UNIVERSITY OF NAIROBI

A PHILOSOPHICAL CRITIQUE OF CRITICAL THINKING PEDAGOGY IN KENYAN SECONDARY SCHOOLS' CURRICULUM

COSMAS MASEGA MICHAEL ONGESA

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DECLARATION

The study for this report was carried out by Cosmas Masega Michael Ongesa (E56/9467/2017) under the supervision of Professor Samson Gunga of the University of Nairobi and Dr. Atieno K' Odhiambo Kill of the University of Nairobi. The research represents original work done by the researcher and acknowledged the work of others which supported the study by referencing using American Psychological Association style (APA, 2017-2018 7th edition). I declare that this report has not been submitted for any credit at any University.

Signature Date: 16/10/2020

Cosmas Masega Michael Ongesa
E56/9467/2017

This project has been submitted for examination with our approval as University supervisors

Signature Date: 24/10/2020

Prof. Samson Gunga
Professor of Philosophy of Education,
Department of Education Foundations,
University of Nairobi.

Signature... Date: October 24, 2020

Dr. Atieno Kili K' Odhiambo
Senior Lecturer in Philosophy of Education,
Department of Educational Foundations,
University of Nairobi.

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DEDICATION

I dedicate this report to my brother Omuro Ongesa, Jacklyne Lumonya, Virginia and Francis Mwongela whose motivation, love, prayers, support and encouragement always gave me hope and determination.

ABSTRACT

Across the globe, the goals of learning for elementary, secondary and higher education curricula tend to emphasize the development of critical thinking (CT) pedagogy in teaching and critical thinking skills in learning. Contrary to this goal, there seems to be inconsistencies in how learning goals are interpreted mostly in Africa and particularly in Kenya. This study therefore, performed a philosophical analysis on the status of critical thinking pedagogy, assessed and proposed improvements to the existing approaches to critical thinking pedagogy in the Kenyan secondary schools' curriculum. The Kenyan 8-4-4 curriculum which is being phased out according to KICD 2017 emphasized competition in exams; content memorization, teacher centered approach in teaching/learning and focused mostly on summative assessments. To address this issues, the newly introduced competency based curriculum (CBC) listed among others, critical thinking and problem solving skills as a core competency in teaching/learning. In secondary school for example the CBC recommend that learners be asked to find better ways of solving the problem of meagre resources such as food, water and electricity both within the school and the community surrounding them without any logical or epistemological basis. Using Kantian critical judgment theory which employs Socratic questioning and critical analysis method to assess human actions or behaviors, the study found that learners' involvement in problem identification and problem solving was key in the development of critical thinking skills within them. Without learners' involvement, the knowledge/skills given to them can neither be creative nor critical. Using this theory against the Kenyan secondary education curriculum, it was not clear whether CT pedagogy and thus CT were employed in teaching/learning by the 8-4-4 curriculum and the progressive 2-6-6-3 curriculum because the two systems of education have not clearly defined how CT had to be imparted in learners during teaching/learning process. Rooted on the school culture and experiences of teachers' commitment to the CT integration, this study, had suggested mechanism in which CT policies and ambitions of the school might be revised in the curriculum to include logic (inductive and deductive reasoning) and epistemology (mainly constructivism model) to achieve required CT pedagogical goals. Only by equipping all teachers with knowledge to integrate CT across the curriculum in the Kenyan secondary school systematically, can the critical thinking culture be realised in those schools and across the nation. Based on the inductive analysis; teachers competent in CT, committed to teaching CT, integrating CT holistically in all programmes of the school, competent pedagogically and practicing of CT across the school can create a CT culture in teaching /learning at secondary schools. Integration of CT across the secondary school curriculum can best be achieved by employing critical thinking and learning model which consists of Bloom's taxonomy, CT dispositions and the Pearson's/Watson-Glaser RED model. If these strategies are employed, then, the Kenyan secondary schools shall realize a CT culture, the 21st century skills for the global citizen, for higher learning and the workplace. Further research is called for to investigate if it is possible to extend CT learning/teaching for learners in primary schools and investigate systematically how to transfer CT to other domains of knowledge by training only within one domain.

Key terms: Critical Thinking, Enlargement of Mind, Community of Inquiry, Philosophy for Children and Curriculum

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ABBREVIATIONS & ACRONYMS

APA: American Psychological Association

CBE: Competency Based Education

CBC: Competency Based Curriculum

CT: Critical Thinking

CTLM: Critical Thinking and Learning Model

EFA: Education for All

HOT: Higher Order Thinking

IBL: Inquiry Based Learning

KCSE: Kenya Certificate of Secondary Education

KESSP: Kenya Education Sector Support Programme

KICD: Kenya Institute of Curriculum Development

LOT: Lower Order Thinking

MOE: Ministry of Education

P E: Physical Education

P4C: Philosophy for Children

PGDE: Post Graduate Diploma in Education

SAPERE: Society for the Advancement of Philosophical Enquiry and Reflection in Education

UNESCO: United Nations Educational, Scientific and Cultural Organization

UPE: Universal Primary Education

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Critical thinking (CT) can be defined as a skillful, reasonable thought which brings about good judgment since it has criteria; it's sensitive to a given context and self-correcting. The criteria that are generalizable and important include: reliability, relevance, consistency, strength, coherence, evidence and validity. It involves self-correcting which is the focus on one's thought processes to discover and rectify weaknesses. Self-correction denotes critical, active and persistence towards improvement. Sensitivity to context is the consideration of specific circumstances, for any special limitations, overall configurations and untranslatability of some meanings during thinking process (Ennis, 2016; Lai, 2011; Lipman, 1988).

The Secondary school is an important transition stage to higher education where overt critical thinking skills are demanded. Kantian 'critical judgment theory' held that critical thinking approach is holistic and promotes inquisitive, critical and active minds (Arendt, 1992). Thinking other than 'critical thinking' is as a result of the natural process that occurs in all people, right from birth. This process helps an individual through reasoning, problem solving, decision making, and analyzing to attain knowledge (Nickerson, Perkins, and Smith, 1985). However, most of the time, our thought is as a result of poor judgement, discrimination, bias, and prejudice (Paul & Elder, 2008). To think critically, individuals both young and old ought to develop capacities to improve their thinking skills and get rid of negative influences through training (Nickerson, Perkins, and Smith, 1985).

Quality basic education do not see schools as places where knowledge is merely transmitted and assimilated, schools are places for questioning and where learning take place (UNESCO, 2009).

A Report to UNESCO (1996) on Education for the Twenty-first Century, by the International Commission presided by Jacques Delors stated that attitudes towards learning are forged to last all one's life time at the stage of basic education (UNESCO, 1996). For several years, critical thinking, or more broadly, the idea of developing philosophical inquiry and introducing principles of philosophizing with learners in secondary Schools, had led about growing curiosity and enthusiasm across the world (UNESCO, 2009). Indeed, the need of stimulating questioning and reflection at the young age, and within the framework of basic quality education is increasingly acknowledged across the world in most countries like Scotland, USA, most of European countries, Australia, some parts of Asia, South Africa and some part of West Africa (UNESCO, 2009).

Education systems in Kenya had undergone several reforms since 1963. Such reforms were occasioned by the Ominde Report (1964) on educational goals, the Gachathi Report (1976) on educational objectives and policies, Mackay Report (1982) on change of curriculum from 7-4-2-3 to 8-4-4, Koech Report (1999) on review of national philosophy, policies and objectives. The national educational and training conference (2003) whose recommendations led to the Sessional Paper No. 1 of 2005 outlined long, medium, and short-term targets for the education sector which included Education for All (EFA) and the Attainment of Universal Primary Education (UPE) by 2015. However, despite those many reforms that the Kenya education system had undergone since independence, issues on critical thinking skills had not been properly addressed and needed attention even in the newly introduced 'progressive' 2-6-6-3 curriculum.

The Task Force Report on re-alignment of the Education in Kenya 2012 and the Kenya Institute of Curriculum Development (KICD) 2016 on National needs assessment observed that the education systems since 1963 had emphasized acquisition of knowledge with no pedagogical

emphasis on application. This had also influenced examinations, which mainly test memorization (Republic of Kenya, 2012; KICD 2016). KICD (2017) and sessional paper No.2 of 2015 report on the introduction of a new competency based curriculum (CBC) noted that the 8-4-4 curriculum that is being phased out "emphasized competition for exams; is more of content memorization and reproduction during exams. The teacher was the main source of knowledge and learners were passive participants; it was more rigid in content, learning time and strategies; had little parental engagement and support; focused more on cognitive development; emphasized on schooling and focused on summative assessment" (KICD, 2017:12). Going through these reports, it was clear that 8.4.4 curriculum did not infuse the critical thinking skills in teaching and learning mainly at secondary level, neither did it put emphasis on how critical thinking skills should be imparted to learners.

The 8-4-4 and the proposed 2-6-6-3 curriculum stipulated that critical thinking skills were core competencies to be sought but secondary school syllabus developers seemed to have ignored these skills in teaching and learning. The reforms towards the introduction of newly proposed 2-6-6-3 initiated after the 2010 constitution review tried to address issues that emerged from the previous education curriculum (8-4-4). "8-4-4 curriculum is more of content memorization and teacher centered" (KICD, 2017:13). Implementation of critical thinking skills in learning and teaching at all levels in the curriculum was among those issues. The curriculum did not spell out, clearly, how the skill can be acquired by learners given that in secondary schools, philosophizing with children was not in the syllabus. The curriculum needed to include into the syllabus epistemological and logical techniques in learning to impart critical thinking approach in the mind of learners. Otherwise, the report noted that at the secondary school level, learners can be asked to come up

with the best ways of addressing the challenges of scarce resources such as water in schools and community (KICD, 2017).

A survey of organizations in Kenya and across the world by Pearson Foundation Study and Microsoft Partners in learning (2013), the Society for Human Resource Management (2013), and Crockett (2016) on the 21st century skills for the global citizens reported that critical thinking approach were the top skills gap for job applicants (Anisa, 2018; Crockett, 2016). It was on this light that Kanz (1999) observed that modern curriculum seemed to treat students like machines doing everything, thus obtaining very little knowledge, operating on the basis of facts, or rules, rather than on wisdom, inner conviction, or knowledge. Although school leavers recognized the importance of critical thinking skills in the job market, they were not given enough opportunity to develop it while in school (Anisa, 2018). This study therefore, was set to do a philosophical critique of critical thinking pedagogy in Kenyan secondary schools' curriculum as an important skill in teaching and learning in the 21st century schools.

1.2 Statement of the Problem

Following the task force report on the 21st century needs for the education sector (2012) in Kenya and the KICD 2017 on National Needs Assessment, there was a problem of the Kenyan education curriculum for learners in secondary schools because it had limited opportunities and was too rigid to align basic education with children's abilities and career interests. The task force recommended a problem-solving approach to education in which participants are to develop or adopt creative skills and problem solving activities for students to improve their critical-thinking skills.

Going through the task force report (2012) and KICD 2017 on the National Needs Assessment for Education, critical thinking had been learning and teaching goal for teachers and learners across all disciplines at all levels. However, that outcome was not always accomplished. The reports further revealed that many teachers and students cannot distinguish between critical thinking and general content coverage. This calls a need for a philosophical training on principles of critical thinking pedagogy. This study therefore critically analyzes the 8-4-4 and the Competency Based curricula reforms in Kenya to date in an attempt to propose a working paradigm for integration of critical thinking approach in the secondary education curricula. It is envisaged that doing this wall help develop learners with enlightened, creative and independent thoughts who can fit in the 21st Century global world as they transit to higher learning and to the job market armed with critical thinking mindset.

1.3 Research Objectives

1.3.1 General Research Objective

To perform a philosophical analysis of the status of critical thinking pedagogy, assess and propose improvements to the existing approaches to critical thinking pedagogy in the Kenyan secondary schools' curriculum.

1.3.2 Specific Objectives

1. To analyse the Kenyan secondary school curriculum to assess the extent to which critical thinking skills had been addressed.
2. To analyse and assess how integrated approaches to critical thinking pedagogy could improve the quality of learning and teaching in the Kenyan secondary schools.
3. To propose a working paradigm for critical thinking pedagogy in teaching and learning in secondary schools in Kenya.

1.4 Research Questions

a) How had the critical thinking theory and practice been addressed in the Kenyan secondary schools curriculum?

b) How could the integration of the practice of critical thinking approaches in curricula improve the quality of learning and teaching in the Kenyan secondary schools?

c) What approach was the most appropriate for critical thinking pedagogy in learning and teaching in the Kenyan secondary schools?

1.5 Significance and Purpose of the Study

1.5.1 Purpose of the Study

The main purpose of the study was to assess the extent to which secondary schools in Kenya had incorporated approaches for enhancement of critical thinking skills into their learning and teaching strategies and practices. The study also explored teaching and learning approaches and their effectiveness in promoting critical thinking pedagogy in secondary schools.

1.5.2 Significance of the Study

The study was significant because it assessed the current curriculum (8-4-4) in terms of teaching and learning strategies at secondary schools with respect to promotion of critical thinking skills which is an important area that need more research. The findings from the research maybe used to help curriculum developers and the ministry of education take initiative to enhance and restructure the Kenyan curriculum during implementation stages to focus on critical thinking pedagogy not only in secondary schools but also other institutions of learning. With the results of this study in place, it was envisaged that the Kenyan secondary schools will acknowledge that teaching and learning critical thinking produces reflective and freely thinking person's capable of interrogating

various forms of fanaticism, propaganda, intolerance and exclusion (Republic of Kenya, 2012; KICD, 2017; Arendt 1992; Lipman 2003; Watson-Glaser, 2010; Crockett, 2016). This study proposes the infusion of critical thinking pedagogy in the curriculum during the implementation stages to foster open and independent thoughts for learners at secondary schools.

1.6 **Limitations and Delimitations of the Study**

1.6.1 Delimitations of the Study

The study sought to analyze the Kenyan education curriculum to examine the extent to which the principles of critical thinking had been addressed. The focus was to be on the reforms that the Kenyan education system had undergone from the 8-4-4 system of education to the currently implemented Competency based Curriculum (CBC). The 2-6-6-3 system of education had been informed by the previous reports such as Ominde report (1964) on the goals of education; Gachathi report (1976) on policies and educational objectives; the Mackay report (1982) on curriculum reform from 7-4-2-3; Koech report (1999) on the review of national philosophy, policies and objectives; National training and conference on Education 2003 which brought about sessional paper No. 1 of 2005; the ongoing education reforms initiated in 2010; the 2012 task force report on adjustment of education sector in Kenya and KICD (2017) on national needs assessment.

The analysis of the study was informed by views on scholars of critical thinking and philosophy for children who include Immanuel Kant, Socrates, Arendt, Dewey, Watson, Glaser, Lipman, and Crockett among others. Critical analysis and assessment formed the basis of the argumentations to meet the study objectives. Additionally, the study did not delve into out of school issues that may have influenced acquisition of critical thinking skills.

1.6.2 Limitation of the Study

Critical thinking as an element of philosophical thought and logic is a wide area of study because it touches many aspects of human life be it education and in the world of work. Other than the school curriculum which was mainly focused in this study other aspects such as the effect of surrounding community, family status and willingness of curriculum implementers (teachers and school administration) to make critical thinking pedagogy as a community of practice in their schools may also affect learners' critical thinking skills. It was not possible to perform a philosophical analysis for all these units due to resource and time constraints. It was assumed that if classrooms in all secondary schools are turned into communities of inquiry, critical thinking skills would be realized in our secondary schools, higher institutions of learning, world of work and life in general.

1.7 Assumptions of the study

The research was set out with the following assumptions:

i. That incorporating critical thinking in learning and teaching at our schools will bring about quality in education.
ii. That infusing critical thinking pedagogy in the regular pedagogy in school curriculum will foster independent, enlightened, reflective and open-minded thought in learners.

1.8 Operational Definition of Terms

Education: When considered in anthropological terms, education is nothing other than the concept of perfection yet to be experienced and can best be experienced through teaching or training and or learning.

Critical thinking: It will be defined as a responsible skillful thinking that brings about better judgment since it has criteria of judgment; it's self-correcting and it is sensitive to a given context.

Using this criterion, teachers and students in secondary schools can distinguish other forms of thought closer to critical thinking from critical thinking.

Pedagogy: Pedagogy refers to the process, method, theory and practice of teaching and learning. Pedagogy as an academic discipline is the study of how knowledge and skills are imparted in learning and teaching process.

Critical thinking pedagogy: In its broadest sense and in this study is an educational philosophy, practice and theory that seeks to help students or learners obtain critical consciousness. Critical pedagogy can best be practiced when students are placed in a community of inquiry.

Community of Inquiry: It can be defined as a class of persons who together reflect and engage themselves in critical purposeful discourse to construct individual meaning and confirm mutual understanding in what is generally referred as the principles of philosophizing. This implies organizing the Kenyan secondary school classrooms with specific philosophical and epistemological instructions and theories to create meaningful learning experience and achieve higher order knowledge.

Philosophy for Children: Is the principle of philosophizing built in classrooms where learners who are not above 18 years, or in our case children in secondary schools 'learn how to learn' through philosophizing or using specific epistemological theories to develop higher order learning experience.

Curriculum: Are knowledge and skills learners in organized learning environment are expected to learn. It includes printed media, oral media, virtual, presentations, assessment rubrics and other methods used to examine and evaluate students learning.

Judgments: According to the study, judgment refers to the forming of opinions, estimates or conclusion on a case under examination or evaluation.

Criteria: Criteria refer to set rule(s) or principle(s) utilized in making reasoned judgment.

Training: Training in this study refers to an activity whose ends or outcomes have been set.

A teacher: A person who imparts knowledge or instructs (someone) how to do something in organized institution. A teacher in this study is a trainer.

Teaching: In this study teaching refers to imparting of knowledge, training or instructing someone how to do something in organized institution.

1.9 Organization of the Study

Chapter one of the research was the introduction which provided the background, the statement of the problem, objectives and the research question. It gave an overview on the direction the research was to take. The chapter also stated the significance and purpose of the study, delimitation, limitation and scope of the study and definition of operational terms.

Chapter two was the Literature Review: the chapter reviewed and provided a critique of the literature related to the study. By doing critical analysis, the literature agreed; proposed new point of view; confirmed particular point of view and/or accepted the existing point of view. The review also reformulated or dismissed the existing point of view on the ground of inadequacy, irrelevance or incoherence; refuted the arguments on the ground of merit and/or reconciled two positions which were seen to be variant.

Chapter three was the methodology used in the research. The study employed appropriate philosophical research methods to achieve the stated objectives. Critical Analysis method, Kantian critical judgment, Paul & Elder model, Pearson/Watson-Glaser RED model, critical thinking

depositions and Blooms taxonomy were selected as appropriate for the study. Critical analysis used rules of inductive or deductive reasoning which are rules of logical thinking, to assess whether the results or arguments given were valid.

Chapter four sought to provide a philosophical assessment and analysis of the status of critical thinking in the Kenyan secondary schools under the 8-4-4 and 2-6-6-3 curriculum. Critical analysis and critical pedagogy informed the analysis. The chapter also sought to assess how critical thinking pedagogy could improve the quality of learning and teaching in the Kenyan secondary schools. A working paradigm was suggested to help integrate into teaching and learning the critical thinking skills in the Kenyan secondary schools. Kantian critical judgement theory, Arendt's critical thinking as an 'enlargement of mind', Paul-Elder teaching model, Watson-Glaser RED model, and other philosophical thought on critical thinking informed the study.

Chapter five presented the synthesis and discussion of research findings and proposed a working paradigm of critical thinking pedagogy for the competency based 2-6-6-3 curriculum.

And finally chapter six will gave a summary of the study findings and recommendations of the study.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

The study did a critical analysis of the secondary school curriculum and reports on educational reforms to assess whether or not and to what extent critical thinking approach had been integrated in learning and teaching at the Kenyan secondary schools. It also analyzed from the available literature how critical thinking pedagogy had performed in the learning and teaching in Kenyan secondary schools and identified the gaps that led to poor performance in its implementation. The study further reviewed and provided a critique to the pedagogy employed by secondary school teachers and proposed a working paradigm for critical thinking pedagogy in learning and teaching at secondary schools in Kenya.

2. 2 Critical Thinking Skills: Analysis of the Kenyan Secondary School Curriculum

The study did a critical analysis of the status of critical thinking skills in the Kenyan secondary school curriculum. The study agreed with certain points of view, proposed and reformulated new point of view, confirmed particular others and accepted some of the existing ones as discussed in the subsequent discussion and analysis. Some views were dismissed on the grounds of inadequacy and incoherence while others were reconciled positions which were seen to be variant.

2.2.1 The Goal of Critical Thinking in Learning and Teaching

Critical thinking skill is an intellectual discourse of actively applying, analyzing, conceptualizing, evaluating and or synthesizing information generated from, or gathered by reasoning, experience, observation, communication or reflection to guide actions and beliefs (Center for Critical Thinking, 2004). For one to critically think, they must know the criteria of most basic structure or thought from which thinking is constructed. Criteria or structure needed include the following: question at issue (research question) that guides one to determine the topic and line of inquiry for

the research; information (available literature); consequences and implications (Center for Critical Thinking, 2011). These structures were found missing in the Kenyan secondary education curricula yet it applies to learners of all levels and to those who want to apply critical thinking. Critical Thinking skill may either be applied to learning or teaching as an independent subject or be infused within other subject areas across all disciplines. Williams (2012) suggest, and this study concurs with the suggestion that critical thinking across all levels (Primary, Secondary, and Tertiary schools) would benefit learners most if they register in a course that teaches critical thinking as self-discipline (Williams, 2012).

According to Nussbaum (2006), education ought to improve learner's reasoning, debating, and ability to empathize. She proposed three important human capabilities that should be developed in education:

a) Principle of philosophizing,
b) The ideal of a global citizen and
c) Understanding of wishes and emotions of others (Hart, 2015; Nussbaum, 2006).

Philosophy for children (P4C) (the principle of philosophizing built in classrooms for learners who are not above 18 years, or in our case children in secondary schools) program may align well with the above capabilities. If practiced in classrooms like that of Kenyan secondary schools, students will form communities of inquiry while in those classrooms and make reflections on areas or subjects of similar concern by sharing different views, giving individual judgment or point of view by considering arguments of others (Williams, 2012).

The main goal for philosophizing with children was to encourage them to make informed choices from independent reasoning (Trickey & Topping, 2004; Williams, 2012). Thinking philosophically

is a characteristic of all human beings and may as well be implemented effectively in the Kenyan secondary schools. Schools (including Kenyan schools) form a unique class of community where learners (children) get encouraged to recognize and respect others' beliefs (Auric and Daniel, 2011). The willingness of learners to accommodate others' different opinions in a community of inquiry is often accompanied with principles of critical judgment. A 'Community of inquiry' is not meant to reach agreement or consensus but helps to develop a harmonized language to disagree or agree with one another in a reasoned way. Learners in secondary schools can be supported to develop consistent judgement by introducing to them the principles of philosophizing or critical thinking skills into the curricula (Williams, 2012).

2.2.2 Critical Analysis of the Kenya Secondary School Curriculum

Critical thinking is among the seven core competencies in the competence based curriculum. Borrowing heavily from social constructivist theory by Dewey, which suggests that teachers should only guide but not teach and that parents are important in the process of education for their children, they argue that critical thinking will assist learners, to open up their mind, be in a position to accept and listen to information and points of view that may sometimes be different from their earlier held positions and beliefs (KICD, 2017). Critical thinking skills are important for all learners in all disciplines and subjects offered in the education continuum, mainly in secondary schools. In science subjects for instance, most curricula suggests that children should think critically about observation and change in observable patterns to form ideas on how to deal with dynamic issues and challenges. In fact, how to train learners to think critically, whether in science or arts without philosophizing happens to be the main challenge of the CBC. The Kenyan curriculum does not spell out, clearly, how the skill could be acquired by learners given that in secondary schools, philosophizing with children is not in the syllabus. The KICD report noted that

learners at secondary schools can be taught to invent best ways of resolving challenges using limited resources within communities and schools (KICD, 2017).

Across the globe, the goals of learning in higher education, secondary and elementary curricula emphasize critical pedagogy; however, it has not been clear how learning outcomes are interpreted in terms of competency performance. Consequently, although the curriculum requires teachers of all subjects at all levels (tertiary, Secondary, and Primary) to teach with critical thinking skills in focus, this goal is never attained due to lack of understanding or clarity in regard to what is meant by critical pedagogy and critical thinking skills (Kennedy, 1991).

It is noteworthy that children in secondary schools are expected to think before applying their emotions so that those subjects which they presuppose are difficult would part of be part of their serious thought to choose. In a classroom, ordinarily, thinking is a communal process where learners would recognize that they are in a community that share common questions and concerns. Curriculum would emphasize working together instead of competing as witnessed in the 8-4-4 curriculum and as all curricula in Kenya have been before the introduction of CBC (Cam, 2014). It is therefore noteworthy that although critical thinking is recognized in Kenya essential for all learners and would improve their abilities, its implementation in the curriculum to achieve results have always remained a challenge.

2. 2. 3 Assessment of critical thinking in Learning and Teaching

An evaluation of the principles of philosophizing with children was conducted by researchers from Durban University to assess whether philosophy for children (P4C) instructions for learners in early years in primary education would improve their results in academic subjects mainly in

numerical, writing and reading. The study also examined the effect of philosophy for children on cognitive skills (Nuffield Foundation, 2015). The research focused on 50 schools mainly, primary, across England from Hull, London, Birmingham, and Manchester with varied challenges, a good number coming from disadvantaged environments. The assessment found evidence that philosophizing with children had a positive effect on learners at stage 1 and 2. Learners introduced to philosophy for children made two months improvement on numeric, writing and reading as compared with learners not introduced to the principles of philosophizing. Teachers argued that critical thinking skill (or philosophizing) made learners confident and patient when listening to others, self-motivated, better, happy and enlightened. Critical thinking skill appeared to impart confidence to children in participation, in discussion and contribution to the construction of new knowledge. The study noted that P4C classes were much more engaged and their questions were informed in all lessons. The evaluation noted improved communication and peer relationship (Nuffield Foundation, 2015) also.

Hamm (1989) and Robert (2008) on Kant's ideas emphasized that principles of philosophizing strengthens learners' reasoning, abilities and ushers them in, to fit in the global society by being autonomous (Vansieleghem, 2006). Moral principles, for instance, are fostered in children at young age by community of inquiry through interactivity and play that reflects autonomy and also initiates children to principles of philosophizing as the latter become their way of life in the global village (Sharp, 1994).

Teaching children critical thinking is a whole and vast approach that leads to active, logical and enlightened mind. Our secondary schools ought to build what Kant, Arendt and Charles S. Peirce stated as 'enlargement of the mind' (Arendt, 1992; Robert, 2008; Burch, 2001) or what Dewey (1966) referred to as 'community of inquiry'. Enlargement of mind through a community of

inquirers requires individuals with like-mind set but diverse opinions and a common concern to figure out challenges, plans and to resolve issues that emanate from within their persons and the society. Community of inquiry can be organized in the Kenyan secondary school classrooms with specific philosophical and epistemological instructions and theories to create meaningful learning experience and achieve higher order learning (Akyol & Garrison, 2008). Vansieleghem (2006) argues that philosophizing offers the possibility to think as individuals while in a group by employing tools of thought which enable individuals to assess the reasoning of others and the self (Vansieleghem, 2006)

It is natural to speak, think and communicate one's mind (Arendt, 1992). Critical thinking implies communicability in which individuals who are addressed or who are listening and can also be listened to form a community (Arendt, 1992; Kant, 1996). Kant asserted that philosophizing or critical thinking, even though it is a matter of an individual, greatly depends on others to be possible. The liberty to talk/speak/write can be snatched from us by powers that be, but the liberty to think cannot be taken from us by those powers. However, how correctly and how much could we think if not in the community with the rest to whom we communicate those thoughts and who at the same time communicate to us?!

Kenyan classrooms in secondary schools bring various learners with different thoughts into contact and these can influence community of inquiry leading to enlargement of the mind (Arendt, 1992). In order to show how it works, Kant says that the human mind needs a reasonable amount of relaxation to maintain freedom so as to be enabled to see objects a fresh from all sides (Arendt, 1992). It is through imagination that judgment is possible. Though solitary, critical thinking does not cut itself off from 'all others'. This thinking as Arendt (1992) observes, is not bound by age. For our children in secondary schools in Kenya to think with enlarged mentality, their mind ought

to be trained to go visiting through imagination. “Enlarged thought” disregards what is referred as self-thought or common interest, which for Kant is limiting and not being enlightened or capable of enlightenment. It should be noted that Kant does not tell us how to combine with others; he tells us how to take others into account to make reasoned judgment (Arendt, 1992).

Robert on Kant (2008) observes that it is always important to teach children elements of thought (Robert, 2008) and not to train them like animals. Critical thinking can best be arrived at by applying the Socratic Method, actualized by critiquing and questioning available knowledge (Arendt, 1992; Robert, 2008). Further, Kant (1996) observes that teachers can only give materials and activities (curriculum or syllabi) that encourage thinking even though they cannot get inside student’s mind. Materials that influence thinking and the response from learners to those materials constitute education (Kant, 1996). Education stake-holders and teachers in Kenya should always know that learning occurs even in their absence and could only attempt to stimulate learners so that learning goes on including that time when the teacher is not available.

Historically, critical thinking has helped prepare children to be self-reliant in any organized society (Fisher, 2007). Lipman (2003) observes that critical thinking programs will improve the condition of learning and teaching. He suggested that the aim of philosophizing with children is to help young children learn to be autonomous thinkers. When schools have done more to teach learners to practice proper judgment, they would protect those learners against those who would manipulate them through indoctrination and inflame them with prejudice. By introducing principles of philosophizing to our children in secondary schools, those learners will be better consumers and producers; better future parents and good citizens (Lipman, 2003)

Introduction and integration of critical thinking for children in Kenyan secondary schools in community of inquirers can develop in young citizens’ disposition that will make them enlightened

and independent as they proceed to higher learning and community responsibilities. Lipman (2003) argued that critical thinking involves mutual criticism, careful voicing of opinions and judgment which according to teachers makes children enlightened and self-reliant (Lipman and Naji; 2003). Introduction of the principles of philosophizing according to Lipman (2003) is the best way of making education relevant. Philosophizing would be operationalized in schools when classrooms are converted to communities of inquiry since more knowledge is not equal to thinking better. Our failure to integrate critical skills in the content at secondary schools reflects our not taking the model of the University seriously in that regard (Lipman, 2003).

Secondary schools in the Kenyan case are ideal for introducing critical thinking skill because her learners are already stimulated and can think critically if trained to do so. While philosophizing with children is yet to be explored in Africa and Kenya in particular, its assessment within the school curricula deserves specific attention, and that was the ultimate goal of this study. Regular thinking (not critical thinking or philosophizing) could be developed unconsciously in people when trying to solve problems in their lives. However, the outcome of the process of thinking would be good if thinking was done well (Watson-Glaser, 2010). Therefore, the purpose of education should not just be memorization of facts but, providing meaningful learning and total knowledge. If the goal of education is only to focus on memorization, it will later/sooner be forgotten. Researchers of education and curriculum developers in Kenya need to integrate into the syllabus critical thinking pedagogy in order to reduce boredom in classrooms (Watson-Glaser, 2010).

Valid critical thinking assessments should allow visibility of learner's reasoning. Hence, Socratic questioning would be the most appropriate for assessing critical thinking as compared to objective questions (Norris & Ennis, 1989). Socratic questioning is sensitive to critical thinking dispositional

facets (Ku, 2009). Koziol and Moss (2005) added that learners therefore should be assessed based on their positions and status of the arguments. For learners to assess con and pro arguments, it would be counterproductive on an issue if they know the standards to use in the critique of opposing pieces of evidence so that may not result in augmenting bias, closed-mindedness, thoughtless generalizations and ethnocentrism (Case and Wright, 1997). The Paul & Elder (2008) Framework assessment tool of Critical Thinking is the best that can be used to assess learners' thinking skills. The tool comprises of the Elements of thoughts assessed using the intellectual standards with goals of developing the intellectual traits. Intellectual standards to be examined must have the following characteristics: free from ambiguity or confusion (understandable); free from distortion or error (truth); exact to the level of details which are necessary (specific); relate to issue at hand; having multiple relationships; having multiple perspectives; making no contradiction; focusing only on important issue and free from bias, self-interest or injustice. Looking at these intellectual standards and the Kenyan secondary school curriculum (KICD, 2017), it is clear that those elements of thought which leads to critical thinking skills were not factored into the curriculum and the secondary syllabus.

2.3 Integrated approach to critical thinking pedagogy and the school culture

Although contemporary and traditional theories had provided a base for learning and teaching critical thinking skills in Universities and colleges across the world and Kenya in particular, many of those Universities, colleges and secondary schools are still producing ill-equipped learners in critical thinking skills. Teachers' interpretation of critical thinking and critical thinking pedagogy (teacher's competency) may be factors causing this (Kennedy, 1991, Jones, 2004). Rote memorization and teacher centered learning is a clear evidence of Kenyan teachers' poor interpretation of critical thinking pedagogy. How they support learners to develop competencies

of solving problems (Goddard & Goddard, 2001, Wheatley, 2002) and the learners' own motivation (competency) in regard to critical thinking abilities will promote critical thinking skills (Bandura, 1993; Zimmerman, 2000; Caliskan 2010). Learners' insufficient skills for searching information (Laxman, 2010), preference of teachers and poor training of constructivist/logical approaches to teaching/learning could be the problem of critical thinking in Kenya especially in secondary schools. In philosophy critical thinking can be enhanced through by reflection, reasoning and critical analysis.

Education reforms up to Koech 1999 Commission from Ominde in 1964 articulated and developed Kenya's educational goals in line with vision 2030. Foundation for the components of the vision 2030 was in essence, laid by Kamunge Report of 1988. Education was needed to solve challenges of the community, promote access to equality, and equity, the Report stressed. The report did not identify critical thinking skills as a core skill to solving community challenges. It is envisaged that Vision 2030 can be achieved by allowing secondary schools to teach and learn these skills as clearly stated by employing critical pedagogy such as that of Freire, Kantian, Paul &Elder or Watson-Glaser models. The models can help infuse into the secondary syllabus the critical thinking aspect in a form that is globally recognized. However, for a long time the Kenyan government only partially implemented recommendations of the reports of various education commissions. This has been a major problem perpetuated by the governments' technocrats from the onset of independence (Amutabi, 2003; Kivuva, 2005). Education reforms focused on the process, curriculum, solving problems and results of the country, but very important skills (critical thinking) and low key stakeholders have always been ignored in the planning and implementation process of those reforms. The low key stakeholders in this case would include teachers, students and parents.

According to Crockett (2016) in the *21st Century skills and the workplace*, Educational Curriculum Developers across the world and in our case Kenya, should look for solutions and new ways to integrate critical thinking skills approaches to pedagogy such as creativity, problem solving, communication, collaboration, analytic thinking, action, ethics, and accountability in liaison with such stakeholders. It is in this regard that this study argued for infusion of CT theory and practice in curriculum reforms to make learners better thinkers and autonomous when charged with duties.

Teachers of critical thinking skills wish to see those learners having open-mindedness, not being judgmental but receptive to perspectives of others and make decision wisely. Learners also need to be aware of their behaviour, deeds and feelings, in the real time doing right things with the right people and saying that which is right (Hui, 2016). Ordinarily, it's about circumstances and context, to make wise and right judgment. It needs thoughts and those thoughts must not be so in-depth that may cause paralysis. Thus competent teachers and learners can create a learning culture that supports critical thinking.

Putting learners in a community of inquiry has a great influence on learners' education (Marzano, Pollock & Pickering, 2001). Perkins (2008) argue that one can think critically through community involvement which overweigh personal energy. Teachers should provide materials and give learners opportunities to study with other learners through the learning period (Kant, 1996). Within those community, the learners listen to each other un-interrupted and hear the distinct opinions of their fellow learners. They work well in a community and honour the views of their friends. They share actively their views and construct on what their friends shared. Evidence of CT is seen as learners verbalize their thoughts and support their views with reasons and proofs (Arendt, 1992; Dewey, 1966; Hui, 2016; Lipman, 2003). In Kenya, secondary schools classes are yet to be

organized into community of inquiry thus making it difficult to teach and learn critical thinking skills.

Educational leaders who are effective help the promotion of a common vision, which is formed with achievable goals and a clear objectives with their teachers (Fullan, 2011). Developing culture in school that enable thinking, experts in CT concur that it is possible when all teachers, top management and support staff in that school critically think, as part of life. School management in Kenyan schools, teachers and curriculum developers have not encouraged this in schools (KICD, 2017, Ongesa, 2020). This makes it difficult to inculcate critical thinking skills in learners. Hence, school wide practice of critical thinking in Kenya is yet to take effect.

According to the study, being competent in CT, being competent pedagogically and being committed to teaching/learning CT are all traits of educators and learners who are capable of teaching/learning CT skills. The study therefore sought to demonstrate that by having a school culture that promotes critical thinking can with no difficulties integrate CT pedagogies into teaching/learning in those schools.

2.4 Proposed working paradigm for Critical Thinking Pedagogy in teaching and learning

Together with other teaching strategies such as the questioning method or Socratic seminars which was used by Socrates in his Mid-wifely school and Lipman's 'community of inquiry' method, this study considered using Arendt's critical thinking theory as an 'enlargement of mind' and Kantian 'critical judgment' strategy to train learners critical thinking skills. In most cases Pearson 2015 and Watson-Glaser RED model of 2010 was of great help in integrating critical thinking into our classrooms.

2.4.1 Questioning or Socratic seminars

Good questioning strategies are the most useful way that can promote critical thinking skills. Effective questions encourage students and guide their thinking to interpret, synthesize, analyze, reflect, and critique. Socratic questioning is a type which can be used to pursue thinking in a number of ways and for many reasons, which include; exploring ideas, to bring the truth of things to fore, to open up problems and issues, to analyze concepts, to uncover assumptions, to follow up logical consequences of thought, to control discussions or to distinguish what we know (Paul and Elder, 2008). Socratic seminars or questioning was based on the foundation that allows underlying thoughts to be questioned, and that critical thinking has a structured logic. The questioning is disciplined, deep, and systematic and examines fundamental theories, issues, concepts, principles and problems. Students, teachers, or anyone who wants to probe thinking deeply can create Socratic questions, like for our case in secondary schools teaching and learning, so as to engage in critical thinking deliberation. In teaching and learning, teachers and students can use Socratic questioning for the following purposes:

- To probe learners' thought and assist them differentiate what they do not understand from what they do understand or know (to have intellectual patience).
- To help learners develop powerful Socratic dialogue tools, to use in self-questioning and assessing others' points of view.

Most importantly, Socratic questioning among educators had been accepted as a function of critical thinking and an open-ended inquiry process (Ikuenobe, 2001). Teachers therefore, should enhance these skills to always respond and raise questions because they are most likely to improve learners' intellectual inquiry (Shaunessy, 2005).

2.4.2 Watson-Glaser and Pearson Critical Thinking RED Model

The RED model was put forward by Harris (2015) and Goodwin Watson and Edward Glaser (2010). They stated that critical thinking involves 3-elements: wisdom in considering problems; proper understanding of logical investigation; and pedagogical skills of applying critical thinking skills. Watson-Glaser examined five steps that should be applied by learners in critical thinking classroom as follows:

1. Making inference - Student's ability to qualitatively differentiate between right and false conclusions.
2. Recognition of assumptions - Tentative guess of the needed outcome from the data given.
3. Deductive Reasoning - Ability to make conclusion from the information provided.
4. Inductive Reasoning (interpretation) - making judgment whether the evidence presented and conclusion obtained can be generalized.
5. Evaluation of the Arguments - Assessment and giving appropriate conclusion by the learners in the study environment.

The five steps can further be transformed into 3-inseperable structures but retaining the essence of need in its goals according to Watson-Glaser 2010 as shown below:

Figure 1: Watson-Glaser 2010 RED Model *(Watson & Glatser, 2010)*

Critical thinking skills according to Watson-Glaser (2010) can improve the desired outcomes in learners from early stages of development. Recognition and making assumptions according to Watson-Glaser (2010) is the ability of learners to distinguish facts and/from opinions in any argument; doing this will assist children in primary and secondary schools to be serious in making responsible choices.

These 21st century skills are important for learners though the challenge is that educators have not been formally trained in critical thinking skills (Graham 2014). Wise consideration of problems through logical investigation is yet to be put into practice on the delivery of content in the Kenyan secondary schools and in most African countries. This study proposes adoption of this model of philosophizing with secondary school learners in Kenya since it has elements of improving learners' problem solving abilities.

2.4.3 Bloom's Taxonomy and Critical Thinking Dispositions

Bloom's Taxonomy consists of six cognitive skills designated as; understanding, applying and remembering (lower order thinking skills) or (LOTS) and creativity, analyzing and evaluating (higher order thinking skills) or (HOTS) (Bloch and Spataro, 2014). LOTS support HOTS because Bloom's Taxonomy is hierarchical in nature. Teacher in Kenyan secondary schools should build HOTS be from LOTS since HOT is the level where CT takes place they greatly require low order skills to be effective. Cognitive environment on the other hand is supported by dispositions (Hogan, 2016), which are in constant interaction with the skills more especially the HOTS, to bring about CT skills.

List of dispositions has no agreed order, their composition therefore is a challenge even selecting which to use. Dwyer, Hogan, Harney, and Kavanagh 2016 study (dubbed as "Key Dispositions

Study") of students and faculty, identified 32 dispositions for CT (Hogan, 2016). Aim was to find key among them, i.e., disposition with very strong support (Hogan, 2016). 10 educators and 31 students were involved in the study that used a method of group intelligence. Key Dispositions according to the research from the result obtained showed that are self-efficacy, open-mindedness, and Inquisitiveness were strongly supported and had a positive influence over others.

Inquisitiveness is intellectual curiosity. Motivation of learners mainly in our secondary schools comes from curiosity since it starts the journey no matter how rocky the path may be (Kowald, 2015). Open-mindedness is an inclination to be open to divergent views and be cognitively flexible. Open-mindedness can be promoted if teachers in secondary schools can assist learners to listen and be alert to different views from their own and suspend their assumptions temporarily when listening to those they do not agree with (Hogan, 2016). Self-efficacy is the ability to trust well examined judgments. Learners should be encouraged with their teacher by providing them with constructive and useful feedback (Margolis & McCabe, 2006).

2.5 Theoretical Framework

Building on Arendt's theory on critical thinking as an 'enlargement of the mind,' this research assessed how incorporation of the critical thinking skills in the future educational reforms in Kenya could help students engage in lifelong learning process and be independent problem solvers for individual and societal growth. Arendt's theory of 'enlargement of mind' was built from Kantian critical judgment theory, and Socrates conception of the teacher as a 'midwife'. Socrates 'mid wifely' concept introduces a questioning spirit where the capacity of the students to ask questions correctly becomes a way of getting the insight about the world. The students would be able to 'think with an enlarged mentality' and emphasis will be on the quality of questions and how deep

they understand the problem in a way that makes them aware of the origin of their opinions and to evaluate the basis of those opinions.

As Arendt (1992) observes, education can never be understood as something given, done and finished, but it has to be continually rethought due to the changes in the world. For the Kenyan education system to achieve its noble objectives, its restructuring must be geared towards breeding independent minded students who will become responsible citizens. Kantian 'critical judgment theory' held that critical thinking will promote active, critical and inquiring minds because it is holistic and dynamic (Robert, 2008, Kant, 1987). Developers of the Kenya's secondary education curriculum should build what Arendt coined as "enlargement of the mind" (Arendt, 1992; Kant 1987) or a 'community of inquiry' (Lipman, 1988; Dewey, 1966). Secondary Schools in Kenya form such a community of inquirers where learners would be encouraged to think autonomously while considering the opinions of others as well.

The "enlargement of the mind" in learners at secondary schools according to Arendt and Kant, plays an important role in Critical Judgment. "Enlarged thought" disregards private subjective conditions by which many are limited (Arendt 1992) like self-interest, which, for Kant, is not enlightened or capable of enlightenment. Although the principles of philosophizing or critical thinking skills has not been put clearly into practice in the Kenyan secondary schools before, Arendt-Kantian theory of "enlargement of mind" and 'critical judgment theory' would a useful tool in introducing, integrating and measuring learners' philosophizing or critical thinking skill in schools.

2.6 Conceptual Framework of the Study

In order to have shared vision for developing critical thinking culture; teachers should be committed to teaching critical thinking, be pedagogically competent in teaching critical thinking and critical thinking skills, able to integrate critical thinking in all school programs holistically and have a school wide practice of critical pedagogical practice. Secondary school learners on the other hand would be willing to participate in the community of inquiry to cultivate critical thinking culture in their classrooms. The school which includes administrators and stakeholders would encourage community of inquiry and School-wide practice of critical thinking skills through collaboration in both teaching and learning. In summary critical thinking pedagogy should be infused holistically in all programs through the community of inquiry as shown in the diagram below.

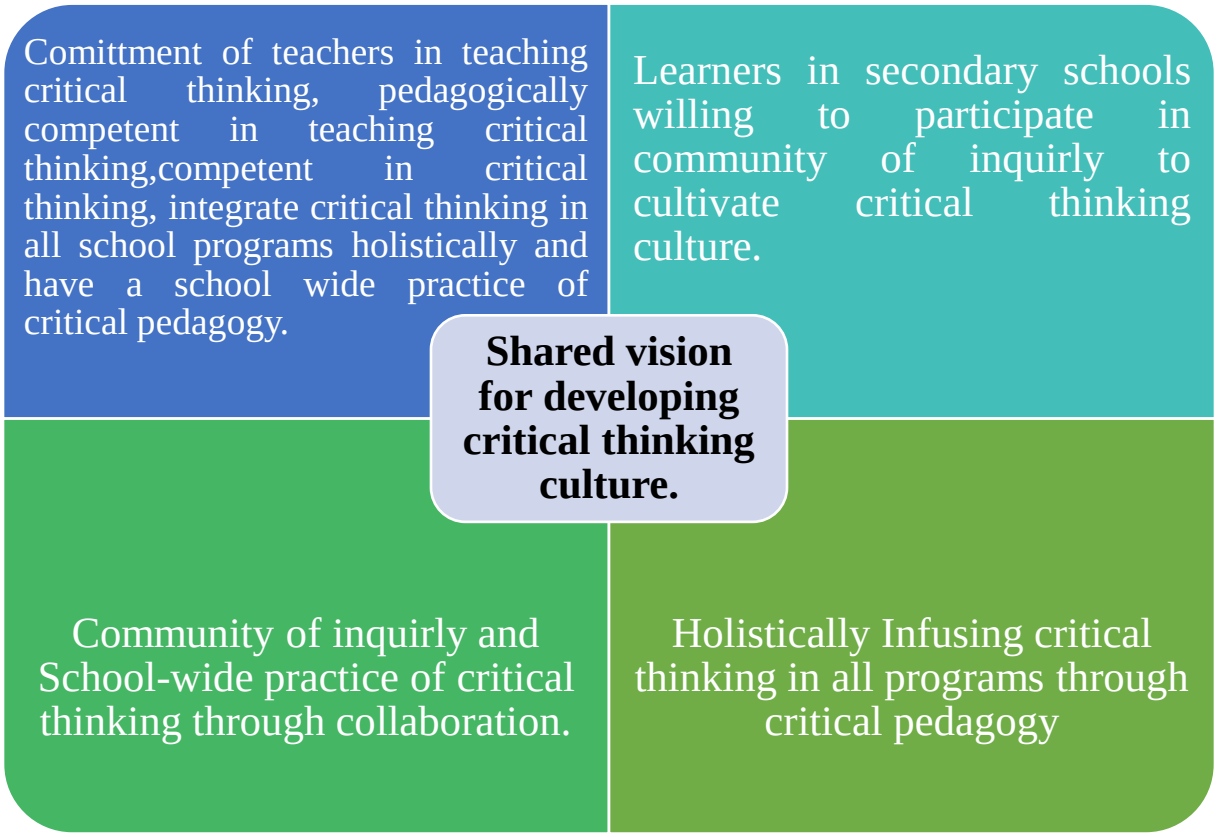

Figure 2: critical thinking approach in the Kenyan secondary school

2.7 Conclusion

There is little theoretical and empirical data regarding critical thinking pedagogy in secondary schools in Kenya. Available information on critical thinking seem to suggest that it can be developed successfully in learners. This was the apparent gap the study attempted to fill. Analysis was done to find ways in which secondary school in Kenya can integrate critical thinking in learning and teaching. This research therefore contributes to the critical thinking knowledge and literature in developing a theoretical base for development of curriculum in Kenya. Critical analysis of the Kenyan education curriculum and the theoretical understanding of tenets of critical pedagogy and critical thinking skills, which this literature provided were essential to inform the practice of classroom teachers on the understanding of critical thinking pedagogy.

CHAPTER THREE
METHODOLOGY

3.0 Introduction

In this Chapter the study discussed the methodology used for the study. The research is intended to demonstrate that adoption of explicit instructional strategy for critical thinking pedagogy will bring about improved learner's thinking and in the end breed enlightened and an open-minded individual. Critical analysis, Kantian critical judgment, Paul-Elder and Critical Thinking and Learning Model (CTLM) of critical thinking were considered among other methods in achieving the stated objectives.

3.1 Analysis of CT Skills in the Kenyan School Curriculum

The study employed the critical analysis method to achieve the stated objective. Critical analysis as a process, uses various philosophical techniques; logic, inductive and deductive reasoning to achieve its goals. The method is discussed below.

3.1.1 Critical Analysis Method

Critical analysis is a disciplined intellectual process of actively and skillfully applying, evaluating, analyzing and or conceptualizing ideas generated by or gathered from experience, reasoning or reflection. The study used critical analysis to interpret the existing Kenyan secondary education curriculum to assess if it had incorporated critical thinking strategies in teaching/learning. The method will help those doing the study to always ask questions used in Socratic interrogation style. Every question asked generate more questions while attempting to give some answers to stimulate thoughts that produce awareness or knowledge (Mautner, 2005). Reflective thinking characterizes critical analysis as thinking about thinking. This involves a process of searching for reasons for certain beliefs related to one thing and not the other; while not taking anything for granted.

Confusions are cleared through critical thinking (Mautner, 2005). Critical analysis is built through questioning out of curiosity. Skepticism nourished this method (Krishnananda, 1992).

Critical analysis uses rules of inductive or deductive reasoning, rules of logical thinking to evaluate the correctness of arguments or results (Krishnananda, 1992). It involves identifying parts of arguments and rephrasing those arguments with recognition that there can be no better way to evaluate and understand the truth. It is an active process of searching for meaning, reality and truth. It is abstract, detailed, and rigorous and encourages initiative. Critical analysis requires active imagination; finding relationships, creating possibilities, breaking habits to discover new possibilities and seeing patterns. It keeps one's mind open to a number of solutions, breaks problems into small easier manageable units, and encourages awareness of the problem at hand (Krishnananda, 1992).

The study, therefore, brought to fore various arguments on critical thinking and its impact in teaching/learning for learners in Kenyan secondary school. Using the analytical approach which involves breaking down philosophical issues through speculation and conceptual analysis, the study critically established the weakness of the Kenyan education system in regard to training her learners on critical thinking skills. The study sought to intellectually prop human freedom of thought and critically illustrated on the one hand, the need of training learners' on CT skill at young age, while on the other hand calling for critical judgement in teaching and learning to bring about enlightened thought in learners. This study employed conceptual analysis so as to examine the role of CT skills in the Kenyan curriculum for learners in secondary schools.

3.2 Assessment of the Education Curriculum for CT Skills

The Paul & Elder (2008) CT assessment model was used to assess CT skills in secondary schools in Kenya. The model had elements of thought in which given intellectual standards were assessed. Thought elements (or the Paul's reasoning wheel) is a framework meant to teach CT skills in a concrete manner. It has eight basic structures present in any form of thinking: purpose of thinking, point of view, assumptions, consequences and implications, concepts, inferences and interpretation, information and question at issue (Paul & Elder, 2008:28) as shown below.

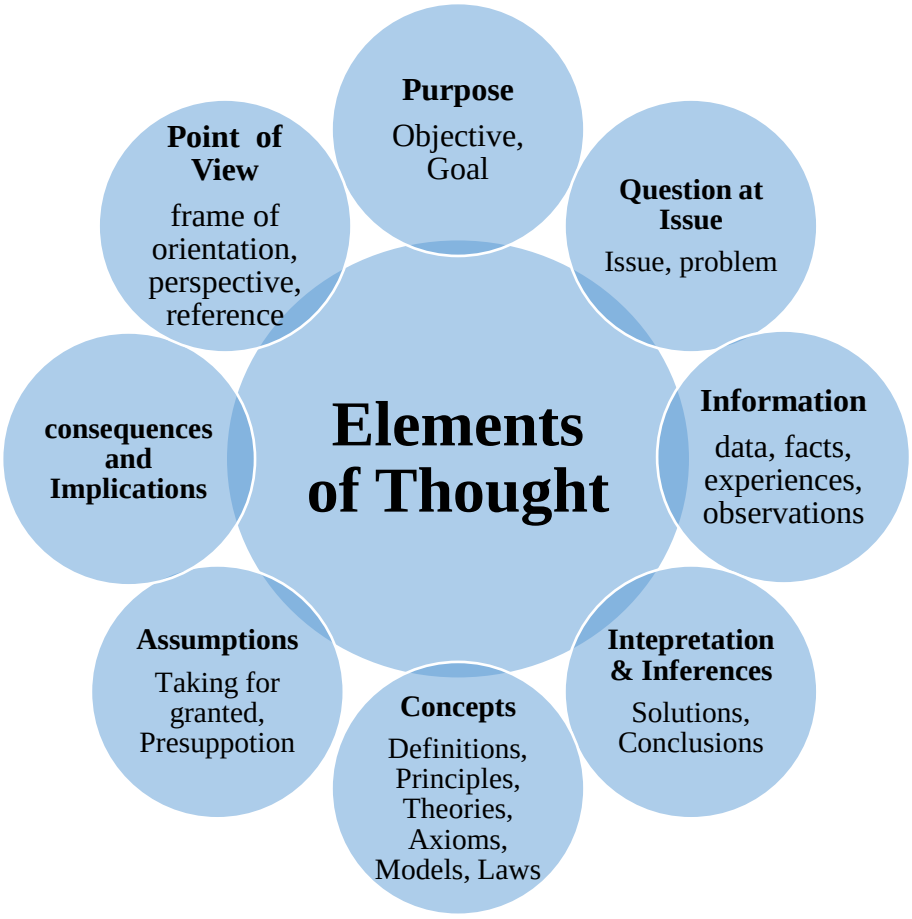

Figure 3: Elements of Thought (Paul & Elder, 2008: 28)

Elements of thought needed are to be taught by teachers explicitly to learners for them to analyze ideas through identification of the elements and question those ideas. Paul & Elder (2008) observed that intellectual standards are important for making judgments which is sound or well-reasoned, thinking logically, forming knowledge and rationally and intelligent understanding. By applying elements of thought and intellectual standards, learners would start to form intellectual traits of confidence in reasoning, empathy, integrity, autonomy, courage, humility and perseverance. The study used Paul-Elder's Intellectual Standards to assess reports on Kenyan secondary school education curriculum reforms to establish whether the curriculum had included the following elements in the content for learners and teachers: Understanding or freedom from confusion, truth or freedom from error/distortion, precision or exactness to the level of details which are necessary and relevant to the matter at hand. Other elements that were assessed in the curriculum included the depth of understanding of CT, multiple perspectives of teaching/learning CT, logic, focus on the importance of CT and freedom from bias, self-interest and injustice.

3.3 Integrated approach to CT pedagogy

The study considered using critical judgment model advanced by Immanuel Kant (1996) to achieve the stated objective. Kant's critical judgment model was built from Kantian transcendental-idealism theory and holds that persons are beings who think and ponder, write and read on the work of others so as to improve their way of thinking and quality of their ideas (Ozman & Craver, 2008). Kant thought that it was important for learners to philosophize and think, but, not to just learn philosophy (Arendt, 1992). Critical judgment model sought to demonstrate how the school learning culture through the curriculum will improve the integrated approach to CT during teaching/learning. The model considers the following themes to be common to the integration of CT in secondary school teaching/learning: Commitment of teachers to teaching CT, teachers and

learners development of the conviction on the value of CT pedagogy and desired outcomes of learners exposed to CT. If those themes are found missing critical judgment method recommend the following CT teaching/learning approaches: modelling by experts of CT; using tools such as games, websites and experiments to stimulate CT; using real world experiences to develop CT; transfer of CT to other subjects and areas of practical concern; Socratic questioning and other reading strategies that promote CT. Kant's model encourages critical thinking as a school wide practice that involves all stake holders (teachers, school administration and students). The method requires learners to be in a community of inquirers (Arendt, 1992; Dewey, 1966) and using constructivist approach those learners can participate in constructing their own acquired knowledge without external interventions. Inquiry based learning (IBL) approach, questioning and critical analysis are encouraged by this model in those communities for both learners and teachers to have enlarged mindset (Arendt, 1992) that can accommodate higher order thinking skills or CT. This method also promotes holistic learning rather than studying disconnected collection of small units. A more effective curriculum that is deep is crucial for facilitating CT. Studying the past according to Kant gives opportunities for learners to analyze and assess the trends so as to develop a better understanding of the current. Most importantly, the use of this method will equip teachers and learners with knowledge to retrieve, unpack, and create meaning from any information they come across.

3.4 Working Paradigm for Integrating CT Pedagogy

To achieve the stated objective, the study to a great extent proposed the Critical Thinking and Learning Model (CTLM) having found that the paradigm was missing in Kenyan secondary curriculum. CTLM is based on the integration of Watson-Glaser (2010) and Pearson (Harris, 2015) CT RED model, Bloom's taxonomy and critical thinking dispositions. The Watson-Glaser and Pearson RED model as a working paradigm for infusing CT approach provided a criterion of

analyzing and assessing CT skills in the Kenyan secondary school curriculum. The steps of critical thinking pedagogy, according, to Harris (2015) and Watson-Glatser's new (2010) RED model are: Evaluate Arguments (ability to analyze/assess accurately and objectively, information and question the quality of evidence supporting of the information), Recognize Assumptions ((ability to separate opinions from facts) and Draw Conclusions (ability to infer, deduce or make interpretations that follow from available evidence) (Watson & Glatser, 2010). According to the model, the ability to teach CT to learners especially in secondary schools in Kenya ought to start with teachers having a good understanding of the concept of CT.

Bloom's taxonomy provides six cognitive skills designated as lower order thinking skills (LOTS) which constitute understanding of information, application and remembering; higher order thinking skills (HOTS) constitute creativity, analysis and evaluation. The HOTS are the CT skills but they need support of LOTS. These skills are to be applied in hierarchical order starting with LOTS and finishing with HOTS while dispositions shape the general orientation of an individual to reflect on the deep internalization of CT habits (Bloch and Spataro, 2014). Disposition is a culture that supports and cultivates CT skills in order to apply and retain HOTS. Therefore, the critical thinking learning model would require dispositions such as like open-mindedness, inquisitiveness and self-efficacy to be in place concurrently with application of Bloom's taxonomy. The study therefore recommended CTLM for Kenyan educational curriculum to be applied during teaching/learning in secondary schools to promote and improve learner's critical thinking ability.

3.3 Conclusion

The chapter provided the study design and methods to be used in meeting the objectives of the study. Critical analysis, Kantian critical judgment model, Paul & Elder critical thinking model and

CTLM were helpful in the achievement of the objectives of the study. Library studies, virtual space, and various researches on critical thinking pedagogy were examined and analysed.

CHAPTER FOUR

4. 0 ASSESSMENT AND ANALYSIS OF CRITICAL THINKING SKILLS IN KENYAN SECONDARY SCHOOLS

4.1 Introduction

The aim of this chapter is to provide a philosophical analysis and assessment of the status of CT pedagogy in the Kenyan secondary schools under the 8-4-4 and 2-6-6-3 curriculum. Critical analysis and critical pedagogy informed the analysis. Using Paul-Elder critical thinking model, the study demonstrated how integrated approaches to critical thinking pedagogy promote quality of teaching/learning in Kenyan secondary schools. A working paradigm was suggested for integration of CT pedagogy in learning and teaching at the Kenyan secondary schools. Kantian critical judgment model, Paul & Elder teaching model, critical thinking and learning model (CTLM), and other philosophical models on critical thinking informed the analysis and assessment.

One of the core competences in the 2-6-6-3 curriculum is the critical thinking skills (KICD, 2017). A close look at the curriculum reveals that the proposal to enhance critical thinking in the Kenyan system of education has not had its epistemological and logical basis articulated; this is important for it to be effective in theory and practice or in application. Without a philosophical (epistemological or logical) approach, it is difficult to infuse CT into teaching/learning process. Proper mechanism of introducing and imparting critical thinking skills in secondary classrooms is therefore missing since the document has not defined a method of infusing CT (Ongesa, 2020). In addition, CT pedagogy is not taught directly in the Kenyan teacher training institutions and Universities (Otiato, 2009). Therefore, it is difficult for teachers to infuse CT into the teaching/learning because they are not pedagogically competent in it. Critical thinking activities

without epistemic logic of critical thinking pedagogy cannot promote higher order thinking skill (Bloch and Spataro, 2014). It is this concern that the study addresses.

4.3 Assessment of CT Skills in Kenyan Secondary Schools.

CT skills in the Kenyan secondary schools were assessed using Paul & Elder (2008) CT framework/model. Culturally valued attitudinal traits and values such as humility, integrity, autonomy, courage, empathy, perseverance, fair-mindedness and confidence would be promoted by this model of CT process. These traits can be achieved if learners in secondary schools are taught to apply and understand standards to the intellectual elements so to assess the extent and quality to which they think critically as shown below.

1. Understandable, free from ambiguity or confusion	
Clear	Would you expound further? Would you give example? Would illustrated what you mean?
2. True, Free from distortion or errors	
Accuracy	How could we check on that? How could the validity of truth be found? How could we test or verify that?
3. Specific, exact to level of details which are necessary,	
Precision	Can we be clearer? Can we be more detailed? Can we be more exact?
4. Relate to the matter at hand	

Relevance	How do this relate to the problem? How do this bear on the question at hand? How does this assist with the issue?
5. Having multiple and complex relationships	
Depth	What make that a problem of study? What is complex to this problem? What difficulties do we need to deal with?
6. Having multiple perspectives	
Breadth	Do we have another point of view? Do we consider another perspective? Do we look at this from another side?
7. Making sense together, No contradictions	
Logic	Do all these make sense together? Does our 1st paragraph fit with the last? Does evidence follow from what you say?
8. Not trivial, Focus on that which is important	
Significance	Is that problem the most important to be considered? Is that ideal central to your focus? Which of that fact do you consider to be the most important?
9. Free from bias, self-interest or injustice	
Fair	Do you have vested interest in the issue? Do you sympathetically represent others viewpoints?

Intellectual standards from Paul-Elder (2008)

Teachers need to explicitly teach learners elements of thought (Paul-Elder, 2008), for those learners to analyze their own reasoning through identification of the elements and questioning it's elemental structure. Unfortunately the Kenyan secondary syllabus does not have those elements because they are not defined in the curriculum (KICD, 2017; Otiato, 2009). The questioning strategy recommended for imparting CT as shown on the table above (containing intellectual standards) is the Socratic questioning. This questioning strategy is yet to be implemented in the Kenyan secondary schools since the curriculum does not define them (KICD, 2017). According to the task force report on the 21st century needs for the education sector 2012 in Kenya and the KICD 2017 on National Needs Assessment, the 8-4-4 curriculum which is currently used in high school is teacher centered and examination oriented without pedagogical skills on CT (KICD, 2017; Republic of Kenya, 2012).

To form knowledge (which is against unsound beliefs), thinking logically (inductive and deductive reasoning), rationally and for intelligent understanding; applying intellectual standards and criteria as shown in the table is necessary (Paul-Elder, 2008). The Kenyan secondary syllabus on the contrary does not teach those intellectual standards. It difficult to assume therefore, that the knowledge given/formed is sound or whether thinking extended during teaching and learning is logical and rational. Students should be taught to understand and use intellectual standards to the elements of taught in order to assess the extent and quality of their critical reasoning. Since in the Kenyan curriculum these elements of thought are not taught, it is difficult for learners to assess the quality and extent of their reasoning. Therefore, intellectual traits represented in the table above are called for so that learners in the Kenyan secondary schools can make judgment based on their own reasoning. This can be achieved by applying intellectual standards to elements of taught (Paul-Elder, 2008) habitually in teaching/learning in Kenyan secondary schools.

Following these intellectual standards and the Kenyan secondary school curriculum (KICD, 2017), it is clear that those elements of thought which leads to critical thinking skills were not factored into the curriculum and the secondary syllabus. There's no justification from the curriculum to prove that the Kenyan secondary education is free from ambiguity or confusion (understandable); free from distortion or error (truth); exact to the level of details which are necessary (specific); relate to issue at hand; having multiple relationships; having multiple perspectives; making no contradiction; focusing only on important issue and free from bias, self-interest or injustice. Therefore, it is difficult to say or approve that there is CT skills in the Kenyan secondary schools if the thought elements and intellectual standards are missing. Integrating of CT through the curriculum would be developed by creating a CT culture in schools. For the effective infusion of CT across the education system the qualities of teachers required, are:

a) Competent in CT
b) Pedagogical competent to teach CT
c) Committed to teach CT

These qualities would further be analyzed in the subsequent sections.

4.4 Integrated Approaches to CT pedagogy in Teaching/Learning at the Kenyan Schools.

This research sought to demonstrate the need for CT pedagogy in learning and teaching at the Kenyan secondary schools. The research assessed common themes to the integrated critical thinking approaches which can promote a critical thinking culture in our secondary schools.

i) Development of Convictions on the Value of CT pedagogy.

Professional development of a teacher enhances the professional identity and knowledge base of the teacher and improves their self-efficacy and commitment (Day & Gu, 2007) in the infusion of

CT. Teachers can be committed professionally to teach CT as a result of self-drive for further reading and continued learning by researching on CT, literature reading, and Inquiry based Learning.

ii) Desired Outcomes for Learners.

Teachers of critical thinking skills wish to see those learners who are open-minded, non-judgmental but receptive to perspectives of others and who can make independent decisions. Learners also need to be aware of their behaviour, deeds and feelings, in the real time doing right things with the right people and saying that which is right (Hui, 2016). Ordinarily, it's about circumstances and context, to make wise and right judgment. It needs thoughts and those thoughts must not be so in-depth that may cause paralysis. Eventually learners will become confident and independent in making decisions in almost all aspects of their lives be it out or in their classroom. It is accompanied by developing of moral courage to manage the outcome when decisions made are wrong (Hui, 2016).

iii). CT in Teaching-Learning Approaches/Strategies.

Teachers should explicitly teach their students criteria of critical judgment, the thought elements and how they could use intellectual standards to address their mode of thought. This is achieved by benchmarking the above teaching/learning approaches/strategies against those approaches which focus on the process of explicit evaluation and teaching of CT skills. Learners' critical thinking skills could be actively assessed using Paul-Elder Intellectual Standards (Paul & Elder, 2008).

Teachers' approaches and strategies for promoting critical thinking skills can be summarised as follows:

Approach/strategy	Teachers' role
Modelling thinking	Role model or walk the talk by making thinking critically a lifestyle
Using tools to stimulate thinking	Hands on activities such as drawing, calculating, agricultural activities, home economics and science experiments
Using collaborative learning	Inquiry based learning and debate/group discussion, community of inquiry
Infusing critical thinking through real world experiences	Applying critical thinking to making presentations for real audiences and infusing critical thinking about issues within the context of learners' experiences.
Questioning and other reading strategies	• Socratic questioning, element of thought and intellectual standards. • Visualising and prediction.
Promoting transfer of learning	To all programmes, daily interactions and subjects

Making Thinking Visible

a) Modelling

Epstein (2008) belief that CT can be modelled by teachers themselves in order to make learners critical thinkers; what you are is what you teach in the class. If one is a critical thinker and a reflective learner, one could automatically impart these qualities to one's students. In Kenya this is yet to take place because the curriculum does not define modelling but it can be achieved if teachers would start employing inquiry based learning

approaches together with learner-cantered teaching strategies (constructivist approach) during the delivery of content and instructions.

b) Using Tools to Stimulate CT

Teachers should make use of available tools and real life situations which is authentic to teach and promote CT across the secondary school syllabus. Authentic and real-life tools include videos, models, internet tools, experiments, and agricultural activities. Others are newspaper articles appealing for the learners, lived experiences, drawings, audio-visual aids, and selected texts, songs and routines in thinking. Epstein (2008) argues that 'philosophizing' with children as a strategy is very effective in teaching and promotion of CT in secondary classrooms.

c) Developing Thinking as a Social Endeavour

Putting learners in a community of inquiry has a great influence on learners' education (Marzano, Pollock & Pickering, 2001). Perkins (2008) argues that one can think critically through community involvement which overweighs personal energy. Cooperative inquiry group forms a community of inquirers during lessons. Within such community, learners listen to each other un-interrupted and hear the distinct opinions of their fellow learners. They work well in a community and honour the views of their friends. They share actively their views and construct on what their friends shared. Evidence of CT is seen as learners verbalise their thoughts and support their views with reasons and proofs (Arendt, 1992; Dewey, 1966; Hui, 2016; Lipman, 2003). In Kenya secondary schools classes are yet to be organised into community of inquiry thus making it difficult to teach and learn critical thinking skills. The community of inquiry therefore, can be organized in the Kenyan secondary school classrooms with specific philosophical and epistemological instructions

and theories to create meaningful learning experience and achieve higher order learning (Akyol & Garrison, 2008).

The community of inquiry encourages open-mindedness as it opens learners to a number of points of view on the same issue presented by their peers. Feedback to open-ended inquiries thoughtfully developed and analysis of varied responses from their fellow learners enable them to infuse their peers' ideas and their own (Lampert, 2006). The community of inquiry provide a ground for learners to practice CT when speaking and listening as they have room to listen to the points of view of their fellow learners, give feedback which is constructive and articulate their views. The usefulness of discussions/debates/inquiry in promoting CT was endorsed too by Yeh (1998) who argues that learners are enabled to look into other views, form, identify an issue and consider, and defend and respond to challenging arguments (Yeh, 1998).

d) Focusing on Real World Issues

An improvement in students' CT abilities in noted when questions which are challenging are posed in class (Shim and Walczak, 2012). Hence questions which are thought-provoking they argue provoke learners to give an issue a different look. They however, argue that developing of CT must invite teachers to balance intellectual support with cognitive matters (Shim and Walczak, 2012) through the explanation concepts which are abstract.

Teachers may use current affairs or emerging issues in the country like Corona and invasion of locust in some parts of Kenya in our case, to develop CT. Purposeful learning of real issues engage learners in developing critical thought. Effort should be taken to link

constantly real life situations with what they learn in class through authentic questioning. David (2008) noted that practical problems motivate learner interest and bring about focused thought as the learners apply and acquire new information in finding solutions to problems (David, 2008).

e) Questioning and other Reading Strategies

1) Questioning Strategy.

Teachers need to use techniques of Socratic questions to evaluate what learners know or think and provoke learner thoughts on varied issues as they emanate in their classrooms. Socratic questioning is rarely practised in the Kenyan secondary school classrooms. This is because teachers teaching are not formally trained to philosophize with learners and their main interest in teaching is attached to examinations which cannot foster critical thinking at all. By using Socratic questioning during discussions in class, learners start looking at things from various points of view. To question according Socrates (Arendt, 1992) would promote new ideas as the questions one ask more often generate more other questions depending on learners' responses.

Learners begin to question even their own thought following Socratic questioning, as well as start to question those questions raised by fellow learners. Questioning can be done very well with very young children in Primary which means that secondary school learners are in the best position to engaging in Socratic discussion. The questioning is disciplined, deep, and systematic and examines fundamental theories, issues, concepts, principles and problems. Students, teachers, or anyone who wants to probe thinking deeply can create Socratic questions, like for our case in secondary schools teaching and learning, so as to engage in critical thinking deliberation. In teaching and learning, teachers and students can

use Socratic questioning to probe learners' thought and assist them differentiate what they do not understand from what they do understand or know (to have intellectual patience). This is noted through questions such as:

- Is it one-sided argument?
- Do we have alternative perspectives not examined?
- Are there any implications if the argument is narrow?

Besides Socratic questioning, learners should also be taught how to question using critical judgment theory through 'enlargement of mind' (Arendt, 1992) or community of inquiry (Dewey, 1966) where their minds go searching. Thought Elements can be examined using intellectual Standards (Paul & Elder, 2008; Arendt, 1992). Costa (2008) argue that posting technically embedded-content problems and questions that stimulate inquiry and provoke imagination aids learning and CT. Questioning encourages learners to go beyond just learning to thinking about hidden issue in the context. This can be done, by asking hypothetical questions "what if" the technique is effective for generating new information (Cardellichio, & Field, 1997). Hypothetical questions should take the format:

- What happens if that was not true?
- What if that could not occur?
- What if I cannot do or I could do something?

2) Fostering CT Dispositions

Concerning CT dispositions, those cited by researchers as noted by Lai (2011), are: propensity to seek reason, inquisitiveness, fair-mindedness, open-mindedness, flexibility, willingness to and a respect in entertaining different viewpoints and a desire to be well-informed (Lai, 2011). During cooperative learning group and communities of inquiry,

learners articulate what they know and listen to other views and the varied points of view of others. Exposing them to different opinions, learners will choose better alternatives and be more open-minded.

Learners would be able to develop reasoning which is sound by looking at things from different perspectives. Learners would realise that their personal opinions in most cases is not the right one and thus narrow and they would open to new challenges on their ideas with new evidence. A teacher should build in students a mind-set of alternative perspectives by always raising questions with them to focus out of the box. Learners can possibly consider alternative ways with such a mind-set, instead of being dogmatic. Fostering CT dispositions involves being cooperative, being keen to the others ideas, willing to try risks and open-mindedness support the CT process (McBride, 2004).

f) Working for Transfer of Learning

By asking learners to predict foreseeable issues and problems they could make valid judgment, get learners to understand the link between writing, calculating, reading and listening, which shall help them make connections in all subjects taught in secondary schools. Noddings (2008) endorsed this method when he pointed out that it is important to guide learners to connect one line of thought to other thoughts in other subjects within the curriculum, and to everyday life. This has not been possible with the Kenyan syllabus for secondary learners. All teachers in Kenyan secondary schools therefore, need to explicitly think within the disciplines of their content area. They should also be armed with pedagogies/methods in thinking to integrate CT skills in their disciplines so that CT pedagogy/skills is integrated through the curriculum entirely. A research on the effects of infusing CT pedagogy into preparation course for a teacher indicated that stressing on CT skills,

even in one subject content topic may result in positive outcomes on teachers' attitudes on mathematics and their opinion towards the teaching of Mathematics (Sezer, 2008).

For example inquiry-based Implementation of biology laboratory could give an improved opinions on teacher in regard to science and how best they were imparted to learners. They preferred self-directed and flexible inquiry-based structure and had to use inquiry-based assignment from the lab in their classes in the future (Tessler, 2010).

Integrating and designing CT pedagogy into the specialised content by teachers will make them prepared to be part who effectively are able to integrate CT skills within their teaching area. Kenyan Universities and colleges in collaboration with the MOE could work to incorporate the teaching of explicit CT pedagogy and the integration of CT in all programmes (non-core & core) in training teachers for secondary schools. All teachers in this way, will be instructed systematically on how they could integrate CT pedagogy in their teaching areas and content of specialisation.

The frequency and degree with which CT pedagogy is integrated across the school curriculum the study also reveals it lies in a continuum. Continuum would markedly broaden if CT is practiced by all teachers in secondary schools in Kenya. Continuum nonetheless offers the potential of a professional development to promote competencies of a teacher in teaching CT, starting with simple methods to integrate CT across the curriculum and progressing to teaching explicitly CT and assessment of the reasoning quality. Due to the great inequalities in the CT practices of Kenyan teachers, there is a need to shape and understand beliefs in teachers concerning the value of CT (Williams, 2005) so as to make the integration of CT more pervasive in the classroom of secondary school.

iv). Using Constructivism

Critical thinking is among the seven core competencies in the 2-6-6-3 or competence based curriculum (CBC). Borrowing heavily from social constructivist theory by Dewey (1966), which suggests that teachers should only guide but not teach (learner-centered approach) and that parents are important in the process of education for their children, they argue that critical thinking will assist learners, to open up their mind, be in a position to accept and listen to information and points of view that may sometimes be different from their earlier held positions and beliefs (KICD, 2017).

The 2-6-6-3 curriculum encourages use of constructivism approach to integrate critical thinking into learning and teaching. Constructivism requires student participation in constructing their knowledge. Learners acquire first-hand knowledge by gathering knowledge using the Internet, experimenting, calculating and other resources and they share experiences. Even Though this is yet to take effect in Kenyan schools because the resources like internet and trained critical thinkers are not available in most of our schools and the school timetable is made in such a way that there is no extra-time for learners to interact with those resources; Constructivism can be enhanced in Kenyan classrooms using Inquiry-Based Approach, use of Socratic questioning and Paul & Elder Elements of Thought using intellectual standards. Friedemann and Wilhelm (1998) elaborated the benefits constructivism as:

> Powerful and big understandings of concepts instead of facts, which help learners to ask personal questions, follow individual interests, make individual connections, create new ideas, and come to conclusions which are unique (Friedemann & Wilhelm, 1998: 30).

4.4.2 Issues in Connection to the Integration of CT in Secondary Schools

Classroom as an Issue

Time constraint: To integrate CT across the secondary school, time is needed to get relevant resources and customize lessons. Time is needed for teachers to think through their goals in terms of CT and how to achieve the objectives. Learners' responses should direct how the discussion should flow by use of the Socratic style of questioning and authentically focusing on practical issues. These need more time than just didactically teaching a normal lesson. To develop learners as critical thinkers, little more time could be needed if the system of education was less exam-oriented.

4.4.3 Developing Key Categories from Themes

Making thinking visible through using tools to stimulate thinking, developing thinking as a social endeavour, working for transfer of learning, fostering thinking dispositions, focusing on real world issues, using constructivism and teaching thinking through questioning and other reading strategies leads to being pedagogically competent in teaching critical thinking. Having commitment to thinking critically through CT pedagogy leads to being committed to teaching-learning CT skills.

4.5 Working Paradigm for Integrating Critical Thinking Model in Secondary Schools

4.5.1 Critical Thinking and Learning Model (CTLM)

Critical thinking and learning model (CTLM) was selected as the best model for infusing CT in the Kenyan secondary schools during teaching and learning.

Figure 4: Critical thinking skills and its raw materials

The CTLM consists of Bloom's Taxonomy; dispositions (open-mindedness, self-efficacy and inquisitiveness); and the RED CT Model. Six cognitive skills of Bloom's are designated as lower order thinking skills (LOTS); understanding, applying and remembering and higher-order thinking skills (HOTS); creativity, analyzing and evaluating. LOTS support HOTS because Bloom's Taxonomy is hierarchical in nature, and cognitive environment is supported by dispositions, which are in constant interaction with the skills more especially the HOTS, to bring about CT skills.

i) **Disposition:** Teaching students to apply and retain HOT skills requires a culture that supports and cultivates CT skills. Dispositions, in contrast to abilities or skills, shape general orientation of an individual and reflect deep internalization of CT habits to thinking (Bloch and Spataro, 2014). Dispositional approach further implies a more ingrained and

robust setting to CT. The CTLM does not follow a certain sequence in nature, but requires the dispositions to be in place concurrent or during introduction of Bloom's Taxonomy. The CTLM is intended for both educators and learners. The ground work for CT can be prepared by teachers for students by aligning learning with critical thinking dispositions.

Key Dispositions according to the research are self-efficacy, open-mindedness, and Inquisitiveness. These three dispositions are explained and defined as:

a) Inquisitiveness: Inquisitiveness is intellectual curiosity, an inclination to be curious; it is the ability of wanting knowledge of things even those not obviously or immediately useful. Eager and curious to attain knowledge (new). This need to be encouraged in our learners. Powers of observation are used for one who is curious, to enhance and preserve an image of what surrounds them (Kashdan, 2010). Brings meaningful, intentional and proactive thinking in activities that are complex, ambiguous, and novel (Kashdan, 2010).

The presence of questions is the evidence of curiosity. A fundamental part is questioning in the learning/teaching process. It is a strategy of teaching which is effective and allows the teacher to extend beyond common knowledge after establishing what is already known and then to develop innovative understandings and ideas (Duron, Waugh, & Limbach, 2006). To say, it's not the destination but the journey, means that it's not the answer but the question that engages students according curiosity. The journey (the question), makes the destination (answer or result) satisfying and more exciting. Motivation of a learner to keep going comes from

curiosity since it starts the journey no matter how rocky the path may be. (Kowald, 2015). This is what is needed in the Kenyan secondary schools.

CT demands questions of the higher order thinking of Bloom's Taxonomy (analysis and synthesis) not those at the lower order. Those teaching should make curiosity and inquiry the central part in preparation of their lesson. This can be done, by asking hypothetical questions "what if" the technique is effective for generating new information (Cardellichio, & Field, 1997).

According to the Paul & Elder model hypothetical questions should take the format:

- What if it happens?
- What happens if that was not the truth?
- What if that did not occur?
- What if I cannot do or I could do something? (Cardellichio, & Field, 1997: 10).

Questions should assist learners and guide them in learning necessary material and information. Questions are meant to teach learners and not to test those learners (Harris, 2019).

b) Open-mindedness: An inclination to be open to conflicting or divergent views and be cognitively flexible. Personal beliefs is detached so as to have different opinion without self-interest or bias. It is one's will to review and accept reasoned opinions based on valid evidence.

Open-mindedness can be promoted if teachers can assist learners to:

- Listen and be alert to different views from their own,
- Listen to less powerful voices,
- Listen to those they do not agree with greater care,

- Suspend their assumptions temporarily when listening to those they do not agree with (Harris, 2015; Watson, & Glaser, 2010).

Open-mindedness is detrimental when one make snap decision. Since personal decision may not factual, this always is the major problem with making a snap decision. De Bono's Six Thinking Caps can be used by the Kenyan secondary school teacher to help learners become better thinkers critically (De Bono, 1999). Every cap stand in for a different perspective. To avoid making snap decisions, four of the caps are useful particularly. Facts are collected by the white cap, and has no interest in feelings or assumptions. One's emotions or intuition is included in the red cap. It is not possible probably to remove feelings from making decisions. Emotions is dealt with the red cap, to deter them from being seen as facts. Optimistic cap is the yellow cap, all the benefits are sought for by this cap. Black cap balances the yellow cap which considers the risks, and adds caution element. Barring an emergency, making decisions which are good, requires time, and the thinking caps give those who make decision a chance to look at the issue from various point of view before a solution is settled on (De Bono, 1999).

c) Self-efficacy: The ability to trust and be confident in individual well examined judgments, this is acknowledged while arguments and problems are considered. High self-efficacy learners are of the view that they have skills to hang on which will assist them manage life and to meet their goals (Margolis & McCabe, 2006).

Learners' disposition in Kenyan secondary schools can be developed by their teachers, by being provided with opportunities to experience success by completing a given task.

Tasks planned carefully should be difficult moderately. If a task is perceived by students too easy, it means the teacher doubts their capability. If the task is too difficult on the other hand, low self-efficacy is reinforced (Margolis & McCabe, 2006). Learners should be encouraged with their teacher by providing them with constructive, useful feedback.

Students working in a community offer a friendly environment, where self-efficacy is encouraged. In many countries and in Africa as well, many of learners expect the teacher to be all knowing in matters of education; they rarely contribute in answering or asking questions during learning. However, learners can communicate with others, mostly in a small community groups. This is evident, that in the community creativity and self-efficacy in those learners is increased (Harris, 2015). The advantages of community work are to enable learners to:

i. Split tasks which are complex to steps and parts
ii. Manage/plan time
iii. Improve learning via explanation and discussion
iv. Receive/give performance outcome
v. Give assumptions a challenge
vi. Stronger communicability (Anisa, 2018; Harris, 2015).

ii). Bloom's taxonomy: CTLM. The goal of the teacher should be to impart CT by developing it from the LOTS (Bloch and Spataro, 2014). Bloom's Taxonomy furthermore, is integral for the items which majorly build CTLM. Dimensions Matrix knowledge is part of the taxonomy. A desires in LOTS objective by a teacher, then remember or factual section is chosen. If abstract or HOTS combination, are needed by the teacher, then analyze

or conceptual section would be the best choice. Building HOTS from LOTS should be the objective of the teacher in secondary classrooms since HOT is the level where CT takes place. Bloom's taxonomy can used also in establishing lesson objectives similar to how it can provoke thinking for learners and teachers.

iii). CTLM RED model: Watson-Glaser (2010) and Pearson's (Harris, 2015) CT model (the ***RED*** model) provides a framework to an individual for thinking about their thinking. The ***RED*** model is based on three keys of critically thinking. Each skill fits together in a continuous sequence. The 3-step RED Model demands learners to draw conclusions, recognize assumptions, and evaluate arguments.

a) Recognition of Assumptions:

It is easy to listen deceptively to presentation or a comment and assume the presented information is true even without evidence to back it up. Questioning assumptions and noticing helps to reveal unfounded logic or information gaps. Assumptions need to be examined from varied viewpoints. To think critically this model posits, recognizing assumptions is must not to assume that presentations or comments made are always valid even though they lack evidence to support them (Watson-Glaser, 2010; Harris, 2015). Therefore:

i. Teachers in secondary schools should ensure that groups of learners are as diverse as possible when assignments call for community of inquiry. Diverse learners look at issues from very different points of view and in new ways that prevents assumptions which are unchallenged (Critical thinking training, 2013).

ii. Learners need to know that what they think is their best strength (technical, cultural, base of knowledge, etc.), may be their best weakness also. Learners should be

encouraged to ask themselves what they are missing or what they may not be seeing (Critical thinking training, 2013).

iii. Learners can learn to analyse the merits of a piece of work if they are given enough practice by recognizing what they assume (unstated or stated), and evaluating their usefulness (Harris, 2015; Watson, & Glaser, 2010).

b) Evaluation of Arguments:

Evaluating arguments is the art that entails objectively assessing and analyzing information and accurately understanding how emotion influences the situation, and questioning the quality of supporting evidence. Confirmation bias is the common barrier in our secondary school teaching and learning, or using emotions to interfere with objective evaluation. The art of evaluating arguments requires students (more so the Kenyan secondary school learners) to understand how emotion influences the situation and question the quality of supporting evidence (Harris, 2015). Learners consider if they can believe an argument or act otherwise by analyzing those arguments (Watson, & Glaser, 2010). Therefore:

i) Learners should assess and investigate whether argument given is balanced and fair, or biased? Bias is noted through question such as:

- Does the argument sound emotional?
- Is it one-sided argument? Do we have alternative perspectives not examined? Is there an implications if the argument is narrow?

ii) Logic and Evidence, learners can ask the following questions:

- Are premises given relevant and reliable?
- Is there a contradiction from the author?

- Does the writer accept alternative view?
- Do we need further justification for the premises?
- Do the premises follow a logical order to the conclusion? Is there some gaps following the argument in logical or reasoning fallacies?

iii) Tone:

Does the writer's attitude of fit to the content? e.g.

- Is the attitude very serious?
- Is it so dismissive?
- Is the attitude too dramatic?

c) Draw Conclusions:

Diverse information are brought together following logical analysis from evidence available to arrive at valid conclusions that is crucial when making a decision. People doing this must be careful not to wrongly generalize outside the available evidence and can alter their held position if the available evidence demands it. They are often characterized as having good judgment and this is what we need in our secondary school learners. Conclusions drawn follow logically from the evidence available. All relevant information are evaluated before drawing a conclusion, selecting the most appropriate conclusion, avoiding overgeneralization beyond the evidence, and judging the plausibility of different conclusions (Watson-Glaser, 2010; Harris, 2015). Therefore:

i) Learners should infer or imply the information given to create meaning from what is not well articulated. Writers/teachers should provide clues to help learners examine what is clearly spelled or stated out at all times.

ii) To draw conclusions effectively, learners ought to:

- Weigh from their own experiences, what they know already.
- Get every information given by the writer (motivations and personalities, conflicts, the place and time, etc.) (Harris, 2015; Watson, & Glaser, 2010).

4.5.2 Effective Strategies and Teaching Models

Learning and teaching actively involves a learner and require them to think and engage about that which they are doing (Prince, 2004). Evidence from large bodies, indicates goals of teaching is to tap into higher order thinking skills (HOTS) or critical thinking. Therefore, learning actively is supported by this evidence than lectures which are passive (Bloch and Spataro, 2014).

4.5.3 Why CT is so critical

At all levels employees, meet challenges due to the rapid information from the increased rate of business and global space (Chartrand, Flander, & Ishikawa, 2013). CT, therefore, is needed in our learning institutions, since it focuses on the most useful information, proper questions are asked, separating opinion from facts, and false assumptions from facts, and all possible solutions are considered before a final course of action is arrived at. CT indeed is vital throughout established businesses, therefore, it is a critical tool and essential, for good management. The integration of CT in our secondary schools is called for due to its urgent need in the job market and higher studies.

The economy of today has been faced with all of its uncertainties, challenges of competition and with constant threat and upheavals, CT skills is now the top needed competency to effectively manage businesses, organization and companies (Martinuzzi, 2014; Brotherton, 2011). This is why it is of great importance to teach these skills in secondary schools before learners go for higher studies and to the job market or business.

In an environment like such, there is high possibility of poor management due wrong unexamined decisions which appears greater this days than before (Martinuzzi, 2014).

Since tomorrow's workforce is represented by today's students, secondary education and higher education ought to give an answer to business climate which is ever-changing. Producing graduates with CT pedagogy and CT dispositions will improve the productivity of organizations which are employing them.

Critical thought is useful especially in this diverse global world where information of every sort is available. It assists learners to be self-disciplined, life-long, and independent who can manage any information s/he comes across in the learning environment.

An autonomous learner is capable of drawing from different resources. This is especially helpful when learners tap into the huge amount of data available in the internet to do individual and group projects, presentations and papers, homework assignments. CT is a tool that will provide learners a basis for analyzing and evaluating information and also help them in sorting through the vast amount of information. Becoming independent learners is important for students. It is therefore, the duty of teachers to provide learners with a chance to practice CT (Kant, 1996; Arendt, 1992; Martinuzzi, 2014).

4.5.4 Obstacles Associated with Critical Thinking

There is disconnection how employers define CT, and how academics do (Jenkins, 2017). Universities and colleges clearly, across the country do not teach adequately CT skills, even though they insist to be teaching (Jenkins, 2017). Extended to secondary schools it is even worse since

those graduates with little knowledge in CT are expected to promote CT culture in secondary schools.

Teacher indeed are not teaching this concept. This has been found to be very common in almost all Kenyan secondary schools because the education system is examination oriented (KICD, 2018). Van Gelder (2005), noted that many professors in colleges only teach CT theory as a course or expose learners to good examples of CT and assuming it will make those learners better thinkers critically. Learning about CT is not enough, learners actually must practice CT. What teachers are doing is obviously a discrepancy of the true class picture. When teachers are not clear about CT, how then, can learners demonstrate CT dispositions?

Another setback is the teacher-centered approach, which continues to be a common method of instruction. Teacher-centered is a one directional channel for delivering content where the teacher speaks, and the learners listen without interaction (student-student or instructor-student) or response. The method is efficient since a teacher is capable to teach large amounts of content within a short time. Teacher-centered method is well suited for recalling what was taught evidence suggests, but, discussing achieves higher cognitive level of knowledge (Barman, Magee, & De Caprariis, 2001). Since learning is an active process it should make learners do important task as they think critically on the task (Prince, 2004). If teacher centered method is taken to be the main method of instructional, this would assist to prove why many learners more from Kenyan Universities and colleges struggle to think critically after undergraduate and graduate study. The same student cannot be expected to teach secondary school students how to make critical judgment.

4.6 Conclusion

Critical thinking pedagogy and skills will assist learners and teachers to meet the challenges faced in education such as unemployment by finding ways of creating employment, rot learning, moral skills among others. The study therefore has found that CT pedagogy and thus CT skills are lacking in the 8-4-4 curriculum and the progressive 2-6-6-3 curriculum because the two systems of education does not define how the skills can be imparted to learners during teaching and learning process. Integration of CT across the school curriculum will only be done when the stakeholders and curriculum developers have created a CT culture in those schools.

Secondly, based on the inductive analysis; being competent in CT, being committed to teaching CT, integrating CT holistically in all school programmes, being competent pedagogically and having a school-wide practice of CT creates CT culture in learning and teaching at secondary schools. Being competent in CT, being competent pedagogically and being committed to teaching CT are all traits of educators who are capable of teaching CT skills. Having a practice throughout the school of CT and integrating CT in most programmes of the school is linked to a culture of a school with CT practice.

Lastly, for teachers to help learners to become better critical thinkers, a CT and Model for Learning similar to the Pearson's and Watson-Glaser RED model should be applied. Even though we have obstacles for better integration of CT in the Kenyan secondary classrooms, secondary school teachers should take the role of promoting the understanding of CT and that administration department to provide the resources necessary for the teaching of CT in those schools. In addition, secondary teachers ought to get exposure to multiple models for teaching, those which foster CT. Consequently, administration must revisit tenure to improve balance on research, and teaching.

When CT skills will be taught better than the lip service, Kenyan secondary schools shall realize how easy to meet effectively the 21st-century demands for higher learning and workplace.

CHAPTER FIVE
5.0 STUDY FINDINGS

5.1 Introduction

This chapter sought to establish from the analysis in chapter four, how the Kenyan education curriculum had integrated critical thinking approach in teaching/learning in secondary schools. The study also sought to find out from the analysis whether integrated approach to critical thinking pedagogy in teaching/learning is as a result of a CT culture in schools.

5.2 Findings on the Status of CT Skills in Kenyan Education Curriculum

The status of integration and realization of critical thinking in Kenyan secondary school curriculum was determined through critical analysis. It appears that CT skills may best be integrated into the teaching-learning curriculum in secondary schools in Kenya by employing both constructivism (learner-centered approach) and logic (inductive and deductive reasoning). In constructivism, learners are guided to identify and solve the problem/challenge. To understand the nature of the problem, strategies for solving that problem (inductive and deductive reasoning) are needed. Therefore, the curriculum needed revision to include logic and epistemology. Through logic, mainly using deductive reasoning, learners are required to break abstract or complex information/statement/problem to small understandable units in order to get a clear meaning out of the information given. Inductive reasoning is applicable in situations where an idea/concept such as teaching pedagogy in one subject to promote CT is generalized/applied to all subjects to promote CT. Epistemology, in this case constructivism, is a learner-centered approach where learners can be placed in a community of inquiry (Lipman, 2003) with a task to find solutions. An example is when learners are tasked to find ways to solve the problem of meager resources in their school such as water scarcity in relation to demand for the same.

5.3 Findings on the quest for Integrated Approaches to CT pedagogy in Teaching/Learning.

Integration of CT pedagogy across the curriculum in Kenyan secondary schools would be developed when the critical thinking culture has been created in schools. The theory of integration of CT in schools has five sub-propositions and two propositions. Qualities required of academics and teachers for the smooth integration of CT across the curriculum are focused by proposition 1, they include:

a) CT curriculum for teachers and students
b) Teachers committed to teach CT
c) competencies in CT pedagogy

Proposition 1 has 3 sub-propositions (above) which have proper implications for the teachers professional practice and curriculum developers.

CT curriculum for learners and teachers: Sub-Proposition 1

As explained in chapter 4 and 5.2 above, pedagogy for critical thinking is necessary for Kenya to promote the CT culture in teaching/learning. Therefore, it is important to include the CT in teaching/learning in Kenyan secondary school curriculum.

Commitment to teaching critical thinking: Sub-Proposition 2

The degree of integration of CT by teachers depends on their commitment and passion to teaching CT. This is seen out of their desired outcomes, beliefs and convictions for engagement with learners. Firstly, it is important to accept that change is a challenging and gradual process; secondly, periodic feedback on learners' progress is essential; thirdly, sustained support and

follow-up is necessary. Elmore (1996) suggested some ways of competency building in teacher's CT based on development of professionalism:

a). Teachers to be encouraged to work with those teachers who seem to have competency in integrating CT pedagogy through Lesson Study or peer observations within the curriculum. Teachers through these observations need to show implementation of CT pedagogy in the different subjects be they languages, humanities, sciences and arts.

b). Resources such as CT pedagogical sample lessons and research articles be provided by MOE to guide teachers what CT looks like in the classroom at the upper and lower secondary levels.

c). Professional discussions can be developed between teachers who are competent in integrating CT through the curriculum.

d). It is necessary if MOE introduce on job training of CT skills like the questioning strategy by Socrates, Fostering Dispositions in CT and CT Strategies for teachers in secondary schools.

Competencies in Pedagogy during teaching of CT: Sub-Proposition 3

For CT to be applied in daily life, teacher competency in CT should be developed to the extent that it would be more elaborate in integration of CT in secondary school classrooms.

CT skills should lead to applications in real life since it is not an end in itself. Teachers used to participating in learning which is authentic using practical situations have a stronger likelihood of applying CT in their daily activities and therefore promoting the nature of everyday interaction in the classroom. CT as 21st century skill for global citizens that provides link between authentic

learning and curriculum of the school in a practical universe have a possibility to make an improvement on ethical practices and quality of everyday activities for everyone. Jeong and VanSickle (2003) noted that a detailed form of understanding concepts in students can be developed when concepts they are engaged in bring learning outcomes applied to practical situations because these concepts when observed as related to practical life become more worthwhile.

A culture of inquiry can be created by teachers within the classroom by modelling and sharing questions and engaging own curiosity with learners (Fontichiaro 2010). Higher-order thinking/challenges can be promoted successfully, if teachers' thoughtfulness model by applying students' insights and show how they came to solve the problem other than providing solutions for issues which are problematic (Jeong & VanSickle, 2003).

A summary of methods/strategies that this study has identified and which could form part of the repertoire to be used by teachers include the following:

a. **Community learning**. Inquiry-learning in a community leads to continuous gain (i.e., reasoning more at high-level leads to faster production of solutions and ideas), more transfer of that which is studied in one situation to the other situation (transfer to self from a group) compared to individualistic or competitive learning-inquiry (Johnson & Johnson, 1999). If teachers value and solicit for learner ideas, and give room for learner discussion, then learners will try to have respect for reasoned observation of each other.
b. **Focusing on issues which are Practical**. CT happen mostly in the situation of challenging issues since it does not happen to opinion or preference with acceptable solutions (Case & Wright, 1997). By making discussion critical whereby learners are needed to weigh options which are plausible, learners will be part of CT lot. These problems could be associated to

practical situations or dissonance created with learners' prior beliefs. Some strategies which are more effective to get learners to critically think include among others examining how issues which are controversial relate to practical life through discussions that brings about CT.

c. **Employing Socratic questions.** Questioning in different ways must be made use by all teachers in their classrooms. Questions drive thinking not solutions and therefore to improve learner CT through instructions, it is necessary to ask questions to provoke their thinking which result in more questions. Teachers who model Socratic questions would lead in learners forming a mind which can always question.

d. **Foster CT dispositions.** Teaching problem-solving and CT skills is not enough. Learners need to be assisted by their teachers develop the inclination or disposition to use mind habits which is productive, managing impulsivity, including persisting, self-efficacy, inquisitiveness, open-mindedness and left open to learning that is continuous–individually (Arendt, 1992; Costa, 2008). CT dispositions developed in learners boosts their capability to reflect on perspectives and possible solutions when faced with open-ended problems & complex before deciding on the outcomes (Lampert, 2006).

Necessary factors thought about for the creation of a CT culture include:

a) Developing a CT culture through a shared vision
b) Teachers committed and competent in teaching CT
c) Integration of CT holistically through all programmes in the school curriculum
d) CT practice across the school

Developing a CT culture through a shared vision: Sub-Proposition 5

Practice of CT will be achieved across the school when the vision of culture of thinking developed is to be part of the community in school as a whole which include; members of the board, teachers, learners, parents and school leaders. Right climate should be created which accommodates a community that promotes critical thought and reflection (Kassem, 2000). A culture of the school which is inclusive forms the school community which is democratic (Carrington and Robinson, 2004).

Teachers committed and competent to teaching CT: Sub-Proposition 6

The integration of CT holistically in all programmes of the school (non-core and core) for the creation of a CT culture is necessary. Instruction of CT systems approach for which thinking is integrated into all grade levels and all subjects in the Kenyan secondary school is called for.

To support the above Propositions it is important to develop a professional structure to promote competency in pedagogy needed for teaching CT in teachers' training colleges and Universities. Policy revision is also needed that pertain to proposed changes in the Kenya certificate of secondary education (KCSE) examinations.

5.4 Findings on the Proposed Critical Thinking Pedagogical Paradigm

Having found that CT is not well articulated in Kenyan secondary school curriculums (CBC and 8-4-4), Critical Thinking and Learning Model (CTLM) was suggested as the most appropriate model for integrating into teaching and learning CT in those schools. The critical thinking and learning model paradigm was found to consists of Bloom's Taxonomy; dispositions (open-mindedness, self-efficacy and inquisitiveness); and the RED Critical Thinking Model.

5.4.1 Critical Thinking and Learning Model (CTLM).

Bloom's Taxonomy-CTLM

Bloom's taxonomy has six cognitive skills designated as LOTS (lower order thinking skills; remembering, application and understanding) and HOTS (higher order thinking skills: synthesis, evaluation and analysis) which are hierarchical in order, LOTS supporting the HOTS. Bloom's taxonomy is integral for the elements which majorly make up the CTLM. Building HOTS from LOTS should be the objective of the teacher since HOT is the level where CT takes place. Bloom's taxonomy can be used also in establishing lesson objectives similar to how it is used to form provoking thought questions for learners and teachers. The HOTS are thus the CT skills. Therefore, Bloom's taxonomy is appropriate for integrating into teaching/learning CT skills.

CTLM Dispositions

Inquisitiveness need to be encouraged in our learners particularly in the Kenyan secondary schools. Curiosity in learners or inquisitiveness can be encouraged through questioning. Curiosity or inquisitiveness is a strategy of teaching which is effective and allows the teacher to extend beyond common knowledge after establishing what is already known and then to develop innovative understandings and ideas (Duron, Waugh, & Limbach, 2006). CT demands questions of the higher order thinking of Bloom's Taxonomy (analysis and synthesis) (Kowald, 2015). Those teaching therefore, should make curiosity and inquiry the central part in preparation of their lesson. This can be done, by asking hypothetical questions "what if" the technique is effective for generating new information.

Secondly, learners in Kenyan secondary schools should detach personal beliefs so as to accommodate different opinion without self-interest or bias. This is termed as open-mindedness

and can be promoted when teachers would assist learners to listen and be alert to different views from their own and, be willing to suspend their assumptions temporarily when listening to those they may not be agreeing with.

Most importantly, learners need to be placed in a community of inquirers. A community of inquirers offers a friendly environment, where self-efficacy is encouraged (McCabe, & Margolis, 2006). In the community, creativity and self-efficacy in those learners is increased since learners can communicate with others. Learners' dispositions can therefore, be developed by their teacher, by being provided with opportunities to experience success by completing tasks planned carefully and moderately difficult.

The RED Model

For learners in Kenyan secondary schools to think critically, they must recognize assumptions not to assume that presentations or comments made are always valid even though they lack evidence to support them (Harris, 2015). This can be achieved when learners in communities of inquiry are made as diverse as possible by their teachers when doing assignments.

Learners too, should assess and investigate whether argument given is balanced and fair, or biased by: Understanding how emotion may influence the situation and question the quality of supporting evidence, by accepting alternative views and ensuring that premises follow a logical order to the conclusion, and that the tone of the writer fits the content (Harris, 2015; Watson-Glaser, 2010).

Our learners therefore, need to be careful not to wrongly generalize outside the available evidence. Conclusions drawn must follow logically from the evidence available. This can be achieved when relevant information are evaluated before drawing a conclusion, selecting the most appropriate conclusion, avoiding overgeneralization beyond the evidence, and judging the plausibility of

different conclusions. To draw conclusions effectively, learners ought to get every information given by the writer and weigh from their own experience what they already know.

5.5 Conclusion

Central to critical thinking in a nation is equipping her learners for the future which is unpredictable. This can be achieved when young people like those in the Kenyan secondary schools will be meant to think for themselves and find their own solution to new challenges faced in the future. Being a confident person who is able to think critically and independently is one of the outcomes desired in education. Based on the inductive analysis; being competent in CT, being committed to teaching CT, integrating CT holistically in all school programmes, being competent pedagogically and having a school-wide practice of CT creates CT culture in learning and teaching at secondary schools. Having a practice throughout the school of CT and integrating CT in most programmes of the school using appropriate model is linked to a culture of a school with CT practice.

CHAPTER SIX

6.0 SUMMARY AND RECOMMENDATIONS OF THE STUDY

6.1 Introduction

This chapter sought to provide the study summary of findings and suggestion for further research. Suggestion for further research would be contained in the recommendation and the summary of study findings will be contained in the conclusion. In the conclusion the study sought to provide the summary: analysis and assessment of the status of CT in teaching/learning in the Kenyan secondary schools; of the Kenyan secondary school culture and its integrated approach to CT and; a paradigm for integration of CT in teaching/learning in Kenyan secondary school curriculum.

6.2 Summary of the Study

At the centre of a Learning Nation, CT School vision is that learners be equipped for the future which is unpredictable. This is to ensure that learners can think individually and attempt to find solutions to challenges they are faced with. In connection to this vision, being confident and able to independently think critically is the outcomes needed for education in all nations, Kenya not an exception. A philosophical critique of critical thinking pedagogy in Kenyan secondary schools' curriculum was the main objective of the study. From the findings, CT pedagogy and thus CT skills were found lacking in the 8-4-4 curriculum and the progressive 2-6-6-3 curriculum because the two systems of education did not define clearly how the skills were to be imparted to learners during teaching/learning process. The integration of CT across the school curriculum will happen once the stakeholders and curriculum developers have created a CT culture in those schools.

Integrating CT by integrating disciplinary content and thinking to disciplinary development of understanding is sound educationally and a step towards direction which is right. Without MOE directions and guidelines which are clear, nevertheless, more particular in the secondary schools,

CT teaching across the curriculum in secondary schools may been seen as an add-on or as an optional extra, where there is competition with the intended curriculum for time, and given minimal recognition in KCSE, examination which is high stakes for secondary school candidates in Kenya.

Even with commitment by some teachers to the integration of CT within the curriculum, this research has indicated that, they might be missing substantive background knowledge which is necessary and pedagogy of assessing their students on how best they critically think. Rooted in the experiences of teachers' commitment to the CT integration, this research, had suggested mechanism in which CT policies and ambitions of the school might be revised to achieve required goals/objectives. Teachers need to have a passion for CT and this skill purposefully should be integrated in all secondary school programs in totality. Only by equipping all teachers to integrate CT across the curriculum in Kenyan secondary school systematically, can the critical thinking culture be realised in those schools and across the nation at large.

Based on the inductive analysis; teachers competent in CT, committed to teaching CT, integrating CT holistically in all programmes of the school, competent pedagogically and practicing of CT across the school creates CT culture in learning/teaching at secondary schools. Being competent in CT, being competent pedagogically and being committed to teaching CT are traits of teachers capable of teaching CT skills while practising of CT across the school and integrating CT in all programmes of the school leads to a school culture practising CT.

A CT and Model for learning similar to Critical Thinking and Learning Model (CTLM) which consists of six elements of Bloom's taxonomy, CT dispositions and Watson-Glaser/Pearson's RED model of CT are important in teaching/learning and integration CT across secondary school curriculum. Even though we have obstacles for better integration of CT in the Kenyan secondary

classrooms, secondary school teachers should take the role of promoting the understanding of CT to their learners. School administration too, should provide to teachers with the resources necessary for the teaching of CT in their schools. Teachers too, ought to get exposure to multiple teaching models so as to foster CT dispositions. Lastly, administration must revisit tenure to create a balance on research, and teaching of CT. The study, therefore, concludes that if those strategies are observed, the Kenyan secondary schools shall realize a CT culture, the 21st century skills for the global citizen, for higher learning and the workplace.

6.3 Recommendations and Further Research

Investigating the status of integration of CT within or across the Kenyan secondary school curriculum in general and recommendation for more action-based research is called for in secondary schools teaching/learning. These action site-based researches may likely focus on integrating CT practice in various subjects which are core such as Kiswahili, humanities, English Language, Science, Social Studies, Arts, Mathematics and technical subjects as well as subjects which are not core like Music and Physical Education. Further Research on proper integration of CT in the secondary school curricular may be productive.

Research in the future could also investigate systematically how transfer of CT to other domains of knowledge might happen by training only within one domain. Further research is called for to investigate if it is possible to extend CT teaching/learning for learners in primary schools. It may be beneficial in addition, to find whether strategies for CT exist which improve the outcome on test items which are standardised when time of the curriculum is spent on promotion of CT. Examining learners characteristics can also be a direction that is important for researches going forward. The point to this being, prior experiences of learners in education and beliefs of the family on how they value CT may play a role in the effectiveness of teaching CT.

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