the appropriate pedagogy for encouraging critical thinking skills. Carter (2015) posited that teachers as mentors must be articulate and exhibit outstanding performances in their practices.

The evidence from this study suggested that some teachers subscribed to the idea of student-centered approaches to teacher-centered approaches, such as individual study, dialogue, and anchored learning. They acknowledged the importance of dialogue during classroom activities and noted that it allows the students to think and express themselves. However, teachers pointed out that dialogic pedagogy would be more successful if they had strong discussion skills and an understanding of the subject matter before using the approach (Wilkinson et al., 2015). They also explained that dialogue is vital to engage students who are not active in classroom activities to think and interact with other students to achieve learning goals (Barak & Lefstein, 2021). Teachers observed the importance of using dialogue, a teacher-led approach that provides a platform to engage the students in learning and an excellent environment to thrive and contribute to the learning process (Phillipson & Wegerif, 2017). They admitted that it allows a continuous conversation between teachers and learners that gives opportunities for students to be active and contribute to classroom discussion through the construction of knowledge.

Teachers can introduce critical thinking into the classroom in various ways by introducing strategies to assist them in thinking critically about ideas that will help them form personal opinions. Teachers should emphasize introducing strategies that can help the students think and contribute to learning by removing challenges that discourage the building of critical thinking skills, such as opinions that cannot be substantiated. The opinions they form through critical thinking are part of their rational thinking, which does not rely on mere feelings but on what they

already know. Based on the study by Huber & Kuncel (2016), different results showed that with the constant innovation and technological advancement, accessing information is no longer a challenge that can prevent students from being inquisitive, but adequate knowledge to identify information that can be substantiated and proven to be true out of all the vast available information. To filter the available information, students must develop good questioning skills by composing and formatting questions that will assist in extracting required information relevant to their thoughts and those they can discard. It aligns with the study of Facione (1991), which emphasized that a critical thinker can manage knowledge. On this ground, educators, policymakers, and employers who consider critical thinking a vital skill that will benefit the workforce in the future have sustained interest in developing students to be critical thinkers (Huber & Kuncel, 2016).

Most teachers interviewed identified that their roles as facilitators and the developers of this skill are crucial in guiding students to ask questions that can aid critical thinking. This recognition of their pivotal role supports the thought of Ennis (1996), who highlighted the potential of critical thinkers to ask questions relevant to specific issues, critically scrutinize and evaluate statements and arguments, painstakingly search for different sources, and unusually eager to find new solutions. For instance, teachers in schools 8 and 10 explained that students can only be good critical thinkers if teachers guide them to avoid wrong interpretations of what they learn. Teachers, as facilitators, can assist students in developing good questioning skills using questions to establish knowledge of the required information. Hence, teachers must provide students with the required strategies and ask them clear and motivating questions that inspire them to think and empower them to be critical thinkers. This emphasis on the power of questions will encourage teachers to engage in discovery rather than rote learning, making learning more meaningful and memorable for students as they make connections to real-world scenarios.

Defining questions that can assist students in thinking about what they learn strengthens the gathering of relevant information that can aid thinking. It aligns with Bloom's taxonomy (1956), which classified the cognitive domain of learning as knowledge, comprehension, application, analysis, synthesis, and evaluation. It is essential for designing a learning experience because it helps teachers identify, classify, and outline what students should learn in the classroom. Teachers can teach students critical thinking by maintaining focus as they gather information about their questions and make reference to their initial knowledge to help them determine the relevance of the information they have before them. This result is relevant to Ennis's (1996) research that it will help the students weigh the relevance of their thinking to what they learn and apply it in the real world. Responses from most teachers revealed that students make meaningful contributions to learning whenever they view various options before asking or responding to questions and making contributions to learning. They also shared the need to provide opportunities for students to acknowledge the importance of being critical thinkers so they can analyze and examine the thinking and logic of others. Teachers in schools 2 and 6 expressed that they can make more impacts and promote students to think critically and for themselves by developing skills in communication and information, collaboration, interpersonal and self-directional, and thinking and problem-solving needed in any field and all levels of education for their development.

Teaching students to apply their thinking skills will assist them in making informed decisions through reflection on the concepts they learn. Teachers can teach them to engage in critical thinking by guiding them to observe and explore any assumptions that exist to determine how logical their interpretation of what they think is and the effects on their decision. While arriving at a logical decision, teachers should encourage students to reflect deeply on all possible outcomes of their actions, as unintended consequences are unforeseen and can negatively impact

their original decision. This step will help students explore other viewpoints further to strengthen their decision. They are now better informed to take the time to measure their matured opinion against these other points of view through exploring alternative viewpoints to help them evaluate their own choices and avoid emphasizing personal biases and innate preferences. Ultimately, it will drive them to make the most informed decisions.

Teachers took the initiative to facilitate individual study for students' cognitive development and create an opportunity for them to develop future skills to meet education needs (Abrami et al., 2015). They suggested that students must exhibit a significant level of discipline and develop a high level of concentration and self-motivation during the learning process to benefit optimally from individual study. Kopzhassarovaa et al. (2016) highlight teachers' suggestion for encouraging individual study to help students develop thinking skills and explain that individual study exposes the student to study beyond the content of the curriculum by expanding on other related information not included in the initial learning content. Following Kopzhassarovaa et al. (2016) submission, most teachers in this study engaged students in an individual study approach to expand their knowledge and think more about what they learn. As a result, it has developed the student to learn and think more, thereby taking responsibility for their progress.

Findings from the study showed that most teachers should have emphasized group-work activities. They did not allow the students to engage in group work, which should have enabled them to express themselves and contribute to learning activities. Only three teachers encouraged students to think about what they learned by relating them to their life experiences and engaging in group discussions, peer discussions, and brainstorming. Some teachers should have mentioned the components of critical thinking, which include problem-solving, creative thinking, and meta-

cognitive skills, and how to apply them to learning activities. Another important aspect of learning that could support critical thinking, which most teachers should have put into practice in their teaching, was the inclusion of consistent dialogue, role play, reflective thinking, and mentoring that assisted the students in thinking about what they learned. Most teachers should have trained the students to reflect on topics relating to their lives or motivate them with topics they are familiar with to express their opinions, even when it is obvious that they need guidance to participate actively. Since infusing critical thinking into teaching and learning activities is a long-term process, teachers can encourage students to develop critical thinking skills by starting with simple activities that do not require much thinking and gradually progressing towards more challenging ones, such as problem-solving and brainstorming. Group work, for instance, can foster collaboration, good communication skills, and the exchange of ideas, which are all essential for critical thinking.

Teachers expressed that they can use the anchored learning approach. This method uses real-world situations or 'anchors' to engage students in learning and to develop critical thinking skills in students if some challenges, such as time constraints, lack of teaching and learning aids, and noisy learning environments. They shared that taking the students on excursions helped them manage the challenge of time constraints as evidence that students should enjoy their lessons when the time scheduled for the lessons is adequate for thinking. For instance, using the case study method requires enough time for students to think thoroughly and be analytical before deciding on available information. Kendra (2021) emphasized that case studies may lead to students making a biased decision when the time to think is insufficient, aside from inadequate information.

Another component of the anchored learning approach is simulation, which requires dedicated time for teaching and learning. Simulation is particularly effective in promoting critical and evaluative thinking, as it encourages more interaction between the teacher and the student (Cox, 2014). Providing adequate time in this context stimulates students to think, problem-solve, and share their learning experiences. It aligns with existing research, such as studies by Reng & Schoenau-Fog (2016), which highlight the importance of critical thinking in fostering teamwork, communication, analytical, and time management skills. These studies have also demonstrated that students who develop critical thinking skills have the potential to succeed academically and in their future careers.

Many teachers admitted that group work could be very beneficial to student learning. They identified the importance of the discussion only as a guide to avoid deviation and encourage the students' participation. However, researchers differ on the role of the teacher in group work. Smith (1980), Meloth & Deering (1999), and Cohen (1994) opined that the teacher should be involved actively to engage and guide the entire group to think critically and participate in the learning activities, while Burke (2011) thinks the presence of the teacher may affect the participation of the group members to work collaboratively. Therefore, I suggest highlighting the teachers' roles in participating in the group work to enable them to develop critical thinking skills for the entire group. It could be either direct participation in the form of face-to-face or providing aids to guide learning. However, the teacher's presence remains significant. However, it must be under control to engage the students to sharpen their critical thinking skills rather than depending on the teacher before they can think (Fung, 2017).

4.9 Research Question 2 - _How do students respond when teachers use pedagogies to support their Critical thinking skills?_

In response to this question, I discussed the approaches that enable students to engage in activities that encourage their critical thinking, students' willingness to engage in critical thinking, and challenges that hinder students from engaging in critical thinking.

4.9.1   What is the knowledge of critical thinking among teachers?

Students described various classroom and learning activities as helpful in their thinking abilities. These were pedagogies like group work, games, role play, dialogue, individual study, peer-led dyads, applied problem-solving, simulation, and one-on-one teacher-student interaction. Most students pointed out that teachers often prefer to speak alone without interacting with them and only make them take down notes. Students in School 4 shared that their teachers need to give them time to think about what they learn; hence, they do not have the opportunity to ask questions. It negatively impacts their assessments and makes them show little interest in learning. Earlier research (Mahmood, 2022) has stressed that teachers' involvement in intervention studies influences the students' performance regarding their success or failure. Teachers' involvement, attitude, and participation in classroom activities can encourage the students to think about what they learn and participate in classroom activities, rather than the teacher being the main focus and not involving the students in learning.

Students in School 6 also added that their teachers do not involve them in learning or encourage them to participate in classroom activities. They do not engage them in activities that encourage the development of critical thinking skills. A study suggested that problem-based learning activities are relevant to promoting critical thinking through the development of problem-

solving skills and active participation in learning activities that encourage students to identify their individual learning needs, encouraging teamwork and creative discussion to promote peer-led dyad and integrate learning experiences into various knowledge (Gurses et al., 2007). However, getting the students to think and contribute to learning becomes complicated when the teachers do not involve them, even when they need to achieve learning objectives. Students expressed that whenever their teacher talks alone, they pay less attention to the lesson rather than connect the learning content to a real-life situation that can help them demonstrate the knowledge they would have gained and apply it (Persaud, 2018).

Most students expressed needing help understanding what they learn whenever their teachers do not ask questions. They shared the need to think about what they learned, especially salient points they need to know about their lessons. Haynes and Bailey (2003) outlined the importance of questioning and that asking the right questions stimulates students' critical thinking skills. Similar researchers (Brown & Kelley, 1986; Hemming, 2000) also emphasized integrating questioning techniques into class discussions to support and encourage students' demonstration and practices of critical thinking skills. Students in School 8 felt that their teacher often asked the right questions to stimulate them to know why they think the way they do, the importance of their learning content, and how to think about their thinking. In an earlier research, Brown and Kelley (1986) highlighted that teachers should use questioning techniques to engage students to participate actively in learning. The authors suggested asking questions such as 'What do you think about this?', 'Should it be viewed differently?' and 'Why do you think that?'. 'What do you think about this'?

Conversely, to encourage critical thinking using questioning, the teacher can use it to ignite contribution from every member of the group either before, during, or after the group activities, as it is a crucial teaching strategy that the teacher can use to prompt students' thinking to participate in classroom activities (Kyriakides et al., 2013; Kazemi & Hintz, 2015). Importantly, students should be allowed to think

and reflect on the knowledge gained in the past or present to aid their thinking capability (Alexander, 2020). It will help them analyze issues without biases and develop them into critical thinkers.

Students have also highlighted the benefits of group work in promoting critical thinking. According to Fung (2017), group work aligns with the constructivist theory, allowing students to share and acquire new information from their peers and recall and retain it for effective learning outcomes. Through group work, students can develop an attitude to identify and evaluate information before concluding, thereby building their critical thinking skills (Watson & Glaser,1980; Scriven & Paul,1996; Reeves & Oh, 2017). All the students in the focus groups have viewed group work as a means of expressing their opinions and working together to achieve common goals. One student, for instance, shared his enthusiasm about a visit to the office of the minister of finance, where every group member shared what they had learned and how lively the classroom was. It aligns with findings from student focus groups, where students from School 7 expressed the view that groups stimulate creativity. It also confirms earlier literature by Burke (2021), which stressed the importance of group learning regarding information available from each group member rather than information from individuals because of their various experiences. Students have recognized the effectiveness of games in promoting independent thinking and problem-solving. As an example of an anchored instructional approach, gaming has proven more engaging and effective than traditional methods. The broader body of literature also supports using games in pedagogical practices, which can lead to a more comprehensive and multidimensional learning experience. These findings should intrigue researchers, as they highlight the importance of games as learning experiences promoting critical thinking skills (Kurt, 2021).

The students expressed the need to include games in their classroom activities, especially for game-inclined topics, to provoke their thinking and enable them to learn faster. They appreciated their free period when they played games related to some topics and felt good when their teachers praised their efforts whenever they responded to questions afterward. These findings align with previous literature, which stressed that Educational games help students develop skills that can lead to engagement in a higher order

of thinking (Warren, 2021). As a student-centered approach that enables creativity and thinking, teachers can use games to teach students how to be persistent, manage risk, and think critically (Warren, 2021; Reid, 2018). It also helps the students retain information and apply it to solve problems. Conversely, teachers should control classroom activities or guide students to understand that getting addicted to gaming may generate negativity and defeat the purpose of learning. However, it creates a bond that exposes the students to the learning content (Reng & Schoenau-Fog, 2016).

There was an intense sense of observation that students learn when their teachers arouse their curiosity through simulation. The students expressed that during practical-oriented topics, when their teacher allows them to think about some commercial adverts they have watched or listened to on the television, they think and ask questions more for better clarification. It was found in the student's accounts when they talked about what they remember most during their economics classes. Student focus groups suggested that teachers can guide the students by arousing their interest by displaying roles spontaneously without rehearsals. For example, Becker and Hermosura (2019) found simulations essential to improve learning and encourage students to understand actions while accepting errors during tests or experiments. Though stimulation is a teacher-centered approach, students' reports on classroom activities showed that it is an educational tool to make teaching and learning experiences more impactful and rewarding (Becker & Hermosura, 2019). It also supports constructivist learning as students think more and engage in interactive sessions when their teacher stimulates them.

Students also noted that individual study, a self-directed learning process where students study without direct supervision or attending a classroom to learn and complement formal education, helps them to think, primarily whenever the teacher uses a method such as role play that enables them to develop a high level of concentration and self-motivation during the learning process. Individual study is the ability of an individual to think and come up with ideas for the expression of opinion and to solve problems (Cluster, 2001); teachers can support and present students with information that can allow them to think

and make a decision based on the information available to them. It involves studying without direct supervision or attending a classroom to learn and complement formal education.

Mamatkulova (2020) also stressed that "independent study skills have also stressed the importance of individual study are the skills that help the learners to make their learning and studying process effective, in other words, they are the collection of the transferable life skill" (p.96). Students who study individually are exposed to more information beyond those in their learning content as they expand on other related information (Kopzhassarovaa et al., 2016). As the need to develop critical thinking increases, individual study becomes more relevant to prepare students for the changing learning environment. It is often convenient when they are adequately prepared and equipped by the teacher. Conversely, providing digitally enhanced tools, such as online research databases or educational apps, is relevant for students to explore and access vast information to ignite their thinking capability whenever they study individually (Vehmas et al., 2017).

4.9.2 Students expressed willingness to engage in critical thinking

The student expressed that their learning experiences are good but can be improved. Their account shows that they enjoy learning and engage in thinking because they see how it gives them more control but often do not explore what they learn; hence, learning often ends after the teacher engages them during classroom activities. They expressed that good classroom experience allows them to argue, persuade their peers, and build confidence to influence others. They expressed a strong interest in thinking critically and logically to solve problems since they have exposure to modern technological gadgets; hence, they need to learn ways to help them think about what they know or learn (Halpern, 1998).

Most students mentioned that teachers needed to be more involved in making them think about what they learn so that they can be more active and participate in class activities all the time

(Tiruneh et al., 2018. They mentioned learning activities they enjoyed, such as gaming, and asked for quizzes in their lessons. The students stressed the need for a change in how their teacher engages them during classroom activities without recourse to whether they understand what they are learning. Some students stressed that their teachers needed more practical teaching approaches to engage them in thinking about what they learned. They observed that teaching methods that do not allow them to contribute to learning through asking or responding to questions make class activities less engaging. Thus, they call for approaches that can help them achieve their learning goals to thrive. The students also expressed the need for their teachers to expose them to various approaches suitable to learning content, such as real-life case studies in economics or interactive experiments in science, that can engage them more in learning activities with a real-life situation and enable them to demonstrate knowledge gained when applicable (Persaud, 2019).

It is apt to engage students in developing critical thinking skills at an early stage inside and outside the classroom to enable them to get accustomed to understanding their actions, solving problems, and making unbiased decisions. Findings showed that students were willing to engage in critical thinking when they shared that they enjoy asking deep and probing questions about a topic when connected to learning content and what they already know. They shared that they identify and understand the importance of a topic and often differentiate the various theories and explanations their teachers make, especially when allowed to think within and outside the classroom. Students in all the schools explained that they enjoy and have good learning experiences whenever they can easily create a rational argument about a topic and reflect on it. They also shared that they are more creative and can solve problems to make the soundest decisions. These skills are beneficial in the classroom and future careers and informed citizens, as they will equip them to evaluate information critically and make informed decisions.

The students identified their willingness to engage in classroom discussions where they can express their thoughts and ideas to empower them to think deeply about issues and express their thoughts (Tiruneh et al., 2018). Students in school 8 shared that they are always happy to learn whenever their teachers provide some clue in the form of reading exercises for them to complete given homework. They explained that these interventions make them think and contribute to learning and group discussion. They also expressed that they enjoy thinking passionately about what they learn whenever controversial questions help them think and express their ideas. Students in schools 6 and 10 also shared that controversial questions enable more thinking and contributions from every member of the classroom, especially when these questions are ultimately relevant to the topic of the discussion. They stated that they often interpret questions personally and evaluate their feelings while acknowledging the role of their teacher to engage and facilitate a successful thinking process that can encourage them to think and assess their understanding of the various topics they learn (Tiruneh et al., 2018).

Most students were willing to engage in learning activities that can encourage them to think through their teachers' push for them to make real-world and personal connections to the topics they learn(Ismail,2019). For instance, a classroom activity could involve analyzing a current news article and discussing its implications on a topic they are studying. Such encouragement often assists students in placing more emphasis on what they learn by connecting, analyzing, and thinking critically about their learning content. Students revealed that they can learn more when their teacher builds their critical thinking skills and teaches them how to approach learning content analytically. It also supports the view of Mainhard et al. (2018) that students look forward to their teachers' activities that can challenge them to discover information about the topic to discuss and gain pre-knowledge, which helps them develop the necessary skills for the lesson and gives them

the confidence to learn and practice the newest topic. It can also assist students in developing their critical thinking skills and connecting better to the content.

Students identified some ways teachers could encourage their willingness to think critically about learning content, which includes providing safe learning environments that are comfortable for students to ask questions, which can help them to understand the content better and analyze available information better. Students in school 4 shared that their teacher can create an atmosphere where they work together, participate in learning, and learn from one another; developing critical thinking skills will be easy for them. The students also stated that they are willing to engage in critical thinking when their teacher answers their questions or classroom exercises to enable them to learn from mistakes. Lehmannl et al. (2021) opined that teaching from mistakes helps students to evaluate the problem better and learn how to solve it moving forward. Most students expressed that when they are in doubt and want to know they are right about their learning content, the fear of failing and not wanting to take risks encourage them to explore and gain confidence to analyze and think (Persuad, 2019; Ismail,2019).

They also shared that they become more dedicated to developing their skills and think about classroom activities and life after school whenever their teachers allow them to direct their learning. It aligns with the findings of Lehmannl et al. (2021) that students participate in learning when guided by their teachers to analyze and gain more insight on what they learn. Students in all the schools sampled expressed their willingness to develop their thinking skills when teachers create space for them to reflect on their ideas about what they learn and when teachers show them how to analyze and question assumptions to articulate their beliefs, gain a deeper understanding of what they learn and consider others' ideas. They call on teachers to teach them how to use

reasoning skills to enable them to make substantiated decisions, form and defend opinions, and solve problems since reasoning skills are another major component of critical thinking, involving the ability to think logically, evaluate evidence, identify assumptions, and analyze arguments. Students admitted that they are willing to think critically to help them feel connected to the problem and develop creative solutions that could help others at school. They acknowledged the role of open-ended questions to enable them to move beyond the repetition of facts and take positions to explain their beliefs through research, evidence, and explanations of credibility. They also shared that when teachers pose open-ended questions, classroom discourse always includes diverse, perhaps opposing, ideas and grounds for rich exchanges that support deep thinking and analysis. Teachers should give students time to think and articulate before contributing to any conversation. It can help more students who are not too active think, contribute to learning, and bring their ideas to life.

Most students explained how important it is to vet the information available to them to build and use them while making informed decisions (Ismail, 2019). They request teachers to discuss how to identify credibility, subjectivity, and objectivity of trusted information to guide them against discourse that can impact them negatively and to identify falsehood. Responses from students also show the need for teachers to provide a platform that can assist them in thinking from diverse perspectives, which means considering a variety of viewpoints, experiences, and backgrounds to support varying viewpoints, especially when discussing current events. Conversely, teachers should assist those with differing perspectives who may not feel comfortable sharing them in the face of an opposing majority feeling comfortable and not condemned even when their perspectives may not be correct.

Students shared that teachers can challenge them with information and examples that require the use of critical thinking skills, apply the skills explicitly into their lessons and all their classroom activities, and assist them in understanding information that is not evidence-based or substantiated by making thinking routines a consistent part of classroom activities. Teachers should understand that it is imperative to support and show their critical thinking skills in the classroom to encourage the development of well-informed citizens. Learning critical thinking is not possible as a stand-alone learning approach; hence, students should explore many areas of learning to take a careful look at issues, think about them, and find the best solution wherever it is required. Teachers must then be committed and consistent in supporting and modeling critical thinking in the classroom to support the development of well-informed citizens.

4.9.3 Pedagogies that Encourage the Development of critical thinking skills

Students described various classroom and learning activities as helpful in their thinking abilities. These were pedagogies like group work, games, role play, dialogue, individual study, peer-led dyads, applied problem-solving, simulation, and one-on-one teacher-student interaction. Most students pointed out that teachers often prefer to speak alone without interacting with them and only make them take down notes (Khan & Ashraf, 2021). Students in School 4 shared that their teachers need to give them time to think about what they learn; hence, they do not have the opportunity to ask questions. It negatively impacts their assessments and makes them show little interest in learning. Earlier research (Mahmood, 2022) has stressed that teachers' involvement in intervention studies influences the students' performance regarding their success or failure. Teachers' involvement, attitude, and participation in classroom activities can encourage the

students to think about what they learn and participate in classroom activities, rather than the teacher being the main focus and not involving the students in learning.

Students in School 6 also added that their teachers do not involve them in learning or encourage them to participate in classroom activities. They do not engage them in activities that encourage the development of critical thinking skills. A study suggested that problem-based learning activities are relevant to promoting critical thinking through the development of problem-solving skills and active participation in learning activities that encourage students to identify their individual learning needs, encouraging teamwork and creative discussion to promote peer-led dyad and integrate learning experiences into various knowledge (Gurses et al., 2007). However, getting the students to think and contribute to learning becomes complicated when the teachers do not involve them, even when they need to achieve learning objectives. Students expressed that whenever their teacher talks alone, they pay less attention to the lesson rather than connect the learning content to a real-life situation that can help them demonstrate the knowledge they would have gained and apply it (Persaud, 2018).

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learning content, and how to think about their thinking. In an earlier research, Brown and Kelley (1986) highlighted that teachers should use questioning techniques to engage students to participate actively in learning. The authors suggested asking questions such as 'What do you think about this?', 'Should it be viewed differently?' and 'Why do you think that?'. 'What do you think about this'?

Conversely, to encourage critical thinking using questioning, the teacher can use it to ignite contribution from every member of the group either before, during, or after the group activities, as it is a crucial teaching strategy that the teacher can use to prompt students' thinking to participate in classroom activities (Kyriakides et al., 2013; Kazemi & Hintz, 2015). Importantly, students should be allowed to think and reflect on the knowledge gained in the past or present to aid their thinking capability (Alexander, 2020). It will help them analyze issues without biases and develop them into critical thinkers.

Students have also highlighted the benefits of group work in promoting critical thinking. According to Fung (2017), group work aligns with the constructivist theory, allowing students to share and acquire new information from their peers and recall and retain it for effective learning outcomes. Through group work, students can develop an attitude to identify and evaluate information before concluding, thereby building their critical thinking skills (Watson & Glaser,1980; Scriven & Paul,1996; Reeves & Oh, 2017). All the students in the focus groups viewed group work as a means of working together to achieve common goals in tandem with the group's goal. One student, for instance, shared his enthusiasm about a visit to the office of the minister of finance, where every group member shared what they had learned and how lively the classroom was. It aligns with findings from student focus groups, where students from School 7

expressed the view that groups stimulate creativity. It also confirms earlier literature by Burke (2021), which stressed the importance of group learning regarding information available from each group member rather than information from individuals because of their various experiences.

Students have recognized the effectiveness of games in promoting independent thinking and problem-solving. As an example of an anchored instructional approach, gaming has proven more engaging and effective than traditional methods. The broader body of literature also supports using games in pedagogical practices, which can lead to a more comprehensive and multidimensional learning experience. These findings should intrigue researchers, as they highlight the importance of games as learning experiences promoting critical thinking skills (Kurt, 2021).

Students expressed the need to include games in their classroom activities, especially for game-inclined topics, to provoke their thinking and enable them to learn faster. They appreciated their free period when they played games related to some topics and felt good when their teachers praised their efforts whenever they responded to questions afterward. These findings align with previous literature, which stressed that Educational games help students develop skills that can lead to engagement in a higher order of thinking (Warren, 2021). As a student-centered approach that enables creativity and thinking, teachers can use games to teach students how to be persistent, manage risk, and think critically (Warren, 2021; Reid, 2018). It also helps the students retain information and apply it to solve problems. Conversely, teachers should control classroom activities or guide students to understand that getting addicted to gaming may generate negativity and defeat the purpose of learning. However, it creates a bond that exposes the students to the learning content (Reng & Schoenau-Fog, 2016).

There was an intense sense of observation that students learn when their teachers arouse their curiosity through simulation. The students expressed that during practical-oriented topics when their teacher allows them to think about some commercial adverts they have watched or listened to on the television, they think and ask questions more for better clarification. It was found in the student's accounts when they talked about what they remember most during their economics classes. Student focus groups suggested that teachers can guide the students by arousing their interest by displaying roles spontaneously without rehearsals. For example, Becker and Hermosura (2019) found simulations essential to improve learning and encourage students to understand actions while accepting errors during tests or experiments. Though stimulation is a teacher-centered approach, students' reports on classroom activities showed that it makes teaching and learning more impactful and rewarding (Becker & Hermosura, 2019). It also supports constructivist learning as students think more and engage in interactive sessions when their teacher stimulates them.

Students also noted that individual study, a self-directed learning process where students study without direct supervision or attending a classroom to learn and complement formal education, helps them to think, primarily whenever the teacher uses a method such as role play that enables them to develop a high level of concentration and self-motivation during the learning process. Individual study is the ability of an individual to think and come up with ideas for the expression of opinion and to solve problems (Cluster, 2001); teachers can support and present students with information that can allow them to think and make a decision based on the information available to them. It involves studying without direct supervision or attending a classroom to learn and complement formal education.

Mamatkulova (2020) also stressed that "independent study skills have also stressed the importance of individual study are the skills that help the learners to make their learning and studying process effective, in other words, they are the collection of the transferable life skill" (p.96). Students who study individually are exposed to more information beyond those in their learning content as they expand on other related information (Kopzhassarovaa et al., 2016). As the need to develop critical thinking increases, individual study becomes more relevant to prepare students for the changing learning environment. It is often convenient when they are adequately prepared and equipped by the teacher. Conversely, providing digitally enhanced tools, such as online research databases or educational apps, is relevant for students to explore and access vast information to ignite their thinking capability whenever they study individually (Vehmas et al., 2017).

4.7. Summary

This Chapter discussed establishing trustworthiness based on credibility, transferability, dependability, and conformability as standard criteria for validating qualitative data. It also presented the qualitative data collected from teachers' interviews and students' focus discussion groups. In the interviews, teachers shared that critical thinking has many benefits to learning, though it needs to be adequately highlighted in the school curriculum as they are valuable to making teaching and learning objectives seamless and achievable. Conversely, most teachers emphasized the challenges that can hinder the encouragement of teaching and learning critical thinking, such as the lack of knowledge about the concept of critical thinking by most of the teachers; hence, their inability to use the relevant approaches needed to engage the students to think about what they learn. In addition, they pointed out the challenge of limited time available

to help students think, students' peculiarity, and the lack of teaching and learning tools to ignite them to think.

The interview sessions with the students revealed that most students enjoy thinking and participate during classroom activities but observed that they have limited time to think about their learning activities. Furthermore, students asserted that they are often ecstatic whenever their teachers allow them to ask and respond to questions and share their opinion about what they learn. The next Chapter, the last Chapter of this research will summarize the findings based on the research questions and relate them to the literature reviewed in Chapter 2.

CHAPTER 5: IMPLICATIONS, RECOMMENDATIONS, AND CONCLUSIONS

5.1 Introduction

This research has explored how teachers can encourage the development of critical thinking skills for the teaching and learning of economics in Nigerian secondary schools. The research questions that underpinned this thesis were:

Q1 What pedagogies can teachers use to encourage critical thinking in students' learning experiences?

Q2 How do students respond when teachers use pedagogies to support their Critical thinking skills?

This Chapter summarizes the findings from the teachers' interviews and the focus groups with the students about the literature presented in Chapter 2. This chapter begins with a short description of each school, organized under the two research questions, and then discusses findings from teachers' interviews to address the first research question. Similarly, the second research question, which addressed the findings of the students' focus groups, is discussed. Finally, this Chapter's concluding part explains my study's limitations, my contribution to knowledge, and suggestions for possible future research.

5.2 Implications for Practice

This study contributed to the importance of critical thinking approaches that supports it and its importance towards achieving teaching and learning goals. The participants identified the importance of critical thinking in teaching and learning with emphasis to relevant approaches that can aid thinking in real world, authentic activities, as their preferred learning method. The teachers' need for specific teaching experiences is supported by the constructivist learning theory which requires authentic learning built on real-world experiences. Educational Stakeholders could consider emphasizing on selection and inclusion of student centred learning approaches to instructional design strategies and content to encourage students to think about what they learn.

The lack of understanding of Critical thinking, such as how to teach it towards achieving effective learning objectives, may have contributed to the learning experiences of students and how teachers encourages students to think about what they learn and build their critical thinking skills.

5.2.1 Limitations

The importance of addressing biases, personal values, societal and cultural impacts on researchers to brings a unique set of experiences to a research (Creswell, 2014). Limitations are variables that could potentially impact or nullify the results of a study if not controlled or considered while assumptions are beliefs held by researchers that align their experiences and academic research findings. In this study, the limitations study includes location, selection of participants, data collected, and time.

5.2.2 Size of this study

Data for the study was collected from ten schools comprising ten teachers and five students from each schools in AMAC, FCT in Nigeria. Therefore, the results from this study may not be applicable to most privately owned schools. Although they share the same standardized and centralized curriculum as government-owned schools, they differ in providing more training programs for their teachers and facilities for conducive learning.

5.2.3 Selection of Participants

The selection of teacher participants was restricted only to economics teachers and school students. Most schools had only one economics teacher for the senior secondary school classes. The student participants were volunteers who indicated their willingness to participate in the research and selection by the school Vice-principals in charge of Academics without the input of the class teachers. The sample could have been more significant and included all students in the senior classes, Year 1 and 3, in the data collection. However, the study was restricted to classes in senior secondary school Year 2 based on their knowledge of economics in

Year 1. The vice–principal charged the participants not to be shy but to freely share their classroom experience with their economics teachers during the sessions with me. The choice of the vice-principal is unlikely to have prevented the teachers from selecting students with whom they have an interest. However, the findings showed that participants provided a range of perceptions and experiences.

5.2.4 Subjectivity in this Study

The study carefully minimized and managed personal perspectives that could influence subjectivity. I carefully minimize the subjectivity of my own perspective haven reflected extensively on my teaching experience by not using questions that could elicit preconceived answers expected by me. Though I might not have asked some questions that ought to have been asked, I avoided known questions while constructing questions for the interview sessions (Seidman, 2019). With my experience as a classroom teacher, I aligned with the social setting of the research and was able to enjoy free access and richer information from the participants while contending with participants' preconception. It enabled me to expressly capture the spontaneous views of the participants and reflect on their responses. In addition, I conducted a pilot study of the research method where I found out that the selected samples had no idea about linking critical thinking to relevant pedagogies that can support teaching or learning. Where there were perceived ideas that could influence subjectivity, I expressly adjusted and took a neutral position to minimize potential bias that could impact the reliability of this study.

5.3 Recommendations for Applications

This study shows that students were ready to learn and prepare for the tertiary institution but were often discouraged by the minimal activities they should have considered. They resorted to rote learning since learning content often needs to be more accurate and ignite them to think. Thus, the findings suggested

promoting professional development that supports innovative pedagogies. Teachers can apply these pedagogies to develop strategies that encourage the achievement of educational goals.

Developing the critical thinking skills of teachers and students is a significant factor that can influence the achievement of educational goals at all levels of teaching and learning. The role of the teacher may include a change in the status quo from approaches that support students learning more, as introducing student-centered approaches can energize the students' higher thinking order. Conversely, combining the teacher and student-centred approaches is suggested for a balanced approach. The finding of this study suggested the need for professional development that could promote a deep understanding of critical thinking concepts through participatory and collaborative activities. Also, a paradigm shift by the teacher seems complicated for teachers who are very comfortable with their convenient pedagogies and find the student-centered approaches to be tasking and burdensome.

5.3.1 Recommendations for Educational Stakeholders

Recently, educators and stakeholders in the Nigerian education sector have called for a curriculum to develop critical thinking skills from the basic level of education, given the changing world order (Sokoya, 2021). In addition, there are suggestions that the government support and provide resources that can aid the knowledge of critical thinking to teachers and students at all levels of education (Igwe, 2021). Findings from the present study indicated that teachers acknowledged the importance of critical thinking in teaching and learning. It suggests that teachers in Nigeria would appreciate the idea of their understanding of the concept of critical thinking to help develop the student's skills. Meanwhile, for teachers to understand what critical thinking entails, Educational stakeholders should ensure that critical thinking be included in teachers' training program and in-service training as one of the strategic new trends and developments in teaching in a changing environment. The findings also showed the importance of basic resources such as conducive learning environment which are relevant for teachers to encourage students on how to develop and engage in critical

thinking and subsequently aid the achievement of set goals. Consequently, teachers' teaching experience will witness a drastic change in the choice of appropriate pedagogy, and students' learning expectations and performances will be different from what they were before the introduction of critical thinking skills. Therefore, educational stakeholders' role is essential to improve the quality of education in Nigeria to emplace machineries that would enhance students to develop critical thinking skills and become the generator of questions rather than only responding to what the teacher says.

This study also supports the view that teaching and learning tools should be provided or improvised for a better learning experience while considering a well-designed curriculum. These tools give the teacher the knowledge and intervention to link the students with the learning content. From this study, students' responses showed that teaching and learning tools supported their learning experiences, even when teachers' intervention was insufficient. Furthermore, they cited when they improvised some tools, which gave them insights into the topics they learned using them. This study reinforced other research that has suggested that using relevant tools supports how students use their critical thinking skills when guided by the teachers during classroom activities. It is therefore expedient for educational stakeholders to emphasize in the curriculum and make provision for the use of teaching and learning tools by the teachers and students to achieve teaching and learning goals.

5.4 Recommendation for future Research

Key findings are:

1. Critical thinking is a new phenomenon in Nigerian secondary schools, although some teachers have personally heard or read about it. Most teachers know the importance of evaluation and measurement but must be aware of it to develop critical thinking skills.

2. This study found that the pedagogy implemented in Nigerian Secondary Economics classrooms strongly emphasizes teacher-centered pedagogy, with little or no attention to the students during classroom activities. Teaching styles remain directed and personalized by teachers rather than student-centered.

3. Students' learning experience remains a mirage as rote learning and other teacher-centered approaches are the main focus of learning activities. This culminates in producing a workforce without critical thinkers in the nation's economy.

4. Including critical thinking in the teacher training curriculum is an avenue to enhance the pre-teachers' training and development of critical thinking skills, first in the teachers and, consequently, in the students. In addition, it will enable a holistic approach to developing innovative pedagogies from the lower levels of education in Nigeria to other levels.

This study highlighted how Nigerian Secondary Schools could encourage critical thinking to achieve sustainable educational goals in a changing world. I raised questions on whether teachers understand the concept of critical thinking, its relevance to their profession and the students, and how they can teach the students to develop critical thinking skills. Findings showed that most teachers need help understanding critical thinking, how to teach it and how to guide the students to develop the skill. There is a need to address this gap through more research on critical thinking and how teachers can understand, articulate and infuse critical thinking in their teaching profession in secondary school classrooms. Hence, I recommend that future research investigate topics such as "performances of teachers in classroom activities when they develop critical thinking skills" "how teachers can use critical thinking to influence students in achieving learning goals" Teaching students to be critical thinkers - A start from basic education level" How teachers can infuse critical teaching to increase the performance of students in Economics". To this end, in future research, it would be valuable to investigate how to introduce students to critical thinking early in life and how to learn critical thinking using qualitative methodology observations of the classroom activities to harness more details

on the performances of the teacher and students in the classrooms. Finally, future research could investigate the performance of secondary school students of economics who are critical thinkers when they get to the tertiary institutions or join the nation's workforce.

5.5 Conclusion

Critical thinking is a crucial 21st-century skill needed for the holistic development of the educational system and all strata of the government of any nation seeking strategic change from cliché to result-oriented and realistic approaches in national development. The clamor for including this skill in the Nigerian school curriculum has recently gained more attention for changing traditional teaching and learning approaches to more result-oriented learning instructions in the educational system. This study investigated how critical thinking can be encouraged in Nigerian secondary schools to enable a change in narrative from previous approaches where teaching and learning are stereotyped and did not support students to engage in how to think about what they learn or their perspectives on any issue. Furthermore, it expatiates the level of Nigerian economic teachers' understanding of critical thinking given the various traditional approaches they use in teaching economics with cognizance of those that encourage critical thinking.

The research questions for this study were: *What pedagogies can teachers use to encourage critical thinking in students' learning experiences? How do students respond when teachers use pedagogies to support their Critical thinking skills?*

The study examines how to promote critical thinking skills in Nigerian Secondary Schools through teaching in Economics classes. It became apparent that there was a need to create awareness for students to understand the importance of critical thinking. However, they expressed that their teachers often ask questions whenever time permits before the end of each lesson. Students' dispositions are apt to learn to think and develop strategies to help them understand the skills to be critical thinkers in the real world. The results of the

study have shown that promoting critical thinking skills requires efforts from all facets of the teaching and learning operation, especially the teacher, who should be well prepared to encourage and develop the skills in the students and the students who are required to adopt the appropriate learning for better output and achievement of educational growth. From the findings, students demonstrated high motivation levels and a better disposition when considering what they learned during economics classes. They displayed it by exercising their thinking skills in analyzing, discussing, asking, and answering for better performances during economics classes. Participants in this research described learning through critical thinking as a significant life experience that can change their perspectives and inspire them to understand learning content with broader views. They observed that the learning process creates a good level of interaction between teachers and students to activate critical thinking skills in students . Findings showed that teachers' knowledge of critical thinking is not significant. However, they must understand it and help engage students in meaningful learning experiences by developing their critical thinking skills. Findings also revealed that due to the need for more knowledge in critical thinking, teachers used primarily teacher-centered approaches that often do not necessarily support the constructivist theory on which I underpinned this study. The data from this study demonstrated a gain in critical thinking dispositions as students showed positive changes in their critical thinking and overall positive attitudes toward deliberate practice and reflection. Also, teachers admitted that performing tasks is beneficial to foster the development and transfer of critical thinking skills through analysis, evaluation, and synthesis of arguments and claims. Some challenges highlighted by the teachers' responses include a lack of need to use critical thinking-supported approaches since it is not part of the school curriculum, crowded school schedules that do not give adequate time for teachers to meaningfully engage the students, Non-availability or lack of relevant teaching and learning materials and the non-inclusion of developing critical thinking skills in the teachers' training curriculum.

The findings further highlight the importance of students' active participation in the learning process and their role in influencing the development of critical thinking skills. The study reveals that most Nigerian economics teachers recognize the need for critical thinking skills to adequately manage students' learning experiences, as the students show a keen interest in learning new things. However, teachers often need clarification on the right direction of learning the students should follow or relate. Students, on their part, identified some learning approaches relevant to developing critical thinking skills, such as group learning, dialogue, individual learning, role play, and other student-centered methods, which the teachers should support. They emphasize the importance of understanding how to think about what they learned for better and lasting learning experiences beyond the school environment. It highlights the students' active role in their learning journey and their potential to influence the development of critical thinking skills.

Neumann (2017) and Zhao (2015) suggested that education stakeholders emphasize economic outcomes, jobs, and money as they relate to education and curricular goals. It is relevant to recognize the importance of building critical thinking skills to strengthen nations' economies, support a skillfully developed workforce, and take the initiative in financial creation. To initiate a diligent implementation of critical thinking in Nigeria's educational system, the collaboration of the activities of teachers and students and the review of the school curriculum have become essential for the system's survival. At the same time, the teacher's role as the significant implementer of the curriculum through reflective practice and collaboration, improving the quality of thinking and questions asked by the students, must change. Placing the students at the center of teaching and learning activities through developing their critical thinking skills is a conscious effort to build their cognitive strength on how to think, not what to think. They must acknowledge that their opinions originate from influences such as parents, religion, peers, friends, teachers, and government and be aware of these influences to evaluate their thoughts before arriving at an objective conclusion.

As a leader and driving force in the teaching and learning programs, teachers' training should include expanding the school content technologically. It is relevant in the 21st-century educational program to enable professional growth and improve the educational content they can offer students (OECD, 2008). It will subsequently reflect the opportunities the students will be exposed to and lead to the desired learning outcome. However, where the teachers are not inclined to this renewed approach in training, the teaching and learning environment may become lopsided, with the students surfing aimlessly and without direction through the internet. The teacher emphasizes the theoretical aspect of teaching with or without using teaching and learning tools. Therefore, teachers should not only be aware of technology-based education using the right tools. However, they should engage more in creatively developing tools to support and achieve successful educational outcomes.

The evidence obtained in this study forms the basis for the highlighted implications. The concept of critical thinking has yet to be well-known in the Nigerian school curriculum. However, teachers measure and evaluate their teaching using general questions they ask the students whenever they have the time before or after each lesson. Only three (3) teachers showed some understanding of critical thinking and applied it in their interaction with their students. Unfortunately, the student's learning experiences suffer a significant setback, as they depend on whatever the teacher says or the notes they prepare for them. It confirms the inability of students to develop critical thinking skills in any area of their learning activities since they need to learn how to think or what to think about during classroom activities. It implies that such gaps may negatively impact students' learning experiences, as anchored by Horn & Veermans's (2019) research on the transferability of knowledge.

Introducing innovative pedagogy, such as critical thinking, in Nigerian classrooms will reinvigorate classroom activities and foster inclusive learning environments that encourage student participation. This approach empowers teachers to lead classroom activities, leveraging students' experiences to stimulate

reflective thinking and activities. Moreover, critical thinking enhances teacher-student interaction and boosts efficiency, particularly when integrated with technology-based platforms that expose teachers to diverse teaching methods and students to effective learning. The need to implement educational strategies aligns with Nigeria's National Policy on Education (NPE) goals: to foster a robust and dynamic economy and a nation brimming with opportunities for all citizens (FRN, 2014). In collaboration with the government, policymakers should prioritize restructuring the education sector to ensure its effectiveness and productivity through adequate funding, as stipulated by UNICEF.

The quality of pedagogy, being the pivot of teaching and learning for teachers and students, will determine the quality and achievement of educational goals. Including pedagogies that support technological tools in the teacher training content can boost instructional improvement and expose the teacher and student to information/skill development in unknown areas of teaching and learning. It will subsequently ignite the mindset of the students towards long-lasting, productive, and creative learning, which the development of critical thinking portends.

This study's findings suggest that critical thinking is apt for teachers to guide and teach students that thinking is integral to their academic pursuits. In the Focus Group Discussion, the students acknowledged the importance of being able to think, looking at most student-centered approaches that supported them to think, such as individual study and anchored learning. However, students indicated that individual study, group study, quizzes, and dialogues are the most prominent approaches to include in their classroom activities. Earlier research has suggested that teachers play a significant role in students' cognitive development during collaborative learning. In particular, consistent students and teachers observed interactions in the classroom, and their self-reported perceptions of the divergent pedagogical approaches indicated that group work is more important in the development of critical thinking disposition than teacher-centered pedagogy because it stimulates classroom dialogues to explore student-teacher communication, which develops a critical thinking

disposition. The findings of Fung (2017) may have implications for teachers' willingness to engage students in group work when curriculum developers, educational policymakers, and education stakeholders emphasize the need for the inclusion of critical thinking concepts in pre-teacher and in-service training for the development of the students.

The findings of this study suggested that teaching students to develop critical thinking skills and disposition is strategic to enhancing their performance and achievement beyond school life. Earlier researchers, Abrami et al. (2015), have shown that teaching critical thinking is both content-specific and generic in expanding the student's cognitive development horizon, particularly after transitioning to university. It implies that critical thinking is relevant as a general approach that can be infused seamlessly into different learning content and other areas of life after school. Norris (1985) articulated that there needs to be concrete evidence of the long-term impact of instruction in critical thinking. I suggested in this study that the curriculum developers incorporate critical thinking skills into the pre-teacher training curriculum and in-service training as an instructional intervention synonymous with learning at all levels of education, starting from the primary level. Teaching students early on to engage in critical thinking will ignite their ability to infuse or immerse it in their learning and general lifestyle. In addition to national sensitization, the government should ensure policy implementation that supports the development of critical thinking skills to achieve national educational goals in line with global best practices.

Finally, the findings of this study suggested that students can develop and sustain critical thinking skills when their teacher teaches them how to think in the early years of learning. It is imminent when they learn how to foster critical thinking development and transferability of skills in analysis, evaluation, and synthesis of arguments and claims early in life. In addition, critical thinking is a skill that must be practiced repeatedly across all subjects through disposition and attitudinal readiness, which ensures students make themselves conscious of the need to apply the skills.

REFERENCES

Abrami, P. C., Bernard, R. M.Borokhovski, E., Wade, A., Surkes, M. A., Tamim, R., & Zhang,

D. (2008). Instructional interventions affecting critical thinking skills and dispositions: A

stage 1 meta-analysis. *Review of Educational Research*, 78(4), 1102–1134.

Abrami, P. C., Bernard, R. M., Borokhovski, E., Waddington, D. I., Wade, C. A., & Persson, T.

(2015). Strategies for Teaching Students to Think Critically: A Meta-Analysis. *Review of

Educational Research*, 85(2) 275 –314.

Adams, C. (2017, September 22). The Disadvantages of Using Games as a Learning Tool. Retrieved

January 31, 2022, from *https://itstillworks.com/12328164/the-disadvantages-of-using-games-

as-a-learning-tool*

Adams, M. G. (2013). *Teaching that changes lives: 12 mindset tools for igniting the love of

learning*. ProQuest Ebook Central https://ebookcentral.proquest.com

Afolayan, T. (2020). National Education Policy 2020. Retrieved June 24, 2022 from

https://www.academia.edu/44560804/

Afolayan, A. (2014, February 26). ASUU and new unionism: Redeeming imperatives. Retrieved

March 12, 2023, from *https://www.peoplesdailyng.com/asuu-and-new-unionism-

redeeming-imperatives/*

Agbenyeku, E. U. (2017). The impact of the activity-based method on the performance of Science

learners from selected junior secondary schools in Nigeria, University of South Africa,

Pretoria   Retrieved   April   15,   2022,   from

https://uir.unisa.ac.za/bitstream/handle/10500/24959/thesis_agbenyeku_eu.pdf.

Agbese, D. (2020, July 24). Thoughts on yesterday's men. Retrieved November 11, 2023, from

https://guardian.ng/opinion/thoughts-on-yesterdays-men/

Ahmad Shukri, N., & Mukundan, J. (2015). A review on developing critical thinking skills through literary texts. Retrieved March 22, 2022 from *https://files.eric.ed.gov/fulltext/EJ1128232.pdf*

Akbari-Lakeh, M., A., Naderi, & Arbabisarjou, A. (2018). Critical thinking and emotional intelligence skills and relationship with students' academic achievement. *Prensa Médica* Argentina 104: 2.

Akanbi, G. O., & Jekayinfa, A. A. (2019). Education and emancipation, educational policies and «de emancipation»: A history of the Nigerian education system from 1914 to 2014. *Espacio, Tiempo y Educación*, 6(2), pp. 177-196. doi: http://dx.doi.org/10.14516/ete.230

Albergaria-Almeida, P., Teixeira-Dias, J.J.C., & Martinho, M. (2011). *How can critical thinking be recognized in the classroom?* In Horvath,C.P. & Forte, J.M. (Ed).Critical Thinking.(175-188). Nova Science Publishers, Incorporated. ProQuest Ebook Central,http://ebookcentral.proquest.com/lib/UNICAF/detail.action?docID=3021945.

Alexander, R. (2020). *A Dialogic Teaching Companion*, Routledge, Abingdon

Al-Ghadouni, A. M. (2021). Instructional Approaches to Critical Thinking: An Overview of Reviews. *Revista Argentina de Clínica Psicológica* Vol. 30, (1) 240-246

Al-Ghadouni, A.M. (2021). Critical Thinking: Components, Skills, and Strategies. *Revista Argentina de Clínica Psicológica* Vol. 30, (2) 1-6. Aliakbari, M. & Akram S. (2013). Teachers' perception of the barriers to critical thinking. *Procedia-Social and Behavioral Sciences* 70: 1–5

AlMutairi, A. N. M. (2015). The Effect of Using Brainstorming Strategy in Developing Creative Problem Solving Skills among Male Students in Kuwait: A Field Study on

Saud Al-Kharji School in Kuwait City. *Journal of Education and Practice*. 6(3):136-145.

Altmann, A., Ebersberger, B., Mössenlechner, C., & Wieser, D. (Eds.). (2018). *The disruptive power of online education: Challenges, opportunities, responses.* ProQuest Ebook Central https://ebookcentral.proquest.com

Amuda, B. G., Domiya G. Ali, D. G., & Durkwa, H. (2016). Gender Difference in Academic Performance in SSCE Economics Subject among Senior Secondary School Students in Maiduguri Metropolis, Borno State, Nigeria. *American Journal of Educational Research*, 4(3), 288-293

Anderson, L. & Krathwohl, D.R. (2000). *Taxonomy for learning, teaching, and assessing*. New York: Longman

Andrews, N. C. Z., Hanish, L. D., Updegraff, K. A., DeLay, D., & Martin, C. L. (2019). Dyadic peer-interactions: The impact of aggression on impression formation with new peers. *Journal of Abnormal Child Psychology,* 47(5), 839–850. doi:http://dx.doi.org/10.1007/s10802-018-0490-y

Annink, A. (2017). Using the research journal during qualitative data collection in a cross-cultural context. *Entrepreneurship Research Journal*, 7(1), 223–17.doi:http://dx.doi.org/10.1515/erj-2015-0063

Arum, R., & Roksa, J. (2011). *Academically adrift: Limited learning on college campuses.* Chicago, IL: University of Chicago Press

Aspers, P., & Corte, U. (2019). What is qualitative in qualitative research? *Qualitative Sociology*, 42(2), 139-160. doi:http://dx.doi.org/10.1007/s11133-019-9413-7

Baker, J. A. (2006). Contributions of teacher-child relationships to positive school adjustment during elementary school. *Journal of School Psychology*, 44(3), 211–229

Bapoğlu-Dümenci, S. S., Muş, Ü. E., & Demir, E. (2021). Analysis of case problems by STEM activities in children's stories and their effect on problem-solving skills. *Bartin ÜniversitesiEgitim Fakültesi Dergisi*, 10(2), 378-389.

Doi:http://dx.doi.org/10.14686/buefad.816297.

Barak, M., & Lefstein, A. (2021). Opening Texts for Discussion: Developing Dialogic Reading Stances. Retrieved January 15, 2022 from *https://www.researchgate.net/publication/351632549*

Barnett, R. (1997). *Higher education: A critical business*. McGraw-Hill Education.

Bassham, G., Irwin, W., Nardone, H., & Wallace, J. M. (2011). *Critical Thinking: A Student's Introduction.* New York: McGraw-Hill.

Bassey, M. (1981). Pedagogic research: on the relative merits of the search for generalisation and study of single events, *Oxford Review of Education*.

Bawa, A. (2020). Role-Play. In R. Kimmons & S. Caskurlu (Eds.), *The Students' Guide to Learning Design and Research*. EdTech Books. Retrieved July 12, 2022, from https://edtechbooks.org/studentguide/roleplay

Beck, L., Trombetta, W., & Share, S. (1986). Using focus group sessions before making decisions. *North Carolina Medical Journal*, 47, 73–74.

Becker, L. R., & Hermosura, B. A. (2019). Simulation education theory. In Comprehensive Healthcare Simulation: *Obstetrics and Gynecology* (pp. 11–24). Springer.

Bell, J. (2005). *Doing Your Research Project: A guide for first-time researchers in education, health, and social science:* Open University Press.

Belland, B., Walker, A., Kim, N., & Lefler, M. (2017). Synthesizing results from empirical research on computer-based scaffolding in STEM education: A meta-analysis. *Review of Educational Research,* 87(2), pp. 309-344.

Benefits of Educational Games in the Classroom (2016, June 16). Retrieved June 12, 2021, from *https://www.brighthubeducation.com/teaching-methods-tips/129304-advantages-of-game-based-learning/*

Bensley, D.A., Rainey, C., Murtagh, M.P., Flinn, J.A., Maschiocchi, C., Bernhardt, P.C., & Kuehne, S. (2016). Closing the assessment loop on critical thinking: The challenges of multidimensional testing and low test-taking motivation. *Thinking Skills and Creativity*, 21, 158168.https://doi.org/10.1 016/j.tsc.2016.06.006.

Bernstein-Yamashiro, B., & Noam, G. G. (Eds.). (2013). *Teacher-student relationships: Toward personalized education: new directions for youth development, number 137*. ProQuest Ebook Central https://ebookcentral.proquest.com.

Bezanilla, M. J., Fernández-Nogueira, D., Manuel Poblete, M. & Galindo-Domínguez, H. (2019). Methodologies for teaching-learning critical thinking in higher education: The teacher's view. *Thinking Skills and Creativity* 33: 100584.

Bloom, B. K. (1956). *Taxonomy of educational objectives— Handbook I: The cognitive domain.* New York: David McKay

. Bloom, B.K. (1994) *Taxonomy of educational objectives: The classification of educational*

goals: Handbook I, cognitive domain. – New York: Longman.

Bohm, D. (1997). *On dialogue* edited by Lee Nichol, London: Routledge. (Extended version of 1990. On dialogue. Ojai, Calif.: David Bohm Seminars)

Bok, D. (2006). *Our underachieving colleges: A candid look at how much students learn and why they should be learning more*. Princeton, NJ: Princeton University Press.

Boud, D. (1988). Moving towards autonomy', in D. Boud (ed). *Developing Student Autonomy in Learning*. Second Edition. London: Kogan Page.

Boud, D. (2001). Making the move to peer learning. In Boud, D., Cohen, R. & Cadima, J., Verschueren, K., Leal, T., & Guedes, C. (2016). Classroom interactions, dyadic teacher-child relationships, and self–regulation in socially disadvantaged young children. *Journal of Abnormal Child Psychology,* 44(1), 7–17.

Branicki, L., Sullivan-Taylor, B. & Rachael Livschitz, S.B.(2018). How entrepreneurial resilience generates resilient SMEs. *International Journal of Entrepreneurial Behaviour & Research* 24(7):1244-1263

Bransford, J.D., & Stein, B.S. (1993). *The Ideal Problem Solver* (2nd Ed). New York: Freeman.

Bransford, J. D., Sherwood, R. D., Hasselbring, T. S., Kinzer, C.K., & Williams, S. M. (1990). *Anchored instruction: Why we need it and how technology can help.* In D. Nix & R. Spiro (Eds.), Cognition, education, and multimedia. Hillsdale, NJ: Erlbaum

Brečka, P., & Valentová, M. (2017). Critical and Creative Thinking strategies for teachers and students. - Innovative Teaching Ideas. Retrieved March 22, 2021 from *https://www.researchgate.net/publication/321780517*

Brookfield, S. (2012). *Teaching for critical thinking: Tools and techniques to help students question their assumptions*. San Francisco, CA: Jossey-Bass.

Browne, M. N., & Freeman, K. (2000). Distinguishing features of critical thinking classrooms. *Teaching in Higher Education*, 5 (3), 301-309.

Budhi, W., & Suwarni, S. (2019). Effect of problem-based learning on critical thinking ability in science. *Journal of Physics*. Retrieved June 12, 2021 https://doi.org/10.1088/1742-6596/1175/1/012135

Burbach, M. E., Matkin, G. S., & Fritz, S. (2004). Teaching Critical Thinking in an Introductory Leadership Course Utilizing Active Learning Strategies: A Confirmatory Study. *College Student Journal.* Retrieved June 12, 2021 from https://eric.ed.gov/?id=EJ706698

Butler, H. A., Pentoney, C., & Bong, M. P. (2017). Predicting real-world outcomes: Critical thinking ability better predicts life decisions than intelligence. *Thinking Skills and Creativity,* pp. 25, 38–46. Retrieved June 20, 2022 https://doi.org/10.1016/j.tsc.2017.06.005.

Cáceres, M., Nussbaum, M., & Ortiz, J. (2020). Integrating critical thinking into the classroom: A teacher's perspective. *Thinking Skills and Creativity* .37 (2020).100674

Cargas, S., Williams, S., & Rosenberg, M. (2017). An approach to teaching critical thinking across disciplines using performance tasks with a common rubric. *Thinking Skills and Creativity*, 26(March), 24–37. https://doi.org/10.1016/j.tsc.2017.05.005

Chauhan, S. (2017). A meta-analysis of the impact of technology on learning effectiveness of elementary students. *Computers & Education*, 105, Pp. 14–30.

Cillessen, A. H. N., Schwartz, D., & Mayeux, L. (Eds.). (2011). *Popularity in the peer system.* ProQuest Ebook Central https://ebookcentral.proquest.com.

Clarke, V. & Braun, V. (2013). Teaching thematic analysis: Overcoming challenges and developing strategies for effective learning. *The Psychologist,* 26(2), 120–123.

Clemmitt, M. (2015). Teaching critical thinking: Should schools do more to foster analytical Skills? *CQ Researcher*, 25(14), 313–336.

Cluster, D. (2001). What is the critical thinking? Change: *Intercultural. Journal about thinking development through reading and the letter,* 4, 36–40.

Cohen, E. G. (1994). Restructuring the classroom: Conditions for productive small groups. *Review of Educational Research*. Pp 1–35.

Cohen, R., Fardouly, J., Newton-John, T., & Slater, A. (2019). #BoPo on Instagram: An experimental investigation of the effects of viewing body-positive content on young women's mood and body image. *New Media & Society*, 21(7), 1546–1564. Retrieved June 30, 2021 from https://doi.org/10.1177/1461444819826530

Cohen, L., Manion, L. & Morrison, K. (2013). *Research methods in education*. Routledge.

Cox, J. (September 9, 2014). Teaching Strategies to Promote Critical Thinking. Retrieved September 9, 2022, from *https://www.teachhub.com/teaching-strategies/2014/09/teaching-strategies-to-promote- critical-thinking/*

Creswell, J. W. (2005). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research*. Upper Saddle River, NJ: Pearson Prentice Hall.

Creswell, J. W. (2009). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches.* (3rd Ed.). Thousand Oaks, CA: Sage.

Creswell, J.W. (2013). *Research Design Qualitative, Quantitative, and Mixed Methods Approaches.* 4th Edition, SAGE Publications, Inc., London.

Creswell, J. W. (2018). *Research design: qualitative, quantitative, and mixed methods approaches*. 5th edition. Los Angeles: SAGE. Chicago.

Crow, M.L. & Nelson, L. P. (2015). The Effects of Using Academic Role-Playing in a Teacher Education Service-Learning Course. *International Journal of Role-Playing*.

Dahl, A. J., Peltier, J. W., & Schibrowsky, J. A. (2018). Critical Thinking and Reflective Learning in the Marketing Education Literature: A Historical Perspective and Future Research Needs. Journal of Marketing Education. *https://doi.org/10.1177/0273475317752452*

Daniel-Gittens, K., Thompson, K., & Carter, P. (2014). Anchor instruction. In B. Chen & K. Thompson (Eds.), Teaching Online Pedagogical Repository. Orlando, FL: University of Central Florida Center for Distributed Learning. Retrieved June 30, 2021 *https://topr.online.ucf.edu/anchored- instruction/.*

DeJonckheere, M., & Vaughn, L.M. (2019). Semi-Structured Interviewing in Primary Care Research: A Balance of Relationship and Rigor. Family Medicine and Community Health, p. 7, e000057. Retrieved October 30, 2021 *https://doi.org/10.1136/fmch-2018-000057*

Dekker, T.J. (2020). Teaching critical thinking through engagement with diversity. *Thinking Skills and Creativity* .37 (2020).100701, 1–9.

Denscombe, M. (1998). *The good research guide: For small-scale social research projects.* Buckingham [England: Open University Press.

Dewey, J. (1933). *How we think: A restatement of the relation of reflective thinking to the educative process*. Boston, MA: D.C. Heath.

Dewey, J. (1997). *How we think*. New York: Dover Publications.

Dewhurst, D., Macleod, H. A., & Norris, T. A. (2000). Independent Student Learning Aided by Computers: An Acceptable Alternative to Lectures. *Computers and Education* 35 (3):223–241.

Doğantan, E. (2020). An interactive instruction model design with role play technique in distance education: A case study in open education system. *Journal of Hospitality, Leisure, Sports, and Tourism Education*, p. 27 doi:http://dx.doi.org/10.1016/j.jhlste.2020.100268

Domínguez Beltrán, F. J., Mina de Villalta, C. E., & Peña Landaverde, I. R. (2019). Internship: A methodological proposal to improve the professional profile of graduates of the English Teaching Major of the Foreign Language Department at the University of El Salvador. Retrieved April 23, 2021 *https://core.ac.uk/download/287723491.pdf*

Doyle, A. (2020, June 08). Critical Thinking Definition, Skills, and Examples. Retrieved March 10, 2021 from *https://www.thoughtco.com/critical-thinking-definition-with-examples-2063745*

Doyle, A. (2021, October 21). What Are Problem-Solving Skills? Definition & Examples of Problem-Solving Skills. Retrieved March 10, 2021 from *https://www.thebalancecareers.com/problem- solving-skills-with-examples-2063764*

D'souza, F., & Vijaya Kumari, S.N. (2018). Interaction effect of instructional strategies (collaborative techno-enhanced anchored instruction and traditional method) and learning styles on social skills among secondary school pupils. I-Manager's *Journal on School*

Educational   Technology,   13(4),   35–44.   doi http://dx.doi.org/10.26634/jsch.13.4.14542.   Retrieved   March   15,   2019   from http://www.criticalthinking.org/pages/defining-critical-thinking/766

Duyckers, R. L. (2020). Intercultural Communication Competence in Upper Primary Students: International Collaboration Case Studies Using Web 2.0 Technologies Retrieved August 10, 2021 from *https://core.ac.uk/download/334814391.pdf*

Dwyer, C. P., Hogan, M. J., & Stewart, I. (2014). An integrated critical thinking framework for the 21st century. *Thinking Skills and Creativity*, pp. 12, 43–52. Retrieved September 10, 2021 from https://doi. org/10.1016/j.tsc.2013.12.004.

Dwyer, C. P. (2017). *Critical Thinking: Conceptual Perspectives and Practical Guidelines.* Cambridge: Cambridge University Press.

Dwyer, C. P. (2020). Teaching critical thinking. *The SAGE Encyclopedia of Higher Education* 4: 1510–12.

Edwards, L. C. (2017). The craft of infusing critical thinking skills: A mixed-method research on implementation and student outcome. *Journal on Centers for Teaching and Learning*, pp. 9, 47–72.

Edwards, L. C. (2023). Infusing critical thinking skills into course content. In C. E. Overson, C. M. Hakala, L. L. Kordonowy, & V. A. Benassi (Eds.), In their own words: What scholars and teachers want you to know about why and how to apply the science of learning in your academic setting (pp. 511–520). *Society for the Teaching of Psychology.*

Elder, L., & Paul, R. (2008). *Defining Critical Thinking: Foundation for Critical Thinking*. https://www.thefont.co.za/wp-content/uploads/2020/03/007-Paul-Elder-2008-A-FULL-Guide-to-Crit-Thinking-Concepts_Tool.pdf

Elena, M. C., & Cohen, A. K. (2021). Fostering youth civic engagement through effective mentorship: Understanding the college student volunteer mentors who succeed. *Journal of Community Psychology*, 49(2), 605-619. doi:http://dx.doi.org/10.1002/jcop.22482

Ennis, R. (1985). Critical thinking and the curriculum. National Forum: *Phi Kappa Phi Journal*, pp. 65, 28–31.

Ennis, R. (1989). Critical Thinking and Subject Specificity: Clarification and Needed Research. *Educational Researcher,* vol. 18, no. 3, 1989, pp. 4–10, doi: doi.org/10.3102/0013189x018003004

Ennis, R. H. (2015). *Critical thinking*. M. Davies, R. Barnett The Palgrave handbook of critical thinking in higher education. Springer.

Ennis, R. H. (2018). Critical thinking across the curriculum: *A vision. Topoi,* 37(1), 165-184.

Erickson, A. (2018). *Case Studies*. In R. Kimmons, The Students' Guide to Learning Design and Research. EdTech Books. Retrieved October 13, 2021 from *https://edtechbooks.org/studentguide/case_studies*.

Erturk, E. (2015). Role play as a teaching strategy. (conference paper). Retrieved June 8, 2021 from *https://www.researchgate.net/publication/284166003*

Etzkorn, K. B., & Braddock, A. (2020). Are you my mentor? A study of faculty mentoring relationships in US higher education and the implications for tenure. *International Journal*

of Mentoring and Coaching in Education, 9(3), 221-237. doi:http://dx.doi.org/10.1108/IJMCE-08-2019-0083

Ewumi, A.M., Oyenuga, A.O., & Owoyele, J.W. (2012). Entrepreneurship Education as Panacea for Youth Unemployment Implication of Vocational Counseling for Sustainable National Development. *Journal of Education and Practice*, 3 (14): 73-77.

Eze, I. F., Chux, G.I., & Jobo, D. (2022). Students' views regarding the barriers to learning critical thinking. *International Journal of Research in Business and Social Science* 11(4) 355–364.

Facione, P. A. (1990b). *The California Critical Thinking Skills Test (CCTST) test manual.* Millbrae, CA: California Academic Press.

Facione, P. A. (2011). Critical thinking: What it is and why it counts. *Insight Assessment*, 2007(1), 1–23.

Facione, N. C. & Facione, P.A. (2001). Analyzing explanations for seemingly irrational choices: Linking argument analysis and cognitive science. International Journal of Applied Philosophy 15: 267–68.

Fahim, M., Miri, M., & Najafi, Y. (2014). Contributory role of collaborative assessment in improving critical thinking and writing. *International Journal of Applied Linguistics & English Literature*, 3(1), 1-11.

Fahim, M., & Ahmadian, M. (2012). Critical Thinking and Iranian EFL *Context. Journal of Language Teaching and Research*, 3(4), 793-800.

Fahim, M. & Rezanejad, A. (2014). Critical Thinking in the EFL Context of Iran. *International Journal of Applied Linguistics & English Literature*, 3(4):128-135.

Farley-Ripple, E., May, H., Karpyn, A., Tilley, K., & McDonough, K. (2018). Rethinking connections between research and practice in education: A conceptual framework. Educational Researcher (May), *0013189X1876104.* Retrieved October 7, 2022 from *https://doi.org/10.3102/0013189X18761042.*

Febriansyah, J., Siswayani, P., & Kurniawati, N. (2023). Fostering Students' Critical Thinking through Reading Texts with Moral Values. Retrieved January 2, 2024 from *https://core.ac.uk/download/590904268.pdf*

Fletcher, J. (2015). *Teaching arguments: Rhetorical comprehension, critique, and response.* Portland, MA: Stenhouse Publishers.

Fletcher, F. A. (2019). A mixed methods study on simulation-based undergraduate medical education for preparedness for practice from multiple stakeholder perspectives (Order No. 27679524). Available from ProQuest One Academic. (2307352415). Retrieved April 12, 2022 from *https://www.proquest.com/dissertations-theses/mixed-methods-study-on-simulation- based/doc view/2307352415/se-2?accountid=188730*

Foresman, G. A., Fosl, P. S., & Wasto, J.C. (2016). *The Critical Thinking Toolkit, John Wiley & Sons, Incorporated,* ProQuest Ebook Central, http://ebookcentral.proquest.com/lib/UNICAF/detail.action?docID=4538252.

Fung, D. (2017). The pedagogical impacts on students' development of critical thinking dispositions: Experience from Hong Kong secondary schools. *Thinking Skills and Creativity,* p. 26. 128–139.

Gasser, L., Grütter, J., Buholzer, A., & Wettstein, A. (2018). Emotionally supportive classroom interactions and students' perceptions of their teachers as caring and just. *Learning and Instruction*, 54, 82–92.

Gaweł, A. (2016). *The Management of Virtual Games During the Education Process [in:] Perspectives on Computer Gaming in Higher Education red. Wach* – Kąkolewicz A., Muffoletto R. Poznań: Wydawnictwo Naukowe Bogucki.

Gillham, B. (2000). Case study research methods. ProQuest Ebook Central Retrieved October 13, 2022 from *https://ebookcentral.proquest.com.*

Gill, P., & Baillie, J. (2018). Interviews and focus groups in qualitative research: An update for the digital age. *British Dental Journal Official Journal of the British Dental Association*: BDJ online 225(7)

Gill, M.L., Grahn, P.J., & Calvert, J.S. (2018). Neuromodulation of lumbosacral spinal networks enables independent stepping after complete paraplegia. Nat Med 24**,** 1677– 1682 Retrieved November 20, 2021 from *https://doi.org/10.1038/s41591-018-0175-7*

Glaser, B. G. (1998). *Doing Grounded Theory: Issues and Discussions*. Sociology Press, Mill Valley, CA.

Glaser, E. M. (1941). *An experiment in the development of critical thinking.* New York, NY: Teachers College, Columbia University.

Glaser, E. M. (1985). Critical thinking: Educating for responsible citizenship in a democracy. National Forum: *Phi Kappa Phi Journal,* 65(1), 24-27.

Glover, I. (2014, July 4). Role-play: An Approach to Teaching and Learning. Retrieved October 13, 2021 from *https://blogs.shu.ac.uk/shutel/2014/07/04 /role-play-an-approach-to-teaching-and* learning/?doing_wp_cron=1627299478.1205449104309082031250

Gómez-Pérez, J. (2010). Acquisition and understanding of process knowledge using problem-solving methods. ProQuest Ebook Central Retrieved August 25, 2022 from *https://ebookcentral.proquest.com*.

Gorard, S., Siddiqui, N., & See, B. H. (2015). Philosophy for Children: Evaluation Report and Executive Summary, EEF. Available at *https://bit.ly/2GJ7Uvd*

Gordon, S.P., Oliver, J., & Solis, R. (2016). Successful Innovations in Educational Leadership Preparation. NCPEA *International Journal of Educational Leadership Preparation*, Vol. 11, (2)

Greenlaw, S. A., & Stephen, D. B. (2003). Teaching critical thinking with electronic discussion. *The Journal of Economic Education*, 34 (1), 36-52

Gose, M. (2009). When Socratic dialogue is flagging: questions and strategies for engaging students. *College Teaching,* 57(1), 45–50.

Gundumogula, M. (2020). Importance of Focus Groups in Qualitative Research. International Journal of Humanities and Social Science (IJHSS), *Center for Promoting Ideas* (CPI), 8 (11), 299–302.

Haber, J. (2020). It's Time to Get Serious about Teaching Critical Thinking. Retrieved March 3, *https://www.insidehighered.com/views/2020/03/02/teaching-students- think-critically-opinion*

Hackman, H. (2005). Five components for social justice education. *Equity & Excellence in Education, pp.* 38, 103–109.

Halpern, D. F. (1998). Teaching critical thinking for transfer across domains: Disposition, skills, structure training, and metacognitive monitoring. *American Psychologist,* 53(4), 449.doi:10.1037/0003-066X.53.4.449

Halpern, D. (2000). *Psychology of Critical Thinking.* Saint-Petersburg: Piter.

Halpern, D. F. (2014). *Critical thinking across the curriculum: A brief edition of thought & knowledge*. Routledge.

Harbour, E. & Connick, J. (2005). Role-playing games and activities, rules and tips.

https://www.businessballs.com/roleplayinggames.htm

Harris, K. R., & Meltzer, L. (Eds.). (2015). *The power of peers in the classroom: Enhancing learning and social skills.* ProQuest Ebook Central https://ebookcentral.proquest.com

Hennink, M. M., Kaiser, B. N., & Weber, M. B. (2019). What Influences Saturation? Estimating Sample Sizes in Focus Group Research. *Qualitative Health Research,* 29,1483-1496.https://doi.org/10.1177/1049732318821692

Herreid, C. F. (2006). *Start with a story: The case study method of teaching college science.* ProQuest Ebook Central https://ebookcentral.proquest.com

Hidayati, L., & Pardjono, P. (2018). The implementation of role-play in the education of pre-service vocational teachers. IOP Conference Series: *Materials Science and Engineering*, 296, 012016. Retrieved October May 29, 2022 from https://doi.org/10.1088/1757-899x/296/1/012016.

Hill-Jackson, V., Hartlep, N. D., & Stafford, D. (2019). *What makes a star teacher: 7 dispositions that support student learning*. ProQuest Ebook Central https://ebookcentral.proquest.com.

Hofreiter, T. D., Monroe, M. C., & Taylor, S. V. (2007). Teaching and evaluating critical thinking in an environmental context. *Applied Environmental Education & Communication*, 6 (2), 149-157.

Holmes, N. G., Wieman, C. E. & Bonn, D. A. (2015). *Teaching critical thinking. Proceedings of the National Academy of Sciences,* 112(36), 11199–11204.

Horn, S., & Veermans, K. (2019). Critical thinking efficacy and transfer skills defend against fake news at an international school in Finland. *Journal of Research in International Education*, 18(1), 23–41. https://doi.org/10.1177/1475240919830003

How to Promote Critical Thinking Skills. (2018, July 19). Retrieved March 14, 2021 from *https://www.hiclark.com/blog/how-to-promote-critical-thinking-skills/*

Huber, C.R., & Kuncel, N. R. (2016). Does College teach critical thinking? A metaanalysis. *Review of Educational Research*, 86(2),431–468. Retrieved September 20, 2021, from https://doi.org/10.3102/ 0034654315605917.

Hummell, L. (2016). 21st-century skills: Critical thinking skills. *Children's Technology and Engineering*, 20(4), 5–6.

Hryhorenko, L. V., & Muslim, B.K. (2017). Modern system of education in Nigeria (by literature review). *The Unity of Scientific periodic journal*, 1-3 (July). Pp.75-77 ISSBN 9091-1792(Print), 9091-175X(online)

Husbands, C., & Pearce, J. (2012). What makes great pedagogy? Nine claims from research. Retrieved from May 19, 2022, from *file:///E:/Chapter%201/what-makes-great-pedagogy-nine-claims-from- research.pdf*

Isaacs, W. (1999). *Dialogue: And the Art of Thinking Together*. New York: Doubleday.

Indeed Editorial Team. (2020, November 24) Problem-Solving Skills: Definitions and Examples. Retrieved July 30, 2022, from *https://www.indeed.com/career-advice/resumes-cover-letters/problem- solving-skills.*

Interaction Design Foundation - IxDF. (2016, November 26). What is Lateral Thinking? Interaction Design Foundation - IxDF. *https://www.interaction-design.org/literature/topics/lateral-thinking*

Ismail, T. (2010). Personality type and student performance in principles of economics. *Journal of Economic Education,* pp. 3–25.

Ismail, T. (2019). Towards Learner Centredness in Higher Education: Exploring English Language Classrooms in the UAE. Retrieved November 24, 2021 from *https://ore.exeter.ac.uk/repository/handle/10871/39558*

Jay, T., Willis, B., Thomas, P., Taylor, R., Moore, N., Burnett, C., Merchant, G., & Stevens, A. (2017). Dialogic Teaching: Evaluation Report and Executive Summary, EEF. Available at *https://bit.ly/2h45RGM*

Johnson, R., & Hamby, B. (2015). A meta-level approach to the problem of defining 'critical thinking.' *Argumentation*, 29(4), 417–430.

Jones, A. (2015). A disciplined approach to critical thinking. In M. Davies, & R. Barnett (Eds.). *The palgrave handbook of critical thinking in higher education.* New York: Palgrave Macmillan

Kahneman, D. (2011). *Thinking Fast and Slow*. Great Britain: Penguin.

Kahneman, D. & Shane F. (2002). *Representativeness revisited: Attribute substitution in 240 intuitive judgment.* In Heuristics and Biases: The Psychology of Intuitive Judgment. Edited by T. Gilovich, D. Griffin and D. Kahneman. New York: Cambridge University Press, pp. 49–81.

Kapp, K.M. (2012). *The Gamification of Learning and Instruction.* San Francisco: Pfeiffer

Kasokonya, S. M. (2007). An investigation of how members of a school board perceive and experience their roles in a secondary school in the Rundu Education Region of Namibia. https://core.ac.uk/download/335384597.pdf

Kazemi, E., & Hintz, A. (2015). *Intentional talk: How to structure and lead productive mathematical discussions*. Portland, ME: Stenhouse.

Kendra, C.(May 02, 2021). What Is a Case Study? Retrieved April 11, 2023, from *https://www.verywellmind.com/how-to-write-a-psychology-case- study-2795722*

Kersaint, G. (2015). Orchestrating mathematical discourse to enhance student learning. Retrieved March 10, 2022 from *http://casamples.com/downloads/WP_OrchestratingDiscourse.pdf*

Kettler, T. (2014). Critical thinking skills among elementary school students: Comparing identified gifted and general education student performance. *Gifted Child Quarterly,* 58(2), 127–136. doi:10.1177/0016986214522508.

Khan, A. N., & Ashraf, S. (2021). Brainstorming as a promising tool for teaching languages. *International Journal of Emerging Technologies and Innovative Research.* 8(8): d420-d423. Available http://www.jetir.org/papers/JETIR21084 24.pdf

Kimchi, J.O., & Ogedegbe, G. (2015). Fundamental Issues in the Management of Secondary Education in Nigeria. *Journal of Emerging Trends in Educational Research and Policy Studies*(JETERAPS)6(7):265–270.

https://openlearning.aauekpoma.edu.ng/Uploads/Journals

Kitzinger, J. (1995). Qualitative Research: Introducing focus groups. *British Medical Journal*, 311, 299-302.

Kopzhassarovaa, U., Akbayevaa, G., Eskazinovaa, Z., Belgibayevaa, G. & Tazhikeyevaa, A. (2016). Enhancement of Students' Independent Learning Through Their Critical Thinking Skills Development. *International Journal of Environmental & Science Education*. VOL.11 (18),11585-11585

Krueger, R.A., & Casey, M.A. (2000). *Focus Groups: A Practical Guide for Applied Research*.Thousand Oaks, California: Sage Publications.

Ku, K. Y. L. (2009). Assessing students' critical thinking performance: Urging for measurements using multi-response format. Thinking Skills and Creativity, 4, 70-76.

Kuluse, P. G. (2021). Household sustainability through wage labor and land use in Zwelibomvu. Retrieved March 14, 2023 from *https://core.ac.uk/download/491675909.pdf*

Kumpulainen, K., & Kaartinen, S. (2003). The interpersonal dynamics of collaborative reasoning in peer interactive dyads. *The Journal of Experimental Education,* 71(4), 333-370. Retrieved July 16, 2021 from https://www.proquest.com/scholarly-journals/interpersonal-dynamics- collaborative-reasoning/docview/217679576/se-2?accountid=188730.

Kurt, S. (February 6, 2021). "Anchored Instruction Model," in Educational Technology, Retrieved May 10, 2021 from *https://educationaltechnology.net/anchored-instruction-model/*

Kyriakides, L., Christoforou, C., & Charalambous, C. Y. (2013). What matters for student learning outcomes: A meta-analysis of studies exploring factors of effective teaching? *Teaching and Teacher Education*, 143. doi: 10.1016/j.tate.2013.07.010.

Lai, E. R. (2011). Critical thinking: A literature review. *Critical Thinking,* (June), p. 149. Retrieved December 28, 2021, from http:// images. Pearson assessments. Com /images/tmrs/Critical Thinking Review FINAL. Pdf.

Larsson, K. (2017). Understanding and teaching critical thinking—A new approach. *International Journal of Educational Research*, 84(December 2016), pp. 32–42. https://doi.org/10.1016/j.ijer.2017.05.004.

Lateef, F. (2010). Simulation-based learning: Just like the real thing. *Journal of Emergencies, Trauma and Shock,* 3(4), 348.

Lawson, B., & Leemis, L. M. (2017). A package for simulation education. In 2017 *Winter Simulation Conference (WSC).* Retrieved March 22, 2021 from https://doi.org/10.1109/wsc.2017.8248124. IEEE.

Laverick, D. M. (2016). *Mentoring Processes in Higher Education.* Springer, Cham

Leathrum Jr, J. F., Mielke, R. R., Shen, Y. & Johnson, H. (2018). Academic/industry educational lab for simulation-based test & evaluation of autonomous vehicles. In 2018 Winter Simulation Conference (WSC). Retrieved April 23, 2022 from *https://doi.org/10.1109/wsc.2018.8632548. IEEE.*

Leech, M. (2019). An investigation into student experience and perceptions of clinical simulation as a teaching method for pharmacy undergraduate education at the University of Portsmouth (Order No. 27681125). Available from ProQuest One Academic.

(2307408204). Retrieved April 23, 2022 from *https://www.proquest.com/dissertations-theses/investigation-into-student-experience-perceptions/doc view/2307408204/se-2?accountid=188730*

Lehmannl, T., Pirnay-Dummer, P., & Schmidt-Borcherding, F. (2021). Fostering integrated mental models of different professional knowledge domains: instructional approaches and model-based analyses. *Education Tech Research Dev* Retrieved April 23, 2022, https://doi.org/10.1007/s11423- 019-09704-0

Lendrum, S., & Tolan, J. (1995). *Case material and role play in counseling training. ProQuest Ebook Central https://ebookcentral.proquest.com.* Liamputtong, P. (2011). Focus group methodology: Principle and practice. Sage Publications.

Leymun, Ş. O., Odabaşı, H. F., & Yurdakul, I. K. (2017) The Importance of Case Study Research in Educational Settings | *Journal of Qualitative Research in Education*. Vol. 5 Issue 3. Retrieved February 14, 2024 from https://enadonline.com/index.php/enad/article/view/1218

Lichtman, M. (2014). *Qualitative research for the social sciences.* SAGE Publications, Inc. Retrieved October 19, 2022 https://dx.doi.org/10.4135/9781544307756

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic Inquiry.* Newbury Park, Ca: Sage Publications.

Linn, M. C. (2000). Designing the knowledge integration environment. *International Journal of Science Education,* 22(8), 781–796.

Liu qiang. (2017, Apr 24). Chinese patent application for virtual reality technology-based prisoner post-release education simulation method. Global IP *News.Education Patent News* Retrieved July 19, 2020 from https://www.proquest.com/wire-feeds/liu- qiang-submits-Chinese-patent-application/doc view/1891380870/se-2?accountid=188730

Mabrouk, S. (2010). Developing the critical thinker in the average student with Bloom's Cognitive taxonomy. Retrieved April 23, 2019 from *http://ww2.faulkner.edu/admin/websites/jfarrell/Critical%20thinking%20and%20Blooms%20Taxonomy.pdf*

Maheshwari, V.K. (2017, January 4). The Problem–Solving Method in Education. Retrieved 18 June 2021 from http://www.vkmaheshwari.com/WP/?p=2375

Mainhard, M. T., Oudman, S., Hornstra, L., Bosker, R. J., & Goetz, T. (2018). Student emotions in class: Teachers' relative importance and interpersonal relations with students. *Learning and Instruction,* 53, 109–119.

Mandal, M. (2019). Role of teacher in teaching problem-solving skills. Retrieved from Scholarly *Research Journal for Interdisciplinary Studies.* VOL- 6/51. 12234–12240.

Maxwell, J. A. (2013). *Qualitative research design: An interactive approach.*

Mazur, J. E. (2016). *Learning Behavior.* New York: Routledge.

Mbagwu, J. U. (2018). Ethical Issues in Nigerian Education: a Philosophical Rejoinder. *International Journal of Scientific Research in Education,* 11(3), 357-371. Retrieved 18 October 2020 from http://www.ijsre.com

McCombes, S. (May 8, 2019). How to do a case study. Retrieved June 23, 2021 from *https://www.scribbr.com/methodology/case-study/*

McGrath, S., Alla-Mensah, J., & Langthaler, M. (2018). Skills for decent work, life, and sustainable development Vocational Education and the Sustainable Development Goals 18. ÖFSE Briefing Paper, No. 18, Austrian Foundation for Development Research (ÖFSE),

Vienna. Retrieved April 12, 2022 from *https://www.oefse.at/publikationen/briefing-papers/detail-briefing-paper/publication/show/ Publication/Skills-for-decent-work-life-and-sustainable-development/*

McKinley, D. (March 5, 2021). Mentors. Retrieved June 18, 2021 from *https://incompassinged.com/2017/07/14/the-importance-of-mentoring-new-teachers/*

Meador, D. (2021, February 16). Using Effective Instructional Strategies. Retrieved S e p t e m b e r 1 2 , 2 0 2 2 *from https://www.thoughtco.com/building-an-arsenal-of-effective-instructional-strategies- 3194257*.

Melechi, Antonio (11 June 2020). Weintraub, Pam (ed.). *"Lateral thinking is classic pseudoscience, derivative and untested"*. *Aeon Essays*. Aeon.com

Meloth, M. S., & Deering, P. D. (1999). The role of the teacher in promoting cognitive processing during collaborative learning. In A. M. O'Donnell, & A. King (Eds.). *Cognitive perspectives on peer learning* (pp. 235–255). Mahwah, NJ: Erlbaum.

Merriam, S. B., & Tisdell, E. J. (2016). *Qualitative Research: A Guide to Design and Implementation* (4th ed.). San Francisco, CA Jossey Bass.

Miles, M.B., Huberman, A.M. and Saldana, J. (2014). *Qualitative Data Analysis: A Methods Sourcebook*. Sage, London.

Mishra, L. (2016). Focus Group Discussion in Qualitative Research. T*echnoLEARN* Vol. 6(1) Pp.1-5

Miri, B., David, B., & Uri, Z. (2007). Purposely teaching for the Promotion of Higher-order Thinking Skills: A Case of Critical Thinking. *Res Sci Educ* (2007) 37:353–369.

Motala, A. (2021). Social justice through student participation: fostering agency in English tutorials at a university. Retrieved March 26, 2022 from *https://hdl.handle.net/10210/497706*

Moreno-Guerrero, A., Rodríguez-Jiménez, C., Gómez-García, G., & Magdalena Ramos Navas-Parejo. (2020). Educational innovation in higher education: Role playing and educational video in future teachers' training. *Sustainability,* 12(6), 2558. doi:http://dx.doi.org/10.3390/su12062558.

Mushi, A. O. R. (2022). Resource Development for Mission Achievement in Tanzania's Rural NGOs. Retrieved April 23, 2023 from *https://core.ac.uk/download/580005478.pdf*

National Curriculum for Senior Secondary Schools (2008). *Secondary school Economics curriculum.* Abuja*:* NERDC.

Nezami, N. R., Asgari, M., & Dinarvand, H. (2013). The effect of cooperative learning on the critical thinking of High School students. *Technical Journal of Engineering and Applied Sciences,* 3(19), 2508–2514.

Ninio, A. (2016). Bids for joint attention by parent-child dyads and by dyads of young peers in interaction. *Journal of Child Language*, 43(1), 135–156.

doi:http://dx.doi.org/10.1017/S0305000915000082

Noble, H.R., & Heale, R. (2019). Triangulation in research, with examples. *Evidence Based Journals*, pp. 22, 67–68.

Noddings, N. (2015). Critical thinking. *Journal of Educational Controversy,* 10(1), 1. doi:10.1017/CBO9781139871655.008.

Nold, H. (2017). Using Critical Thinking Teaching Methods to Increase Student Success: An Action Research Project. *International Journal of Teaching and Learning in Higher Education.* Vol.29. (1) pp. 17–32.

Norris, S. P. (1985). Synthesis of research on critical thinking. *Educational Leadership*, pp. 42, 40– 45.

Obemeata, J.O. [1991]. Effective Teaching of Economics in Senior Secondary School. West *African Journal of Education*. 1[1].9-13

Ogwo, C. (2023, March 15). How poor implementation of policy results in substandard education in Nigeria Retrieved 8 January 2024 from https://businessday.ng/features/article/how-poor-implementation-of-policy-results-in-substandard-education-in-nigeria/

Oleabhiele, E. O. & Oko, N. O. (2018). Economics Curriculum Implementation at the Senior Secondary Education Level. *Journal of economics and environmental education* .3(1), 19-20

OECD (2018). *The future of education and skills - Education 2030.*

Okafor, T.U. (2009). *Readability and Content Evaluation of Recommended Physics Textbook in Anambra State Secondary Schools*. PhD Thesis, University of Nigeria, Nsukka.

Ogunode, N. J. & Adah, S. (2020). Educational policy in Nigerian: Challenges of Implementation and Ways Forward. *Middle European Scientific Bulletin,* vol. 4.

Opie, C. (2004). *Doing educational research: A guide to first-time researchers*. London: Sage.

Owo, W. J., Idode, V.O. & Ikwut, E. F. (2016). Validity of Brainstorming Strategy on Students' Prior Knowledge and Academic Performance in Chemistry in Selected Secondary Schools in South-South Nigeria. *American Scientific Research Journal for Engineering, Technology, and Sciences.* 24: 113-130.

Park, S. (2021). Exploring the Relationships between L2 Learners' Critical Thinking and Self-Regulating Capacities and English Grammar and Reading Abilities. Retrieved October 13, 2023 from *https://core.ac.uk/download/521864647.pdf*

Parker, P., Hall, D. T., Kram, K. E., & Wasserman, I. C. (2018). *Peer coaching at work: Principles and practices.* ProQuest Ebook Central https://ebookcentral.proquest.com

Parker, D. (2019). *Building bridges: Engaging students at risk through the power of relationships (building trust and positive student-teacher relationships).* ProQuest Ebook Central https://ebookcentral.proquest.com

Parviainen, P., Tihinen, M., Kääriäinen, J., & Teppola, S. (2017). Tackling the Digitalisation Challenge: How to Benefit from Digitalisation in Practice. *International Journal of Information Systems and Project Management (IJISPM),* vol. 5(1), pp. 63-77.

Parslow, G. R. (2002). Commentary: Critical thinking: Can we teach it? Should we teach it? Biochemistry and Molecular Biology Education. Retrieved November 12, 2020 *https://doi.org/10.1002/bmb.2002.494030010013*

Paul, R., & Willsen, J. (1993). Critical thinking: Identifying the targets. Critical thinking: How to prepare students for a rapidly changing world, 17-36. Santa Rosa, CA: *Foundation for Critical Thinking.*

Paul, R., Elder, L., & Bartell, T. (1997). California teacher preparation for instruction in critical thinking: *Research findings and policy recommendations.*

Paul, R. (1999). Critical thinking: Teaching students to seek the logic. *Journal of Developmental Education,* 23(1), 34–35.

Paul, R. & Elder, L. (2003). The miniature guide to critical thinking concepts and tools.

Foundations for Critical Thinking Press. 1-21. Retrieved January 20, 2022, from www.criticalthinking.org.

Paul, R. (2005). The state of critical thinking today. *New Directions for Community Colleges*, (130), pp. 27–38. doi:10.1002/cc.193

Paul, R. & Elder, L. (2006). The Miniature Guide to Critical Thinking Concepts and Tools (4th ed.). *Foundation for Critical Thinking.*

Paul, R. &. (2010). The thinker's guide to analytic thinking. Dillon Beach, CA.: *Foundation for Critical Thinking Press.*

Paul, R., & Elder, L. (2011). Our concept and definition of critical thinking. Retrieved from *www.criticalthinking.org/pages/our-conceptand-definition-of-critical-thinking/411/.*

Pennings, H. J., Brekelmans, M., Sadler, P., Claessens, L. C., vander Want, A. C., & van Tartwijk, J. (2018). *Interpersonal adaptation in teacher-student interaction. Learning and Instruction,* 55, 41–57.

Persuad, C. (2018, October 12). What are Instructional Strategy [Blog post]. Retrieved from January 20, 2022, from *https://tophat.com/blog/pedagogy/*

Persuad, C. (2019, March 1). Pedagogy: What Educators Need to Know [Blog post].

Retrieved from *https://tophat.com/blog/pedagogy/*

Percy, W. H., Kostere, K., & Kostere, S. (2015). Generic Qualitative Research in Psychology. *The Qualitative Report*, 20, 76-85.

Polat, E. S. (2002). *New pedagogical and information technologies in the education system: A manual for students of pedagogical universities and a system for improving the professional skills of teachers*. Moscow: Akademiia.

Phillipson, N. & Wegerif, R. (2017). *Dialogic Education: Mastering core concepts through thinking together*, Routledge, Abingdon

Pini, S. (2009). Education mentoring for teenagers and young adults with cancer. *British Journal of Nursing*, 18(21), 1316. oi:http://dx.doi.org/10.12968/bjon.2009.18.21.45363

Primary Educational – Igbotic. *https://igbotic.net/course-category/primary-educational/?tutor-course-filter-category=131*

Qianmei Li, Yihan L., & Yan S. (2020). Impacts of debate instruction on students' critical thinking skills in College EFL Classes: an empirical investigation. *Journal of Physics: Conference Series*. doi:10.1088/1742-6596/1629/1/012104

Qing, Z., Ni, S., & Hong, T. (2010). Developing critical thinking disposition by task-based learning in chemistry experiment teaching. Procedia - *Social and Behavioral Sciences,* pp. 2, 4561–4570.

Quinn, S., Hogan, M., Dwyer, C., Finn, P., & Fogarty, E. (2020). Development and Validation of the Student Educator Negotiated Critical Thinking Dispositions Scale (SENCTDS). *Thinking Skills and Creativity38*: 100710.

Reid, A. J. (2018). The development and application of a serious game for raising awareness and understanding of no PILLS: A game-based learning approach (Order No. 27809871). Available from ProQuest One Academic. (2344439929). Retrieved January 12, 2021 from *https://www.proquest.com/dissertations-theses/development-application-serious-game- raising/docview/2344439929/se-2?accountid=188730*

Reng, L., & Schoenau-Fog, H. (2016). The game enhanced learning model: Mapping game- based learning for educators. Reading: Academic Conferences International Limited. Retrieved March 31, 2021 from *https://www.proquest.com/conference-papers-proceedings/game-enhanced-learning-model-mapping-based/docview/1859715133/se-2?accountid=188730*

Reynolds, S. W. (2016). *Determining and exploring teachers' perceptions on the barriers to teaching critical thinking in the classroom: A survey study* (Doctoral dissertation).Retrieved July 14, 2023 from https://ttu-ir.tdl.org/ttu ir/bitstream/handle/2346/68118/Reynolds Dissertation-2016.pdf?sequence=1

Rimiene, V. (2002). Assessing and developing students' critical thinking. *Psychology Learning and Teaching,* 2(1), 17–22.

Right, J. (2018) The Importance of Learning *Materials in Teaching*. Retrieved 14 October 2022 from *https://www.theclassroom.com/importance-learning-materials-teaching-6628852.html*

Ritter, B. (2021). Changing problem-solving methods in higher education to meet the challenges of Industry 4.0 (2021). Piscataway: *The Institute of Electrical and Electronics Engineers*, Inc.(IEEE).RetrievedMay12, 2023 doi:http://dx.doi.org/10.1109/EIT51626.2021.9491909

Rowe, M. P., Marcus Gillespie, B., Harris, K. R., Koether, S. D., Li-Jen Y. S., & Lori, A. R. (2015). Redesigning a general education science course to promote critical thinking. CBE—Life *Sciences Education* 14: ar30.

Roth, R., & Doug B. (2015). The Importance of Critical Thinking in Writing, *Momentum Press*. ProQuestEbookCentral,http://ebookcentral.proquest.com/lib/UNICAF/detail.action?docI=4 624466.

Rowley, J. (2002). Using case studies in research. *Management Research News*, 25(1), 16–27.

Ryan, A. M., & Ladd, G. W. (Eds.). (2014*). Peer relationships and adjustment at school.* ProQuest Ebook Central https://ebookcentral.proquest.com.

Saez, L., Legrand, K., Alleyrat, C., Ramisasoa, S., Langlois, J., Muller, L., Omorou, A., Lavenne, R.D., Kivits, J., Lecomte, E., & Briançon, S. (2018). *Using facilitator–receiver peer dyads matched according to socioeconomic status to promote behavior change in overweight adolescents: a feasibility study.* BMJ Open, 8.

Sarkissian McPhilomy, S. (2014). Using role-plays and simulations to motivate ESL students in a grammar class: A case study (Order No. 3583312). Available from ProQuest One Academic. (1552485752). Retrieved December 12, 2021 from *https://www.proquest.com/dissertations- theses/using-role-plays-simulations-motivate-esl/docview/1552485752/se- 2?accountid=188730*

Schmaltz, R. M., Jansen, E., & Wenckowski, N. (2017). Redefining Critical Thinking: Teaching Students to Think like Scientists. Retrieved March 15, 2021, from *https://doi.org/10.3389/fpsyg.2017.00459*

Scriven, M., & Paul, R. (1987). Critical Thinking. Retrieved March 15, 2021 from
http://www.criticalthinking.org/pages/definingcritical-thinking/766

Scriven, M., & Paul, R. (1996). Defining critical thinking: Critical thinking as defined by the
National Council for Excellence in Critical Thinking, 1987. Retrieved from
http://www.criticalthinking.org/pages/defining_critical-thinking/766

Scriven, M., & Paul, R. (2005). *Defining critical thinking.* Retrieved from
http://www.criticalthinking.org/pages/defining-critical-thinking/410.

Seel, N. M., Lehmann, T., Blumschein, P., & Podolskiy, O. A. (2017). *Instructional design for
learning: Theoretical foundations*. ProQuest Ebook Central
https://ebookcentral.proquest.com

Seidman, I. (2019). Interviewing as qualitative research: A guide for researchers in education and
the social sciences (5th ed.). *Teachers College Press*

Sellars, M., Fakirmohammad, R., Bui, L., Fishetti, J., Niyozov, S., Reynolds, R., & Ali, N. (2018).
Conversations on critical thinking: Can critical thinking find its way forward as the skill
set and mindset of the century? *Education Sciences*, 8(4)
doi:http://dx.doi.org/10.3390/educsci8040205

Shenton, A. K. (2004). Strategies for Ensuring Trustworthiness in Qualitative Research Projects.
Education for Information, 22, 63-75.

Shiel, T. K. (2017). *Designing and using performance tasks: Enhancing student learning and
assessment.* Thousand Oaks, CA: Corwin.

Sibtain, M., & Hussain, L. (2018). Students' Interest and Academic Achievement in the Light of New Instructional Approaches. *Journal of Educational Research; Bahawalpur* Vol. 21. 30.

Smith, D. G. (1980). *College instruction: Four empirical views.* Paper presented at the annual meeting of the American Educational Research Association ERIC Document Reproduction Service No. ED 192 676.

Smith, T. S. (Ed.). (2012). *Undergraduate curricular peer mentoring programs: Perspectives on innovation by faculty, staff, and students.* ProQuest Ebook Central https://ebookcentral.proquest.com

Smith, K. (Ed.). (2015). *Mentoring for learning: Climbing the mountain*. ProQuest Ebook Central https://ebookcentral.proquest.com

Sofroneeva, E., Von Koskull, C., & Makkonen, H. (2021). Building a High-Performing Collaborative Innovation Ecosystem in the Arctic. Retrieved *https://core.ac.uk/download/481512140.pdf*

Stanovich, K. E. (2018). Miserliness in human cognition: The interaction of detection, override and mindware. *Thinking & Reasoning* 24: 423–44

Stanovich, K. E., & Stanovich, P. J. (2010). *A framework for critical thinking, rational thinking, and intelligence. In Innovations in Educational Psychology: Perspectives on Learning, Teaching, and Human Development.* Edited by D. D. Preiss and R. J. Sternberg. Berlin/Heidelberg: Springer Publishing Company, pp. 195–237.

Stedman, N. R., & Adams, B. L. (2012). Identifying faculty's knowledge of critical thinking concepts and perceptions of critical thinking instruction in higher education. *NACTA Journal*, 56(2), 9–14.

Stronge, J. H. (2018). Qualities of effective teachers. ProQuest Ebook Central

    https://ebookcentral.proquest.com

Sumner, W. G. (1940). *Folkways: A Study of the Sociological Importance of Usages, Manners,*

    Customs, Mores, and Morals, New York: Ginn and Co., pp. 632, 633.

Syukri, M., Putri, E. S., Musdar, M., & Halim, L. (2023). Analysis of Solving Physics Problems   Using

    the Minnesota Model for Mechanics Concepts. Retrieved February 6, 2024, from

    https://doi.org/10.26737/jipf.v8i3.3995

Tapia-Nunez, S. (2021). *The effect of problem-based learning and game-based learning on*

    student achievement and student engagement (Order No. 28321294). Available from

    ProQuest One Academic. (2519024765). Retrieved July 19,

    2024 from *https://www.proquest.com/dissertations-theses/effect-problem-based-learning-*

    game-on- student/docview/2519024765/se-2?accountid=188730

Thayer-Bacon, B. (2000). *Transforming critical thinking: Thinking constructively*. New York,

    NY: Teachers College Press.

Thoughts on yesterday's men | The Guardian Nigeria News - Nigeria and World News — Opinion The

    Guardian Nigeria News – Nigeria and World News. Retrieved January19, 2024 from

    https://guardian.ng/opinion/thoughts-on-yesterdays-men/

Tihinen, M., Koikkalainen, M., Mattila, O., & Mäkimurto-Koivumaa, S. (2020). Towards

    individual study paths. Retrieved March 13, 2022 from

    https://www.researchgate.net/publication/345689898.

Tiruneh, D. T., De Cock, M. & Elen, J. (2018). Designing Learning Environments for Critical Thinking: Examining Effective Instructional Approaches. *International Journal of Science and Mathematics Education,* 16, 1065–1089.

Tobias, S., & Duffy, T. M. (Eds.). (2009). *Constructivist instruction: Success or failure*? ProQuest Ebook Central ttps://ebookcentral.proquest.comh

Tran, L.U. (2008). Dialogue in education. *Journal of Science Communication*. Vol 7 (1). Retrieved July 15, 2023, from http://jcom.sissa.it/

Troncoso-Pantoja, C., & Amaya-Placencia, A. (2017). Interview: A practical guide for qualitative data collection in health research. *Revista De La Facultad De Medicina*, 65(2), 329-332. doi:http://dx.doi.org/10.15446/revfacmed.v65n2.60235

Tsui, L. (2007). Cultivating critical thinking: Insights from an elite liberal arts college. *The Journal of General Education,* 56(3), 200–227.

Umeala, O.S. (2015). Factors influencing teaching and learning of Economics in Secondary schools in Nigeria. *Journal of Educational Policy and Implementation* 4(1) 333–314.

UNESCO. (2014). Education for All 2013-2014; Teaching and Learning; Achieving quality for all. Paris: *UNESCO.*

Uusikartano, J., Väyrynen, H., & Aarikka-Stenroos, L. (2020). Public Agency in Changing Industrial Circular Economy Ecosystems: Roles, Modes and Structures. *Sustainability*, 12(23), 10015.

Van Gelder, T. (2005). Teaching critical thinking: Some lessons from cognitive science. *College Teaching*, 53(1), 41–46.

Van Wyk, M. M. (2015). Teaching Economics. In: James D. Wright (editor-in- chief), *International Encyclopedia of the Social & Behavioral Sciences,* 2nd ed., Vol 24. Oxford: Elsevier. pp. 83–88.

Vehmas, K., Tihinen, M., & Seisto, A. 2017. Collaborative design boosting development of digital wellness services. *International journal of scientific and technical research in engineering,* vol. 2(2), pp. 36–49.

Vizcarguenaga-Aguirre, I., & López-Robles, J. R. (2020). Mono, mixed or multiple strategy approach: A descriptive study of the latest published articles in the International Journal of Project Management. Retrieved July 15, 2023 from *https://core.ac.uk/download/334606955.pdf*

Wagner, T. (2014). *The global achievement gap: Why even our best schools don't teach the new survival skills our children need and what we can do about it*. NY: Basic Books.

Walshaw, M., & Anthony, G. (2008). The teacher's role in classroom discourse: A review of recent research into mathematics classrooms. *Review of Educational Research,* 78(3), 516–551.

Walsh, P. (2023, October 23). Advantages and disadvantages of using games for learning. Slideshare.net. Retrieved November 30, 2023, from *https://www.slideshare.net/slideshow/advantages-and-disadvantages-of-using-games-for-learning/27502862*

Wang, L. (Ed.). (2014). International conference machinery, electronics, and control simulation. *ProQuest Ebook Central https://ebookcentral.proquest.com*

Wang, D. (2016). Collaborative problem-solving process in a web-based anchored instruction. Piscataway*: The Institute of Electrical and Electronics Engineers*, Inc. (IEEE). Retrieved May 29, 2022 from https://www.proquest.com/conference-papers-

proceedings/collaborative-problem-   solving-process-web-based/docview/1845327296/se-2?accountid=188730

Watson, G., & Glaser, E. M. (1980). *Watson-Glaser critical thinking appraisal*. San Antonio, TX: PsychCorp.

Warren, E. (May 20, 2021). Why are Games the best Teaching Method for Learning? Retrieved August 19, 2021 from *https://learningspecialistmaterials.blogspot.com/*

Wambsganss, T., Niklaus, C., Cetto, M., Söllner, M., Handschuh, S., & Leimeister, J. M. (2020). AL: An Adaptive Learning Support System for Argumentation Skills. Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems, 1–14? Retrieved August 24, 2022 *https://doi.org/10.1145/3313831.3376732*

Wegerif, R. (2007). *Dialogic Education and Technology: Expanding the Space of Learning*. New York: Springer-Verlag.

Wegerif, R. (2013). *Dialogic: Education for the Internet Age*. Routledge, Abingdon

Westbrook, J., Durrani, N., Brown, R., Orr, D., Pryor, J., Boddy, J., & Salvi, F. (2013.) Pedagogy, curriculum, teaching practices, and teacher education in developing countries. *Education rigorous literature review*. Department for International Development.

Weston, D. & Clay, B. (2018). *Unleashing Great Teaching – the secrets to the most effective teacher development*; Routledge; Abingdon.

Westrup, U., & Planander, A. (2013). Role-play as a pedagogical method to prepare students for practice: *The students' voice*. Högre utbildning, 3(3), 199–210.

What the hell even IS critical thinking? https://www.njjohnson.com.au/post/what-the-hell-even-is-critical- thinking Mastering the Cannons of Rhetoric | Speak New York - EduRead. ? Retrieved August 19, 2020 from *https://eduread.in/mastering-the-* cannons-of-rhetoric-speak-new-york/

Why is Problem Solving Important in Child Development? (2020, Mar 19) Retrieved December 12, 2021 from *https://www.marlborough.org/news/~board/health-and-wellness/post/why-is-problem- solving-important-in-child-development.*

Wilberding, E. (2019). *Socratic methods in the classroom: Encouraging critical thinking and problem-solving through dialogue.* ProQuest Ebook Central https://ebookcentral.proquest.com.

Wilkinson, I. A., Murphy, P. K., & Binici, S. (2015). *Dialogue-intensive pedagogies for promoting reading comprehension: What we know, what we need to know.* In C. S. Asterhan, S. N. Clarke, & L. B. Resnick (Eds.), Socializing intelligence through academic talk and dialogue. Washington DC: American Educational Research Association.

Willingham, D. T. (2008). Critical thinking: Why is it so hard to teach? *Arts Education Policy Review*, 109(4), 21–32.? Retrieved March 29, 2021 from https://doi.org/10.3200/AEPR.109.4.21-32.

Wilson, B. G. (1996). *Constructivist learning environments: Case studies in instructional design.* Englewood Cliffs, NJ: Educational Technology Publications, Inc.

Yao, X., Shuge, Y., Wenjing Y., Qunlin, C., Dongtao, W., Yuling, H., Lijie, Z., Jiang, Q., & Dong, Y. (2018). Emotional intelligence moderates the relationship between regional gray matter volume in the bilateral temporal pole and critical thinking disposition. *Brain Imaging and Behavior* 12: 488–98.

Zakaria, R., & Musta'amal, A. H. (2014). *Rapport building in qualitative research.* In: 1st International Education Postgraduate Seminar Proceedings Volume 1, 23-24.

Zhang, Y. (2022). The Research on Critical Thinking Teaching Strategies in College English Classroom. *Creative   Education*, p. 13, 1469–1485. doi: 10.4236/ce.2022.134090

Zhao, Y. (2015). A world at risk: An imperative for a paradigm shift to cultivate 21st century learners. Society, 52(2), 129–135.? Retrieved November 1, 2022 *https://doi.org/10.1007/s12115-015-9872-8*

Zhong, Z., & Wang, Y. (2022). Open data governance in smart mobility: An empirical investigation of Shanghai? Retrieved April 10, 2024   *https://core.ac.uk/download/544065529.pdf*

Zoller, U. (1999). Teaching tomorrow's college science courses – Are we getting it right? *Journal of College Science Teaching*, 29(6), 409–414.

Zydney, J. M., Bathke, A., & Hasselbring, T. S. (2014). Finding the optimal guidance for enhancing anchored instruction. *Interactive Learning Environments*, 22(5), 668-683. doi http://dx.doi.org/10.1080/10494820.2012.745436.

UNICAF UNIVERSITY

Appendix A

UNICAF UNIVERSITY RESEARCH ETHICS APPLICATION FORM **DOCTORAL STUDIES**	UREC USE ONLY: Application No: Date Received:

Student's Name: OPEYEMI AMOS AMAO

Student's E-mail Address: yemmieamos1@gmail.com

Student's ID #: R1810D6569511

Supervisor's Name: CHRYSO HADJIKOU

University Campus: Unicaf University Zambia (UUZ)

Program of Study: UUZ: EdD Doctoral of Education

Research Project Title: Effective Pedagogy in Nigerian secondary schools: How Critical Thinking can be encouraged.

1. **Please state the timelines involved in the proposed research project:**

Estimated Start Date: 1-0ct-2021   Estimated End Date: 3-Apr-2022

2. **External Research Funding (if applicable):**

   2.a. **Do you have any external funding for your research?**

   ☐ YES   ☒ NO

   If YES, please answer questions **2b** and **2c**.

   2.b. List any external (third party) sources of funding you plan to utilise for your project. You need to include full details on the source of funds (e.g., state, private, or individual sponsor), any prior / existing or future relationships between the funding body / sponsor

and any of the principal investigator(s) or co-investigator(s) or student researcher(s), status and timeline of the application and any conditions attached.

2.c. If there are any perceived ethical issues or potential conflicts of interest arising from applying for or receiving external funding for the proposed research, then these need to be fully disclosed below and also further elaborated on in the relevant sections on ethical considerations later on in this form.

1

3. **The research project**

3.a. Project Summary:

In this section fully describe the purpose and underlying rationale for the proposed research project. Ensure that you pose the research questions to be examined, state the hypotheses, and discuss the expected results of your research and their potential.

It is important in your description to use plain language so it can be understood by all members of the UREC, especially those who are not necessarily experts in the

particular discipline. To that effect ensure that you fully explain / define any technical terms or discipline-specific terminology (use the space provided in the box).

This study underpins the importance of critical thinking in education and other fields of knowledge. Critical thinking is gaining more recognition in tandem with global development hence the need is to investigate how it can be encouraged in Nigerian Secondary Schools to improve students and achieve educational objectives. The purpose of the research is to find out the knowledge strength of teachers in critical thinking as a tool for effective pedagogy and how they encourage students to use their Critical thinking skills in the learning process. It will also expatiate the students' experiences when introduced to and influenced by their teachers to gain Critical thinking skills. The low performance of students in economics and the need to further ensure the economic development of students beginning from the secondary school level became a subject of discourse in Nigeria in the last two decades. Developing critical thinking skills by first the teachers and the students is relevant for a paradigm shift from the traditional teaching and learning methods that is either teacher-centred or student-centred. The research is significant in finding out the reasons for the low performances of students in economics by identifying the teaching methods economics teachers have adopted over the years, which have not explicitly impacted the achievement of learning goals. It will highlight teaching approaches that support teachers' and students' acquisition of critical thinking. In addition, the research outcome will inspire teachers to explore more structured learning strategies to aid the teaching and learning of economics through the application of knowledge to reinforce the economic development of Nigeria. The research is apt to strengthen the activities of policymakers and curriculum designers towards integrating critical thinking in the teachers' training curriculum and enable students to apply the skills acquired in an ever-changing technological environment.

OPEYEMI AMOS AMAO   R1810D656951   2

3.b. Significance of the Proposed Research Study and Potential Benefits:

Outline the potential significance and benefits of the research (use the space provided in the box).

This study will either lay further credence to or refute the importance of critical thinking skills in the effective teaching of Economics. It will expose how critical thinking can enable effective pedagogy, a global strategic aspect of education, to improve the performance of economics students in Nigeria if appropriately harnessed. This research is significant in broadening teachers' exposure to the various teaching methods and identifying how to adopt the most appropriate methods, taking cognizance of learners' various categories and capabilities. It will create an avenue for the self-development of learners through learning processes that are explicit and reflective for reproducing acquired knowledge after school life. It will also assist education policymakers and curriculum designers in integrating critical thinking practices in the study of economics so that students can apply them to content areas of information they can obtain, understand, and analyze in an ever-changing technological environment.

4. **Project execution:**

4.a. The following study is an:

☒ experimental study (primary research)

☐ desktop study (secondary research)

☐ desktop study using existing databases involving information of human/animal subjects

☐ Other

        If you have chosen 'Other' please Explain:

OPEYEMI AMOS AMAO   R1810D656951   3

4.b. Methods. The following study will involve the use of:

Method	**Materials / Tools**

Qualitative:

☒ Face to Face Interviews

☒ Phone Interviews

☒ Face to Face Focus Groups

☐ Online Focus Groups

☐ Other *

Quantitative:

☐ Face to Face Questionnaires

☐ Online Questionnaires

☐ Experiments

☐ Tests

☐ Other *

*If you have chosen 'Other' please Explain:

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5. Participants:

5 a. Does the Project involve the recruitment and participation of additional persons other than the researcher(s) themselves?

☐ YES **If YES, please complete all following sections.**

☐ NO **If NO, please directly proceed to Question 7.**

OPEYEMI AMOS AMAO   R1810D656951   4

5 b. Relevant Details of the Participants of the Proposed Research

State the number of participants you plan to recruit, and explain in the box below how the total number was calculated.

Number of participants   60

Ten Teachers and fifty students will be recruited as participants from ten schools. One economics teacher from each school will be engaged in the interview session, while five students will form the focus group discussion. I will exhaust all questions related to the research questions during the interview sessions and the focus group discussion until they reach the saturation point.

Describe important characteristics such as: demographics (e.g. age, gender, location, affiliation, level of fitness, intellectual ability etc). It is also important that you specify any inclusion and exclusion criteria that will be applied (e.g. eligibility criteria for participants).

Age range   From   14   To   16

Gender   ☐ Female
              ☐ Male

Eligibility Criteria:

- Inclusion criteria

  Physically, intellectually and mentally fit male and female economics teachers with 5 years and above teaching experience.

  Male and female economic students in senior secondary 2

- Exclusion criteria   Teachers with less than 5 years of teaching experience and non economics students. Participants will be asked if they would like to participate in the study

Disabilities   Participants will not have any disabilities

Other relevant information (use the space provided in the box):

Participants will include both male and female economics teachers who possess minimum Academic qualification of First Degree, very fit and between the ages of

30-50years who are located within the sample area. Also, students will be drawn from the senior Secondary 2 classes only with an age range of 14-16 years located within the selected schools in the sample areas who are physically and mentally fit.

OPEYEMI AMOS AMAO   R1810D656951   5

5 c. Participation & Research setting:

Clearly describe which group of participants is completing/participating in the

material(s)/   tool(s) described in 5b above (use the space provided in the box).

Teachers will be engaged in interview sessions while those who may not be available during the face-to-face interview will be allowed phone interview session. The students will participate in the focus group. Both sessions will be conducted until I get to saturation point.

5 d.   Recruitment Process for Human Research Participants:

Clearly describe how the potential participants will be identified, approached and recruited (use the

space provided in the box).

I will contact the principal of the school by presenting a letter of permission to conduct the research from the Federal Capital Territory (F.C.T) Secondary Education Board. The importance of the research will be discussed with the principal and I will give explanations on the ethical consideration and limitations of the research during the collection of samples will be made.

5 e.   Research Participants Informed Consent.

Select below which categories of participants will participate in the study. Complete the relevant Informed Consent form and submit it along with the REAF form.

Yes	No	Categories of participants	Form to be completed
☐	☐	Typically Developing population(s) above the maturity age *	Informed Consent Form
☐	☐	Typically Developing population(s) under the maturity age *	Guardian Informed Consent Form

* Maturity age is defined by national regulations in laws of the country in which the research is being conducted.

OPEYEMI AMOS AMAO   R1810D656951   6

5 f.   Relationship between the principal investigator and participants.

Is there any relationship between the principal investigator (student), co- investigators(s), (supervisor) and participant(s)? For example, if you are conducting research in a school environment on students in your classroom (e.g. instructor-student).

☐ YES   ☐ NO

If YES, specify (use the space provided in the box).

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6.   Potential Risks of the Proposed Research Study.

6 a. i.   Are there any potential risks, psychological harm and/or ethical issues associated with the proposed research study, other than risks pertaining to everyday life events (such as the risk of an accident when travelling to a remote location for data collection)?

☐ YES   ☐ NO

If YES, specify below and answer the question 6 a.ii.

```



```

6 a.ii Provide information on what measures will be taken in order to exclude or minimise risks described in 6.a.i.

OPEYEMI AMOS AMAO   R1810D656951   7

6 b. Choose the appropriate option

		Yes	No
i.	Will you obtain written informed consent form from all participants?	☒	☐
ii.	Does the research involve as participants, people whose ability to give free and informed consent is in question?	☒	☐
iii.	Does this research involve participants who are children under maturity age? **If you answered YES to question iii, complete all following questions.** **If you answered NO to question iii, do not answer Questions iv, v, vi and proceed to Questions vii, viii, ix and x.**	☒	☐
iv.	Will the research tools be implemented in a professional educational setting in the presence of other adults (i.e. classroom in the presence of a teacher)?	☐	☒
v.	Will informed consent be obtained from the legal guardians (i.e. parents) of children?	☒	☐
vi.	Will verbal assent be obtained from children?	☒	☐
vii.	Will all data be treated as confidential? If NO, explain why confidentiality of the collected data is not appropriate for this proposed research project, providing details of how all participants will be informed of the fact that any data which they will provide will not be confidential.	☒	☐
viii.	Will all participants /data collected be anonymous? If NO, explain why and describe the procedures to be used to ensure the anonymity of participants and/or confidentiality of the collected data both during the conduct of the research and in the subsequent release of its findings.	☒	☐

8

OPEYEMI AMOS AMAO   R1810D656951
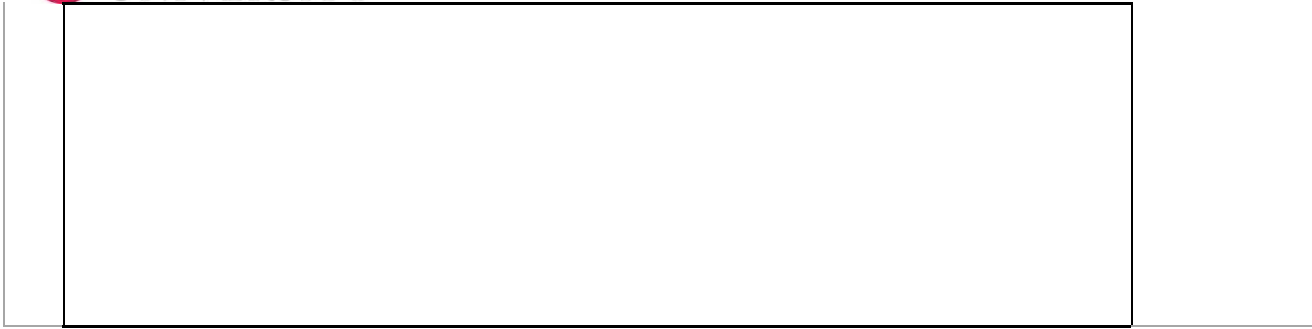
		Yes	No
ix.	Have you ensured that personal data and research data collected from participants will be securely stored for five years?	☐	☐
x.	Does this research involve the deception of participants? If YES, describe the nature and extent of the deception involved. Explain how and when the deception will be revealed, and who will administer this debrief to the participants: 	☐	☐

6 c. i. Are there any other ethical issues associated with the proposed research study that are not already adequately covered in the preceding sections?

☐ Yes   ☐ No

If YES, specify (maximum 150 words).

6.c.ii Provide information on what measures will be taken in order to exclude or minimise ethical issues described in 6.c.i.

6 d. Indicate the Risk Rating.

☐ High   ☐ Low

OPEYEMI AMOS AMAO   R1810D656951   9

7. Further Approvals

Are there any other approvals required (in addition to ethics clearance from UREC) in order to carry out the proposed research study?

☑ YES ☐ NO

If YES, specify (maximum 100 words).

8. Application Checklist

Mark √ if the study involves any of the following:

☑ Children and young people under 18 years of age, vulnerable population such as children with special educational needs (SEN), racial or ethnic minorities, socioeconomically disadvantaged, pregnant women, elderly, malnourished people, and ill people.

☐ Research that foresees risks and disadvantages that would affect any participant of the study such as anxiety, stress, pain or physical discomfort, harm risk (which is more than is expected from everyday life) or any other act that participants might believe is detrimental to their wellbeing and / or has the potential to / will infringe on their human rights / fundamental rights.

☐ Risk to the well-being and personal safety of the researcher.

☐ Administration of any substance (food / drink / chemicals / pharmaceuticals / supplements / chemical agent or vaccines or other substances (including vitamins or food substances) to human participants.

☐ Results that may have an adverse impact on the natural or built environment.

9. Further documents

Check that the following documents are attached to your application:

		ATTACHED	NOT APPLICABLE
1	Recruitment advertisement (if any)	☐	☑
2	Informed Consent Form / Guardian Informed Consent Form	☑	☐
3	Research Tool(s)	☑	☐
4	Gatekeeper Letter	☑	☐

5	Any other approvals required in order to carry out the proposed research study, e.g., institutional permission (e.g. school principal or company director) or approval from a local ethics or professional regulatory body.	☐	☐

OPEYEMI AMOS AMAO   R1810D656951   10

10. Final Declaration by Applicants:

(a) I declare that this application is submitted on the basis that the information it contains is confidential and will only be used by Unicaf University for the explicit purpose of ethical review and monitoring of the conduct of the research proposed project as described in the preceding pages.

(b) I understand that this information will not be used for any other purpose without my prior consent, excluding use intended to satisfy reporting requirements to relevant regulatory bodies.

(c) The information in this form, together with any accompanying information, is complete and correct to the best of my knowledge and belief and I take full responsibility for it.

(d) I undertake to abide by the highest possible international ethical standards governing the Code of Practice for Research Involving Human Participants, as published by the UN WHO Research Ethics Review Committee (ERC) on http://www.who.int/ethics/research/en/ and to which Unicaf University aspires to.

(e) In addition to respect any and all relevant professional bodies' codes of conduct and/or ethical guidelines, where applicable, while in pursuit of this research project.

☐   **I agree with all points listed under Question 10**

Student's Name: OPEYEMI AMOS AMAO

Supervisor's Name: CHRYSO HADJIKOU

Date of Application: 13-Feb-2022

Important Note:

Save your completed form (we suggest you also print a copy for your records) and then submit it to your UU Dissertation/project supervisor (tutor). **In the case of student projects, the responsibility lies with the Faculty Dissertation/Project Supervisor.** If this is a student application, then it should be submitted via the relevant link in the VLE. Please submit only electronically filled in copies; **do not** hand fill and submit scanned paper copies of this application.

UNICAF UNIVERSITY

Appendix B

Gatekeeper letter

Address: FCT SSEB

Date: 25-Jan-2022

Subject: Permission to conduct Research

Dear Chairman,

I am a doctoral student at Unicaf University in Zambia.

As part of my degree, I am studying Effective Pedagogy in Nigerian Secondary Schools: How

Critical Thinking can be Encouraged.

I am writing to ask whether you would be interested in/willing to allow ten selected secondary schools located within AMAC to participate in this research.

Subject to approval by the Unicaf Research Ethics Committee (UREC) this study will be using ten interview sessions with teachers and ten focus group discussions with ten students each from schools selected as research tools.

This research aims to investigate how critical thinking can be encouraged in Nigerian Secondary Schools for the improvement of the performances of students towards achieving educational objectives. It will allow schools to review the teaching methodology in economics towards understanding how critical thinking can be further encouraged. Learning this outlook in critical thinking will enable your school to develop a positive attitude towards economics for better performance to realize the nation's economic developmental policies. The supervisor of this research is Dr Chryso HADJIKOU, a lecturer with UNICAF.

I am asking for your support morally, psychologically and physically to make this research a success. It includes permitting the principals of the selected schools to allow their economics teachers and students willing to participate in this study to be recruited on the school premises. I am asking for permission for selected students in Senior Secondary School 2 to participate in a Focus Group Discussion and teachers for interview sessions during school hours. The sample will be conducted within six weeks under the guided anonymity of participants and will not interfere with the school timetable.

Thank you in advance for your time and for your consideration of this project. Kindly please let me know if you require any further information or need any further clarifications.

Yours Sincerely,

Student's Name: Opeyemi Amos Amao

Student's E-mail: yemmieamos1@gmail.com

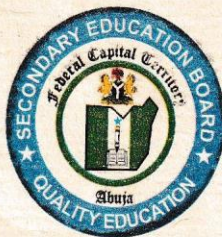**Student's Address and Telephone:**

Suncity Estate. AMAC. FCT. +2348171609100

Supervisor's Title and Name: Dr Chryso HADJIKOU

Supervisor's Position: Lecturer

Supervisor's E-mail: c.hadjikou@unicaf.org

FCT - SECONDARY EDUCATION BOARD
EDUCATION SECRETARIAT
P.M.B. 151, Garki, Abuja.

www.fctseb.gov.ng.
info@fctseb.gov.ng

Block 3, Area 3,
Garki, Abuja.

Our Ref:................................

26th January,2022

Your Ref:............................

Date:..............................

Opeyemi Amos Amao
Unicaf University,Zambia

RE: PERMISSION TO CONDUCT RESEARCH

The above subject matter refers.

2. I am directed to notify you that the **Director SEB** has approved the research **Effective pedagogy in Nigeria Secondary Schools** to be conducted in ten (10) schools in AMAC

3.   You are to report to the principal of affected Schools and make photocopy of the approval available to the school principals for **noting.**

4. Please, you are expected to give the Board a copy of your findings at the end of the Research

5. Accept the warmest regards of the Director.

CHEKU, A.I
Head Research/library unit
For   Director/Secretary SEB

Appendix D

Guardian Informed Consent Form
Part 1: Debriefing of Participants

Student's Name: OPEYEMI AMOS AMAO

Student's E-mail Address: yemmieamos1@gmail.com

Student   ID   #: R1810D6569511

Supervisor's Name: CHRYSO

University Campus: HADJIKOU

Program of Study: Unicaf University Zambia (UUZ)

UUM: EdD - Doctorate of Education

Research Project Title: Effective Pedagogy in Nigerian secondary schools: How Critical Thinking

can be encouraged.

Date: 27-Jan-2022

Provide a short description (purpose, aim and significance) of the research project, and explain why and how you have chosen this person to participate in this research (maximum 150 words)**.**

This research aims to investigate how critical thinking can be encouraged in Nigerian Secondary Schools for the improvement of the performances of students towards achieving educational objectives.

This participant was chosen to participate in a focus group discussion as an economics student to find out the learning method(s) that the participant understands during economics classes. In addition, the participant was chosen as sample to avail me of how participant think and how teachers can influence thinking.

The above named Student is committed in ensuring participant's voluntarily participation in the research project and guaranteeing there are no potential risks and/or harms to the participants.

Participants have the right to withdraw at any stage (prior or post the completion) of the research without any consequences and without providing any explanation. In these cases, data collected will be deleted.

All data and information collected will be coded and will not be accessible to anyone outside this research. Data described and included in dissemination activities will only refer to coded information ensuring beyond the bounds of possibility participant identification.

I, OPEYEMI AMOS AMAO **, ensure that all information stated above is true and that all conditions have been met.**

Student's Signature:

1

Appendix E

Guardian Informed Consent Form

Part 2: Certificate of Consent

This section is mandatory and should to be signed by the participant's legal guardian

Student's Name: OPEYEMI AMOS AMAO

Student's E-mail Address: yemmieamos1@gmail.com

Student ID #: R1810D6569511

Supervisor's Name: CHRYSO HADJIKOU

University Campus: Unicaf University Zambia (UUZ)

Program of Study: UUM: EdD - Doctorate of Education

Research Project Title: Effective Pedagogy in Nigerian secondary schools: How Critical Thinking can be encouraged.

I have read the foregoing information about this study, or it has been read to me. I have had the opportunity to ask questions and discuss about it. I have received satisfactory answers to all my questions and I have received enough information about this study. I understand that the participant is free to withdraw from this study at any time without giving a reason for withdrawing and without negative consequences. I consent to the use of multimedia (e.g. audio recordings, video recordings) for the purposes of the participation to this study. I understand that all data will remain anonymous and confidential, unless stated otherwise.

I, [ ] , the legal guardian

of [ ] allow and provide consecan

that [ ] willingly participate in the study.

I, [ ] , the legal guardian

of [ ] have been ensured that verbal consent

given by [ ] I will also be taken before the study.

Appendix F

Informed Consent Form
Part 1: Debriefing of Participants

Student's Name: OPEYEMI AMOS AMAO

Student's E-mail Address: yemmieamos1@gmail.com

Student ID #: R1810D6569511

Supervisor's Name: CHRYSO HADJIKOU

University Campus: Unicaf University Zambia (UUZ)

Program of Study: UUM: EdD - Doctorate of Education

Research Project Title: Effective Pedagogy in Nigerian secondary schools: How Critical Thinking can be encouraged.

Date: 27-Jan-2022

Provide a short description (purpose, aim, and significance) of the research project, and explain why and how you have chosen this person to participate in this research (maximum 150 words).

This research aims to investigate how critical thinking can be encouraged in Nigerian Secondary Schools for the improvement of the performances of students towards achieving educational objectives.

This participant was chosen to participate in this research to be interviewed as economics teacher, and to find out the teaching approaches that the participant is using to teach economics. In addition, the research would like to find out if the participant know about critical thinking and how it can influence the teaching of economics to enhance student's performance.

The above named Student is committed in ensuring participant's voluntarily participation in the research project and guaranteeing there are no potential risks and/or harms to the participants.

Participants have the right to withdraw at any stage (prior or post the completion) of the research without any consequences and without providing any explanation. In these cases, data collected will be deleted.

collected will be coded and will not be accessible to anyone outside ...ibed and included in dissemination activities will only refer to coded information ensuring beyond the bounds of possibility participant identification.

I, OPEYEMI AMOS AMAO **, ensure that all information stated above is true and that all conditions have been met.**

Student's Signature:

_____

1

Appendix G

Informed Consent Form
Part 2: Certificate of Consent

This section is mandatory and should to be signed by the participant(s)

Student's Name: OPEYEMI AMOS AMAO

Student's E-mail Address: yemmieamos1@gmail.com

Student ID #:   R1810D6569511

Supervisor's Name: University Campus: Program of Study:

CHRYSO HADJIKOU

Unicaf University Zambia (UUZ)

UUM: EdD - Doctorate of Education

Research Project Title:

Effective Pedagogy in Nigerian Secondary Schools: How Critical Thinking

 can be encouraged

I have read the foregoing information about this study, or it has been read to me. I have had the opportunity to ask questions and discuss about it. I have received satisfactory answers to all my questions and I have received enough information about this study. I understand that I am free to withdraw from this study at any time without giving a reason for withdrawing and without negative consequences. I consent to the use of multimedia (e.g. audio recordings, video recordings) for the purposes of my participation to this study. I understand that my data will remain anonymous and confidential, unless stated otherwise. I consent voluntarily to be a participant in this study.

Participant's Print name:

Participant's Signature:

Date:

If the Participant is illiterate:

I have witnessed the accurate reading of the consent form to the potential participant, and the individual has had an opportunity to ask questions. I confirm that the aforementioned individual has given consent freely.

Witness's Print name:

Witness's Signature:

Date:

Appendix H: Interview schedule for teachers

SECTION A: Personal information

Instructions: Please indicate by ticking in the boxes provided as applicable

School Name ……………………………

Location   ……………………………

Gender: Male ☐   Female ☐

Age: under 30 ☐ 35-44 ☐ 45-50 ☐ Above 50 ☐

Highest Academic Qualification: PhD ☐ M.ED ☐ B.Sc ☐

B.sc(Ed) ☐ NCE ☐ others ☐ Specify…………

Class(es) you teach………………….

Teaching experience: 0-2 ☐ 3-9 ☐ 0-19 ☐ more than 20.

SECTION B

Teaching objectives

1. What are your aims/goals in your teaching?
2. Do you often achieve these goals? How do you know this?
3. Which student-centered teaching methods do you use?
4. How do you achieve your goals with your identified teaching method(s)?
5. What are your assessments of the students' responses to these methods?
6. Is critical thinking included in the curriculum of the subject you teach?

Critical Thinking

7. What do you think critical thinking is? How would you define it?
8. Do you consider critical thinking while planning your teaching?

9. Can you explain how you introduce new topics to the students?

10. Does your school curriculum encourage and support critical thinking?

11. Do you create time for students to reflect on what you teach?

12. In what ways do you challenge your students' perspective towards making them think?

13. Do you use any teaching tools that enhance critical thinking? How often?

Critical thinking skills

14. Can you talk about how you encourage dialogue in your class?

15. In what ways do you encourage students to practice the skill of comparing issues before answering questions?

16. Do you encourage students to ask questions? If yes? What kind of questions?

    - Can you describe a specific example?

    - How do you encourage students to interpret and respond to questions

17. In what ways do you allow students to reflect upon specific topics after class activities?

18. How do you encourage students to apply how they think to their learning?

19. How do you assist your students in identifying their strengths and weaknesses based on their class activities?

20. Do you allow students to answer questions based on their interpretation?

21. In what ways do students usually express their opinions? How able are they to defend their opinions?

22. In what ways do you engage the students in individual study? How do you follow up to ensure students' level of compliance?

23. How can the encouragement of students' critical thinking support learning in the subject of economics?

Students' critical thinking abilities

24. How would you describe your students' abilities to think critically?

25. How do you discourage students from not making contributions during class activities?

26. How do you emphasize the specific information you want students to contribute?

27. In what ways do you allow your students to present their ideas and opinions?

28. What class activities do you use to motivate students to think critically?

29. How do you make students think about what you teach?

30. Do you often encourage students to look at issues differently?

31. How do you encourage students to make sound judgments about issues raised during class activities?

32. How do you encourage students to participate in class discussions?

33. How do you discourage students from arriving at conclusions that cannot be substantiated?

34. Can you explain how you guide students to differentiate facts from opinions?

Barriers to critical thinking in the classroom.

35. Are there any barriers that prevent the encouragement of students' critical thinking skills?

36. Is there anything else you would like to mention regarding critical thinking?

Thank you so much for participating in this interview!

Appendix I: Focus group schedule for students

SECTION A:

Background information

Instructions: Please indicate by ticking in the boxes provided as applicable

School Name………………… Location …………………………

Gender: Male ☐ Female

☐ SECTION B

Learning objectives

1. Please describe your academic experience.

2. Are you making any progress in your academics?

3. How quickly do you learn new things?

4. What were some things you remember most during the economics classroom?

5. Describe how your teacher introduces and teaches economics.

Critical thinking skills

6. Does your teacher provoke you to think?

7. Do your class activities help you to think?

8. Does thinking make you work hard in your study?

9. Does your teacher give you time to think about some topics and ask questions?

10. How do you feel when your teacher allows you to think before responding to questions?

11. In what way has this affected your thinking during class activities?

12. Do you develop solutions to problems that can be applied to other situations?

13. How do you weigh issues before you conclude on them?

14. Do you think about your teacher's response to questions raised during class activities?

15. How do you relate what your teacher teaches to real-life situations?

16. How often does your teacher encourage discussion in your class?

17. Does your teacher ask questions before introducing a topic to the class?

    -How often?

18. Describe your experience when you study on your own.

19. Does your teacher ask you to share what you gain through individual study?

20. Does your teacher allow you to express your opinion when introducing a new topic?

21. How often do you work in groups during the lessons in the classroom?

22. In what ways do you explore how to solve problems?

23. How often do you do quizzes?

24. Do you believe that when your teacher allows you to think, you can perform better in class?

25. Describe how you feel when your teacher allows you to participate actively in the class.

26. What activities should your teacher include in the class to encourage you to think more?

Barriers to critical thinking in the classroom.

27. Are there barriers that prevent you from thinking and participating in classroom activities?

28. Is there anything else you want to say about your economics class and teacher?

Thank you so much for participating in this focus group!