COMPETENCY BASED CURRICULUM AND CREATIVITY LEARNING OUTCOMES AMONG GRADE FOUR PUPILS IN MAKUENI COUNTY, KENYA

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DECLARATION AND APPROVAL

Declaration by the Student

This thesis is my original work and has never been presented for a degree in any other University or for any award.

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DEDICATION

I dedicate this work to my wife Mwikali and our dear children Muuo, Mumo and Mutheu.

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I also thank the authorities that gave me permission and legal barking to interact with respondents to collect data. In the same breath I thank the respondents who allowed me to ask them research questions and interact with them to collect data. Without the respondents' inclusion to get a real picture of what is happening on the ground and hence test the research hypotheses the study would be incomplete and fairly useless. The respondents form the bulk of the persons who the research is poised to help. By implementation of the research recommendations, developments may be realized.

ABSTRACT

21st century is an era of technological advancement, unpredictability and unfamiliar demands. Consequently, it is vital that creativity remains at the heart of learning in order to foster life-long skills such as idea generation, hypothesis making and testing, problem solving and self-efficacy among others. These are sub-skills of the vital competence, "creativity". Reducing levels of creativity among learners seen for example in their reduced levels of coming up with projects for science fairs and the significance of creativity in successful living motivated the researcher to undertake a study purposed to evaluate the influence of Competency Based Curriculum (CBC) on creativity learning outcomes among grade four learners in Makueni County, Kenya. Objectives of the study were to establish the: extent to which core competencies nurtured in CBC influence creativity, relationship between teaching and learning approaches in CBC and creativity, extent to which teacher induction into CBC contributes to learners' creativity and to examine the relationship between CBC instructional materials and creativity learning outcomes. The study was informed by constructivism and discovery learning theories. Mixed methods paradigm and triangulation design were employed in the study. The target population for the study was 38,905 individuals comprising 34,847 grade four pupils, 3,180 teachers, 832 Head teachers, 37 Curriculum Support Officers (CSOs) and 9 Quality Assurance and Standards Officers(QASOs). Stratified random sampling was used to select 17 primary schools. The strata were the nine sub-counties constituting the County. Krejcie and Morgan formula was used to determine sample size which was 380 respondents. The pupils, teachers, head teachers, CSOs and QASOs were 323, 31, 17, 6 and 3 respectively. Interview guide, questionnaire, observation schedule and pupil creativity test were the data collection instruments. Interviews were for head teachers, CSOs and QASOs. The questionnaire was for the teachers. Data was collected from pupils using observation schedules and tests. Piloting of the research instruments was done in three schools in the neighboring Machakos County. Validity was established by supervisors and experts in the School of Education, Machakos University. Cronbach alpha reliability coefficient was used to establish reliability for quantitative data collecting instruments. It was 0.907 hence they were reliable. Quantitative data was analysed using Statistical Package for Social Sciences (SPSS) version 27 programme and presented in tables. Descriptive statistics used were: frequency, percentage, mean and standard deviation. The inferential statistic used was regression. Qualitative data was analyzed thematically and presented in narrative forms. The research established that, 74% of grade four pupils' creativity can be accounted for by CBC. The study concluded that, core competences, teaching and learning approaches, teacher induction into CBC and CBC instructional materials had statistically significant influence on pupil's creativity learning outcomes and should be reinforced to maximize their influence to learners' creativity. The recommendations were that the education stakeholders should ensure that: all the core competencies are properly nurtured, follow-ups are done on teacher training in CBC and motivate teachers to participate in the training, trainers are experienced and do efficient training and schools have enough funds to acquire instructional materials.

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LIST OF ABBREVIATIONS AND ACRONYMS

ASEI: Activity Student Experiment Improvisation

BECF: Basic Education Curriculum Framework

CEMASTEA:Centre for Mathematics, Science and Technology Education in Africa

CBC: Competency Based Curriculum

CSO: Curriculum Support Officer

IBL: Inquiry Based Learning

ICT: Information Communication Technology

INSET: IN- Service Education and Training

KBC: Knowledge Based Curriculum

KICD: Kenya Institute of Curriculum Development

KIQs: Key Inquiry Questions

MoE: Ministry of Education

NACOSTI: National Council for Science, Technology and Innovation

QASO: Quality Assurance and Standards Officer

SMASE: Strengthening Mathematics and Science Education

SPSS: Statistical Package for Social Sciences

TTCT: Torrance Test of Creative Thinking

CHAPTER ONE

INTRODUCTION

1.1 Introduction

This chapter contains background to the study, statement of the problem, purpose of the study, objectives of the study, research hypotheses, justification of the study, significance of the study, scope of the study, limitations, delimitations, assumptions of the study, and definition of key terms.

1.2 Background to the Study

Growing demands for the acquisition of 21st century skills, introduction of technology to our everyday life as well as globalization have affected teaching and learning. It has brought the need to guarantee to everybody the achievement of new critical competencies for their personal and societal development (Pamier, 2017). Due to globalization in the 21st century and the emergence of a knowledge-based society in which knowledge in various fields is viewed very critical, the term/quality "competency" has attracted lots of attention. Today, business schools are challenged by rapidly changing industrial environments that require matching curricula with appropriate and expected business competencies in their graduates (De Los Santos, Dominguez &Lafrance, 2015.). Learning institutions must therefore respond to these stakeholders' expectations of developing 21st century competences in the eminent increasingly competitive knowledge-based economy (Scheopner-Torres, Brett & Cox, 2015).

Claro (2009) views competencies to be knowledge, skills, and attitudes required for a successful life in a knowledge-based society. Milkman (2017) explains that, Competency-Based Education (CBE) involves mastery of discrete (tangible hence

applicable) knowledge and skills as the gate for learners to progress to more advanced lifestyles. As opposed to traditional education, which was based on a fixed length of academic time, Competency Based Curriculum (CBC) allows learners to move at their own pace, spending as much or as little time on each strand as personally necessary to demonstrate mastery of desired competencies.

According to Makunja (2015), CBC is not a new concept in the education systems of the world. Demand for greater accountability in education being assessed by its contribution to community development gave great impetus to adopt CBC. Competence Based Education is anchored majorly on what students can do (performing tasks) on top of what they know about the tasks. In this respect, the notion of competence/ability becomes the key word (Tabaro, 2018). A student is said to be competent if s/he has specific knowledge, skills, attitudes and values required to perform a real-life task.

Globally, CBC has been adopted to help satisfy the need for a skilled workforce for economic development. In the United States of America (USA), CBC has made considerable inroads in its educational system (Natale, 2011). CBC is advancing across USA as a critical component of creating an education system able to personalize education while staying true to the vision of an equitable education system (Denise, 2011). In the USA, CBC was introduced due to concern about low student achievement and poor quality of teacher training. These prompted a need to structure the outcome of learning to encourage teachers to express their teaching objectives in terms of observable student behaviour. It was thought that, the approach would improve schools, teachers, and teacher educators' effectiveness and serve to address society's concern about unsatisfactory performance in the development of

programs in teacher education in the USA. To date, CBC is not completely actualized in USA primary schools (Wongnaa & Boachie, 2018).

In the European Union (EU), different Member States have gradually incorporated CBC into their educational legislation (García-López, Gutiérrez, Pastor & Romo, 2018). The seven key competencies set out in the European framework are communication in mother tongue, communication in foreign languages, mathematical competence, digital competence, learning to learn, social/civil competence, entrepreneurship, and cultural expression. One of the main aims of these key competences is to ensure that, basic education and training systems equip children and young adults with the fundamentals of further learning and working life (García-López et al., 2018). The CBC concept moved to European countries due to the economic recession caused by the widespread unemployment among the youth (Komba & Mwandanji, 2015).

Several techniques of learning were proposed in the United Kingdom in order to enhance creativity in learning. One of the methods aimed to establish which learners majorly learn by kinesthetic, verbal or visual teaching and learning methods. The technique provided learning activities that would match with the preferences of each learner. Scholars specifically in England prioritised creativity learning outcomes in education. This was as a result of a study conducted by the British National Advisory Committee on Creative and Cultural Education (NACCCE) in 1999 that advised that, for an education system to meet global standards, it should value and integrate creativity in research, teaching and learning. UNESCO also notes that, learning institutions of the 21st century should anticipate the emerging demands of the youth

as a response to societal changes by nurturing their creativity since being creative is fundamental for success (Aud,McCammon & O'Farrell, 2007).

Innovation which is borne of Creativity is a critical propeller of human advancement (Hennessey & Amabile, 2010). A lot of scholars have studied the contribution of creativity in the community and in education. Such scholarly work has heightened the desire of building the creative ability in learners. Other researchers have investigated how teachers' views on creativity as well as exams influence instructors' ability to develop divergent and creative thinking in learners. Although creative ability and products provide solutions to industrial and economic challenges, innovative people are needed to better our societies and solve emerging challenges in the community.

In Australia, Corcoran (2006) undertook a research aimed at inculcating creative thinking among senior students in secondary school. Based on the revelations of his investigation, Corcoran recommended that, instructors should involve their learners in experiences that highly involve social interaction. This would be achieved by building learning environments that stimulate and motivate creativity. This would culminate in maximising their learners' creative learning outcomes.

In China, teachers of science value the significance of creativity in science education and have consequently identified several methods which can scale up scientific creativity learning outcomes. Most of the research has generally used cognitive methods to foster creativity learning outcomes in students. For example, Cheng (2004) undertook a study whose aim was to come up with ways of nurturing scientific creativity learning outcomes in Hong Kong. From his research findings, he

concluded that, employing open inquiry method in teaching positively influences learners' creative ability.

In the developing countries, education systems experience a growing gap between their curricula and the demands from society, business, and industry for a more flexible workforce with high skills in problem-solving, teamwork, and project management. CBC adoption in most African countries is a modification of similar frameworks from the developed countries (Cheptoo, 2019). The implementation has been imposed on the countries following directives of the government or due to Western non-governmental organizations' support. East Africa for example signed the East African harmonization policies, which required the countries to adopt CBC. However, the adoption has been done amid challenges like a lack of expertise in African teachers (Cheptoo, 2019). Generally, many research findings on the implementation of CBC indicate shortcomings. Studies have majorly been on the implementation of CBC, challenges facing CBC, attitude towards CBC, but not on the actual nature and outcomes of CBC especially in Africa.

In Africa, some studies on curriculum and creativity learning outcomes have been conducted. Lee and Buxton, (2006) studied the creativity in mathematics among senior primary school learners in South Africa. The purpose of the investigation was to find out if pupils creative in mathematics were enhanced by the teaching methods used in South African schools. A creativity test in Mathematics as well as a questionnaire that queried learners to gage their views to particular Mathematical operations was administered. Learners were in addition requested to rate their personal imagination in Maths. Validity of the test was established by administering a creativity test in Maths and a general proficiency test then making a comparison of

results with class performance. The most creative pupils liked Maths which was indicated by playing games in Mathematics when free compared to learners with low creativity. They pointed more operations in Mathematics that they loved and expressed greater liking for more involving areas such as geometry. The creative learners expressed significantly more affinity for group discussion and practical work than the less creative pupils. The research recommended that, increased use of interactive teaching approaches would probably help mathematically creative learners.

Tennet (2005) undertook research in Rwanda on the environmental factors viewed as influential in the development of creativity in children. A sample of 121 mothers of youngsters with 4-6 years filled a questionnaire on particular issues of the environment they provided at home and their valuing of specific creativity personality characteristics in their young ones. After conducting a Factor analysis it was unearthed that, majority of the mothers were had home environments viewed to nurture creativity learning outcomes and in a big way appreciated personality characteristics related to creativity. They also valued the behaviours opined to be indicative of self-direction in the behaviour of children. Educational level and work status of the mothers were realized to be related to the practices by the mothers that nurture creativity in their sons and daughters especially in terms of the way in which family environments are organised.

Serulungu (2018) did a study to examine the practice of CBC on provision of quality education in the Tanzania. The study employed a case study design using both qualitative and quantitative approaches. It involved subject teachers and students. It recommended that, the Tanzanian government should provide sufficient teaching and

learning materials, improve the teaching and learning environment and emphasize close monitoring and evaluation of classroom teaching process to maximize the actualization of learning outcomes.

In Kenya, Momanyi and Rop (2019) conducted a study to establish teacher preparedness for the implementation of CBC. They did this by surveying early grade primary school teachers in Bomet East sub-county. The survey was prompted by concern on the capacity of teachers for CBC implementation. The findings of the study revealed that, teachers were inadequately prepared for CBC implementation. Their knowledge of CBC was vague and this hampered their curriculum delivery and its evaluation. The study recommended that, KICD and MoE (Ministry of Education) should plan for more training sessions to bridge capacity gaps highlighted in pedagogy, assessment and preparation of teaching documents.

Similarly, Benjamin and Chepchumba (2020) conducted a study in Kenya to determine teachers' competence as a cornerstone in the implementation of CBC in lower primary schools in Nakuru County. The study employed descriptive survey design to get opinion of teachers. The research findings revealed that, teachers' competence significantly influenced the implementation of CBC.

Muasya and Waweru (2019) investigated the constraints likely to face the successful implementation of CBC in Machakos County which borders Makueni County. The study adopted a descriptive survey design targeting all the 8,320 teachers in all the 828 public primary schools in Machakos County, Kenya. Stratified random sampling was used to select 342 teachers in charge of grades one to three, where CBC was been implemented. A questionnaire and an observation checklist were used as tools

for data collection. The study established that, teachers were not adequately prepared for the implementation of the new curriculum. Infrastructure available in schools was not adequate for the successful implementation of CBC. In addition, the government hurriedly implemented CBC in schools without first addressing challenges such as understaffing, inadequacy of teaching and learning materials and unfriendly teaching and learning environment. The study recommended that, the MoE through KICD should invest more on teacher training and involve teachers in curriculum change process to create a positive attitude among teachers for successful implementation of CBC.

One of the main themes of the national IN-Service Education and Training (INSET) for SMASE is furtherance of effective student participation by employing innovative classroom practices (SMASE training manual, 2016). The main intent of the INSETS is to train Science and Maths instructors to nurture in learners communication, collaboration and problem solving skills as critical 21st century competences. Among the aims of SMASE is to capacity build Science and Maths instructors with competences to apply in order to nurture creativity learning outcomes among learners. This is exemplified by the improvisation that SMASE encourages. This intent serves to help in successful implementation of the curriculum. It is actualized by instructors presenting Activity Student Experiment Improvisation (ASEI) lessons. These are learner centred lessons that in a special way nurture creative thinking. Learner active participation in the teaching-learning process is stressed by SMASSE. This active learner involvement is typified by the PDSI (Plan Do See Improve approach. PDSI approach in teaching and learning has the potential of stimulating development of creativity learning outcomes development in pupils.

In any good curriculum, creativity learning outcomes should therefore be a prime objective. Creativity if nurtured in learning institutions has the potential of sparking and supporting student prowess, maximise personal and social engagement as a result of learning as well as causing greater learner satisfaction brought about by increased score in self-efficacy (Robinson, 2011). Child development can be hampered, causing mishaps in personality development if creativity is not developed. The researcher opines that, more has to be done in CBC implementation to foster creativity learning outcomes in learners.

1.3 Statement of the Problem

In Kenya, the state of education and how it prepares learners for the world of work has been a hot topic among politicians, educationists, employers and the general public. According to Wanjohi (2017), skills shortage in sectors like Engineering and Technology with a rapidly changing job market have raised questions on whether Kenyan education is sufficiently equipping youngsters with the competencies they need to thrive in the modern world. Kim (2011) opines that, unfortunately during a technological age when creativity and divergent thinking are most needed, creativity levels over the last thirty years are declining. According to Doron (2016), the declining levels of creativity appear to have been largest in young children. This is of concern given the importance of equipping youngsters with the creativity life skill that is vital for navigating the constantly evolving world.

Creativity is a precious asset for solving individual, organizational and social problems. According to Barbot, Besancon and Lubart (2015), creativity is vital for achieving sustainable development. Since a curriculum is viewed as a critical instrument of social change, it is vital that in the course of its operationalization,

evaluation is done to find out if it is fostering its envisaged learning outcomes. The study intended to reveal the extent to which implementing CBC was spurring creativity learning outcomes in Kenyan learners in grade 4. Limited studies have been done in this area in Kenya since the initiation of the CBC. Available literature is not conclusive on the subject of CBC and its influence on creativity learning outcomes. It is on this premise that the researcher was motivated to undertake the study. If this study had not been undertaken, CBC implementation would proceed without being measured on its capacity to craft creative learners. Results of the study may therefore be used to validate, invalidate or improve CBC. The ideal situation should be that, CBC should develop higher order thinking skills which encompasses the four higher levels of learning per blooms taxonomy of cognitive learning objectives. These higher levels are: application, analysis, synthesis and evaluation. The higher levels of thinking need to be ingrained early in pupils if CBC is to be successfully implemented. These higher levels resonate with Pellegrino and Hilton's (2012) view of deeper learning as being a process through which an individual becomes capable of taking what s/he has learned in one situation and applying it in new circumstances (transfer of learning). Deeper learning should encompass exploration, connectedness and broader real-world learning. The proper acquisition of higher order thinking/deeper learning may beget creativity in learners.

1.4 Purpose of the Study

The research purposed to determine the influence of CBC on creativity learning outcomes among grade four pupils in Makueni County, Kenya.

1.5 Objectives of the Study

The study was guided by the following objectives:

i. To find out the extent to which the core competencies nurtured in CBC influence creativity learning outcomes among grade four pupils in Makueni County.

ii. To determine the relationship between teaching and learning approaches employed in CBC and creativity learning outcomes among grade four pupils in Makueni County.

iii. To evaluate the extent to which teacher induction into CBC contributes to creativity learning outcomes among grade four pupils in Makueni County.

iv. To examine the relationship between competency-based instructional materials and creativity learning outcomes among grade four pupils in Makueni County.

1.6 Research Hypotheses

$Ho_{1.}$ There is no statistically significant relationship between the core competencies inculcated in CBC and creativity learning outcomes among grade four pupils in Makueni County.

Ho_{2}. There is no statistically significant relationship between teaching and learning approaches used in CBC and creativity learning outcomes among grade four pupils in Makueni County.

Ho_{3}. There is no statistically significant relationship between teacher induction into CBC and creativity learning outcomes among their grade four pupils in Makueni County.

Ho_4. There is no statistically significant relationship between instructional materials used in CBC and creativity learning outcomes among grade four pupils in Makueni County.

1.7 Justification of the Study

Conducting a study on the influence of CBC on creativity learning outcomes was stimulated by Sawyer's (2006) recommendation that, in our current knowledge-based communities, one of the key tasks of learning institutions is to educate for creativity. Since 1950, it has severally been recommended that, educational institutions should prioritise the development of creativity in students. The European Union (2009) recommended that, to be ahead in this new world, Europe should become more creative and innovative. The Union urged all member states to give maximum attention to creativity and innovation in their educational institutions.

It was also opined by Pucio (2006) that, numerous challenges which in most cases lack predetermined solutions and many opportunities that have no set pathway to victory beckon for creative ideas. In response to Creativity been enlisted as a 21st century skill, Pucio (2006) suggested that, educational institutions should foster the creative ability of all students as they ultimately prepare them to join the work force to give their contribution to development. According to Becker (2009), creative people are not only vital components of economic advancement in the 21st century but also motivate a knowledge-based community which will maximize our competitive strengths, granting us an age.

Creativity has the potential of empowering pupils if well ingrained. Empowered students get more control for their learning for they use what they learn to adapt in

their everyday situations. The introduction of creative practices in the classroom has the potential of developing other competencies. This implies that, if creativity is well inculcated, it has a spillover effect of stimulating the development of other 21st century skills. Purposing to nurture creativity in pupils may be more natural given that, children are naturally curious. The creativity begets in them other competencies like critical thinking, metacognition and collaboration among others which are all vital for their wellbeing. Creativity also breeds success since it impacts on pupils' motivation, progress and achievement. By fostering creativity in learners of low performance, confidence is built. The confidence makes them more focused/interested with learning hence improving their performance and may sustain lifelong love for learning.

1.8 Significance of the Study

The study may assist teachers in getting to know the factors that optimally nurture creativity in learners and consequently apply the same in teaching so as to scale up creativity competence among learners. Students of all levels may as well benefit in identifying to capitalize on to improve creativity as they undergo their education. With increased creativity, learners will be more able to cope with life challenges. Field officers especially Curriculum Support Officers (CSOs) and Quality Assurance and Standards Officers (QASOs) may use the research findings and recommendations to help them determine areas of focus when giving formative feedback and support to practicing teachers to ensure successful implementation of the CBC. The research could as well assist MoE policy developers (e.g. KICD and CEMASTEA) in implementation of CBC by making creativity a critical outcome in

its implementation. Such policies may involve the restructuring of teacher education to be CBC compliant and INSETs to practicing teachers on the paradigm shift.

The research publication may also create more awareness among school administrators and guardians on how to be better involved and contribute in the CBC implementation. In addition, the research will contribute to knowledge that may useful to scholars wishing to do further studies on the problem being investigated. The study may also benefit the entire country of Kenya in realization of vision 2030. One major pillar in realization of the vision is by fostering creativity in our learners.

1.9 Scope of the Study

Geographically, the focus of this study was Makueni County, Kenya. A representative sample of the primary schools in the County were involved in the study. As far as time was concerned, data from respondents was collected in term three (May-August) 2021. This was opportune since the grade four learners were in their final term of the grade and hence had fairly covered the CBC content of grade IV.

Only four factors in CBC (core competencies, teaching and learning approaches, teacher induction and instructional materials) were investigated to establish their contribution to creativity learning outcomes. As far as methodology was concerned, the study applied mixed methods approach. The instruments of data collection were written/oral tests, observation checklist, questionnaires and interviews.

1.10 Limitations of the Study

The study was limited by factors such as some respondents not very willing to provide information needed for the study. To boost respondent cooperativeness, the

researcher called or pre-visited the sampled respondents to explain the significance of the research and its findings to the schools and the community. In addition, introductory letters from the University and other authorities were also shown to respondents or people in charge of the respondents to allow the researcher solicit information. To surmount the challenge of being given false information by unwilling/dishonest respondents, the researcher cross-checked some of the information given (especially statistical) with the one at the county directors' office to verify its accuracy. Every respondent was also allowed to consent before providing data and was assured confidentiality and anonymity.

The other limitation of the study was that, it was difficult to measure the effect of intervening variables in the research. This was taken care of in the data analysis by ascribing the remaining percentage of cause of creativity in learners to be other factors not considered in the study.

Limited generalization of the study findings owing to the study sample was another limitation. This was mitigated by striving to get a representative sample size from the population by using Krejcie and Morgan formula of sample size determination. The other limitation was disruption of learning owing to COVID-19 pandemic. However this affected all learners equally. To mitigate the effect of forgetting what the learners had learned, the researcher gave the grade four teachers of the sampled schools and the pupils at least two weeks after schools opened to revise and bring their minds to school before piloting and actual research were done.

1.11 Delimitations of the Study

This study was targeted to only Primary school grade four pupils, teachers handling the grade four learners, head teachers, CSOs and QASOs in Makueni County public schools. It was also delimited to a modified version of Ellis Paul Torrance Test of Creative Thinking (TTCT) for testing creativity in grade four learners.

Creativity was further assessed with only five scoring scales. These scales were fluency, flexibility, originality, elaboration and resistance to premature exposure. Fluency meant the total number of interpretable, meaningful, and relevant ideas generated in response to a stimulus. Flexibility implied the number of different categories of relevant responses. Originality was a measure of statistical rarity of the responses. Elaboration meant amount of detail in the provided responses and lastly Resistance to premature closure was a measure of the respondent's degree of psychological openness. The scales used the CBC rubrics of scoring.

1.12 Assumptions of the Study

The assumptions of the study were that, teachers were teaching and pupils were learning as per CBC, all respondents were cooperative and honest as well as provided reliable data to answer the research questions and the researcher was able to access the respondents.

1.13 Definition of Key Terms

Assessment: Measuring the achievements of learners in regard to intended learning competencies agreed to be acquired.

Creativity: Coming up with novel, useful and contextually appropriate ideas/work by an individual or a small group of people working together.

Competence: Ability to successfully carry out a task as per set standards.

Competency-Based Curriculum: Teaching and Learning that emphasizes application o f knowledge, skills, attitudes and values in real-life situations.

Competency-Based Instructional Materials: The teaching and learning aids used in CBC.

Core Competences: Abilities that a learner should possess to be successful in the 21st Century.

Curriculum: All the learning planned and gained through school, whether it is done in groups or individually, inside or outside the school.

ICT competence: Ability to use information communication technology for learning and work.

Instructional Materials: Resources used by teachers to help learners understand/recall concepts.

Learner: An individual admitted to an educational institution intending to be educated.

Learning Experiences: The activities that learners engage in aimed at enabling them achieve the intended specific learning outcomes.

Learning Approaches: The methods used by learners to ensure that they get the content in the CBC.

Learning Outcome: The behavior that the learner should possess and demonstrate following a learning experience. This is indicated by the knowledge, skills, attitudes and values gained following a learning experience that the learner is applying in his/her life.

Teaching approaches: Methods used by teachers in instruction.

Teacher Induction: Training provided to practicing teachers to help them implement a curriculum change.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter presents literature emanating from former research related to these current research. The chapter highlights varied perspectives that are vital to other writers who provided divergent views relating to the study. It is segmented into sub-titles mainly: CBC coupled with creativity learning outcomes, theories informing the study, conceptual framework, and gaps that that the investigation intents to fill.

2.2 Competency Based Curriculum

This section describes the concept of CBC, outlining how it is intended to be rolled out, some studies that have been done on CBC and its major principles.

2.2.1 Contextualization of CBC

Curriculum is the medium through which nations of the world empower their citizens with the knowledge, skills, attitudes and values that are necessary for them to be economically and socially engaged, in order to attain national and personal development (Kabita & Ji, 2017). Curriculum development is usually necessitated by the desire to respond to change and as such, any quality curriculum development is an on-going process. A good curriculum needs to align with global trends of rapid expansion of knowledge, broadening information and communication technologies (ICT), as well as the resultant constant change in the skills needed by learners to fit in the job market (Stabback, 2016). Currently, global education is experiencing a shift to CBE (Gardner, 2017). CBC is therefore a worldwide educational reform.

The idea of CBC can be traced as far back as 1957 in the USA. Americans were provoked to shift their education from KBC to CBC following the launch of the first

satellite (sputnik 1) into space by their rival super power, USSR. According to Cipollone, Shiffer and Moffat, (2015), great American educators like Benjamin Bloom were tasked with coming up with an American curriculum geared towards creativity and innovation learning outcomes.

Most African countries started to consider the shift in the 1990s. This was borne by African governments' dissatisfaction with KBC. They blamed KBC for producing learners who were only academic but had no applicable knowledge, skills, attitudes and values. In Zambia for example, the curriculum review started in 2013 and their CBC was gradually implemented until 2017. The aim of the Zambian CBC was to produce self-motivated, confident and productive Zambians. The curriculum was envisaged to develop holistic and independent learners with knowledge, skills, attitudes and values to enable them succeed in school and life. These competencies would make them effectively serve the society.

CBC can be viewed as a system of instruction, assessment, grading and academic reporting aimed at the learner demonstrating that, s/he has acquired the knowledge, skills, attitudes and values that they are expected to be learned (KICD, 2019). According to Serulungu (2018), a CBC is a curriculum that organizes its activities in such a way that, it allows the development of abilities. It does so by exposing learners to real life experiences in order to equip them with problem solving abilities. The synonyms of CBC are: proficiency, mastery, outcome, performance or standards-based learning. It is a shift from the Knowledge/content Based Curriculum (KBC) that was blamed for being teacher-centered for it had little interest on learner's interests, ability and career aspirations. CBE also differs from traditional input models of education where a good deal of the focus and planning priority is

given to instructional process (i.e. teaching) instead of more focus on results (Simonds, Behrens & Holzbauer, 2017). Collins and Brien (2011) add that, a CBE is an education rich in inculcating desirable practical skills and certifies learner progress on the basis of demonstrating performance of the competences.

CBC is the way to go because the citizens of the 21st century are confronted with complex social, cultural, economic and technological challenges hence needing quality education to develop essential skills and abilities. Kenya is currently shifting from KBC to CBC as a result of responding to global changes. Wanjohi (2017) exposes that, National needs assessment study, extensive stakeholders' engagement, National curriculum reform conference and bench marking saw the birth of the Kenyan Basic Education Curriculum Framework (BECF) commonly called and recognized as CBC.

The Kenyan CBC is viewed as a catapult to her realization of vision 2030 of becoming a middle-income industrialized nation. The Kenyan CBC envisages to prepare learners for the world of work and inspire life-long learning. It combines subjects to teach competencies that can be used across disciplines. It is meant to develop attributes like critical thinking, problem solving, communication and collaboration among others. These skills are increasingly in demand in the job market for they form the core of creativity.

CBC was introduced to the Kenyan education system in the year 2016 in a pilot phase. It was fully launched in 2019. CBC is gradually replacing the three-decade old 8-4-4 system. The 8-4-4 system has been criticized for placing much emphasis on content recall and for been exam oriented. According to Wanzala (2018), 8-4-4 does

not allow for the identification of learner talents and exploitation of the same early enough. Njengere (2017) opines that, the 8-4-4 system is too rigid and has limited opportunities to align basic education with children's career interests, aptitudes and abilities.

According to Momanyi and Rop (2019), the new 2-6-3-3-3 system is seen by many as a panacea for graduate employability. This is because CBC aims at engaging learners in applying knowledge through demonstration as opposed to KBC which is content overloaded at the expense of ability development. The employability following a CBC course is high because employers are more interested in what students can do rather in addition to what they know. Knight and Yorke (2007) opine that, with CBC students are more able to clearly identity and articulate those skills they have developed that make them more attractive to potential employers, aiding them transit more easily from school to work. Such learners loaded with competencies can also self-employ themselves, a solution for the pandemic problem of joblessness.

According to Tilya and Mafumiko (2010), CBCs are now popular in both developed and developing countries. CBC owes its popularity in that, it enables learners to engage actively and hence benefit in today's global knowledge-based society. In contrast to the KBC that focuses on learning objectives, CBC anchors on learning outcomes. Learning objectives comprise the knowledge, skills, attitudes and values intended by the teacher for the learner to acquire in a learning process. Learning objectives are hence dictatorial for they do not incorporate the learner's interests, abilities and needs. Learning outcomes in CBC are developed in co-operation with the learner. Learning outcomes are therefore more fulfilling. Codefop (2008) argues

that, the learning outcomes that a CBC produces in learners are crafted to meet the needs of all education stakeholders (the learner, teacher & all third parties). The learning outcomes are used as indicators of educational efficacy hence can be used to account for investment of public funds in education.

KICD (2017) adds that, the use of learning outcomes in CBC makes learning more learner centered in that, the education is driven by the learner's demands. Such an education focuses more on learning than teaching and hence becomes fun and enjoyable, promoting life-long love for learning. In CBC, the teacher therefore becomes a guide/coach not just an instructor for s/he moderates and organizes the learning process rather than majorly transmitting knowledge. CBC advocates for teaching and learning methods which are more interactive and enforce learner participation. KICD (2017) stresses that, the learner should be an active participant for curriculum implementation to bear its envisaged high-level transformative standards as spelled out in the mission of the Kenya BECF of nurturing the potential of every learner.

KICD (2017) outlines the three pillars of the Kenyan BECF. The pillars are: Values, Principles and the buttressing Theories of CBC. Values are standards that guide an individual's behavior/ responses to circumstances. Values therefore influence how a person feels, acts and makes choices in life. Societal values are on the decline even among youngsters leading to low levels of morality. The values that CBC envisions to nurture are love, respect, responsibility, unity, peace, social justice, patriotism and integrity. The acquisition of values by learners shall facilitate the achievement of the curriculum mission.

According to KICD (2017), the principles of the Kenyan BECF are: offering learners opportunity to develop their full potential/talents, excellence, diversity, inclusion, parental empowerment and engagement, community service and differential curriculum learning. Parental empowerment and engagement is premised on the fact that, parents, family and care givers are a child's first and most important educators. They can therefore be of positive influence and help their child do well in school and ultimately in life. The empowering involves giving parents useful information to assist them to better engage with their child's learning with a view of optimizing learning (positive change of behavior) outcomes. Under the CBC framework, parents should be involved in their child's learning throughout schooling. The involvement helps identify a learner's potential and contribute in nurturing it. Under the CBC framework, teachers should create and maintain strong partnerships with parents/guardians to engage them in the personality development of their sons and daughters.

Haki Elimu (2014) views community service learning as an experiential learning strategy that integrates classroom learning to learning from the community. It enables learners to reflect, experience and learn from the community. It helps learners to link personal and social development with cognitive development. Wanjohi (2017) exposes that, under the Kenyan BECF Community Service will be a compulsory subject for all learners in all levels. It shall create opportunities for learners to apply knowledge and skills acquired through formal education into the community to improve its welfare. The major community service-learning areas under the Kenyan BECF shall be: Citizenship, Entrepreneurship, Financial literacy, Life skills, Communication skills and Research.

KICD (2017) uses four major theoretical perspectives to guide CBC implementation. The perspectives are: Instructional design theory, Vygotsky's social-cultural theory, Howard Gardener's Multiple Intelligence theory and Jean Piaget's Cognitive development theory. The instructional design theory is highly applied in the teaching-learning process especially its advocacy of using learner centered teaching approaches to maximize learning. Vygotsky's social-cultural theory informs CBC implementation especially in its strong suggestion of learner support by all people in the society beginning with guardians, experienced others (teachers) and the community at large from where the learner emanates from and is destined to. Howard Gardener's multiple intelligence theory informs CBC implementation in its integrated approach to build all faculties of the learner. Jean Piaget's cognitive development theory is of great value for it directs on how to sequentially assist the learner in his/her cognitive development in planned knowledge delivery. According to KICD (2019), the four theoretical perspectives have a lot of practical application in optimized and successful child development and education. KICD has developed curriculum designs to guide the implementation of the BECF. The curriculum designs are core documents for teachers to use in the teaching process. In addition to the subject specific competences, the Kenyan BECF addresses cross cutting competences like communication, collaboration, critical thinking and creativity.

Codefop (2008) outlines the four main dimensions of the CBC approach to teaching and learning that are instrumental in fostering creativity learning outcomes. The four dimensions are: Transversality, Contextualization/decontextualization, Complexity and Integration. The four dimensions are interrelated and if fully implemented beget creativity. Transversality is a feature in CBC because competences are not bound to

one specific academic discipline. Competences concern various situations. Cachia (2010) argues that, creativity in the educational context should be conceptualized as a transversal and cross curricular skill. The EU Commission also links the cross-cutting skills of problem solving, analysis, self-management and communication with the resultant quality of creativity.

The contextualization dimension stresses that, competences should be developed and evaluated in situations as close as possible to real life conditions of the learner. This is because, the competence should help the learner to become more adaptable. The complexity dimension in the realization of learning outcomes through a CBC is premised on the fact that, tasks and situations requiring competence are increasingly complex since they require an individual to use different personality resources to perform a task successfully. At its full implementation as evidenced by learning outcomes in its consumers (learners), CBC is highly integrative. This is because competences integrate various disciplines and aspects. The integrative nature of CBC is further supported by Tan and Barton (2010) who points out that, CBC focuses on learners demonstrating mastery of certain interconnected knowledge, skills, attitudes and values which are the spring boards of creativity learning outcomes.

2.2.2 Creativity Learning Outcomes and their Assessment

Runco (2012) points out that, over the years, scholars have found it difficult to define and measure creativity. This is because the creativity construct is complex, multi-dimensional and multifaceted. The complexity and multi-dimensionality of creativity makes it to have more than 100 definitions. Blamiresa and Peterson (2014) suggest that, the different definitions of creativity resulted to diverse ways of assessing creativity in individuals. There are four major perspectives of defining and therefore

measuring creativity learning outcomes also called the four Ps approach to creativity. According to Kaufman, Plucker and Russel, (2012), the four Ps are the four perspectives of creativity used by many scholars. The four Ps are: Process, Person, Product and Press.

2.2.2.1 The Process Perspective of Creativity

The process perspective of creativity focuses on the cognitive processes involved in creativity. In regard to the process perspective, Torrance (2008) who was a pioneer in creativity research defined creativity as a process of perceiving problems or gaps in knowledge, developing hypotheses/prepositions, testing to validate or invalidate the hypotheses and finally sharing results of the search. The thinking process yielding creativity involves bringing associative elements together into new combinations to meet task requirements. Guilford (1975) opines that, there are two cognitive processes that beget creativity. These are divergent and convergent thinking. Divergent thinking is a broad intellectual search used in open problems to generate logical answers or alternatives for one problem. To the converse, convergent thinking is a focused search that involves associating different ideas, evaluating them and production of a specific logical solution to a problem.

According to Jank, Benedek and Neubaur, (2014), the measurement of creativity learning outcomes on the basis of cognitive processes majorly measures divergent thinking. The commonly used divergent thinking test is the Torrance Test of Creative Thinking (TTCT). Others include: Wallach-Kogan Creativity Test, Structure of the Intellect Divergent Production Test and Creativity Assessment Packet. Cognitive creativity tests also measure a learners' ability to make associations and the ability of working on many ideas simultaneously. These tests involve giving a learner open or

ill structured problems to generate as many responses as possible. The responses are scored to capture his/her Fluency, Flexibility, Originality, Elaboration and Resistance to premature closure which are the key indicators of creativity learning outcomes in a candidate.

Fluency is the ability of a person to produce a large number of interpretable, meaningful and relevant ideas/responses on an issue/topic/problem or generally to a stimulus. The more the responses, the more fluent a person is. Guilford (1975) defines Flexibility as the ability to produce a large variety (categories) of ideas on an issue/topic/problem. It also involves the ability to shift from one approach/strategy to another. After administering a creative thinking test, the responses of a pupil are categorized. The more the categories of ideas, the more flexible the learner is. A cognitively flexible individual is able to consider an idea through different angles. Sternberg (2015) considers mental flexibility as an essential asset for living in the dynamic 21st century and an essential part of creative thinking. Originality is the statistical rarity/uniqueness/unusualness of a response/idea on a problem. The rarer the response, the more original the person is.

Elaboration means the details a person provides on an issue/topic/problem. The more details a person gives the more elaborate and eventually the more creative s/he is. Resistance to premature closure is the degree of psychological openness, based on the belief that creative behavior requires a person to consider various pieces of information and hence remains open minded (Hahm, Kim & Park, 2019). Resistance to premature closure ensures that a person takes time to consider many aspects of an issue before deciding or concluding. This is likely to make the person develop a quality informed decision. The scores on the five indicators of creativity are

integrated to get a creativity/productivity quotient which is a depiction of a person's creativity level for the domain tested. Torrance's model of measuring Fluency, Flexibility, Originality, Elaboration and resistance to premature closure then integrating them gives a psychometric evaluation of an individual's creativity level in a clear quantifiable way. However, the model is weak in that, it tells nothing of the relevance/value of the creative output.

2.2.2.2 The Person Perspective of Creativity

The Person perspective of creativity according to Kaufman et al. (2012) focuses on the personality of the individual been tested for creativity. Runco (2007) suggested a wide array of traits associated with creativity in a person. These personality characteristics are: attraction to complexity, high energy, behavioral flexibility, intuition, emotional variability, self-esteem, risk taking, perseverance, independence, introversion, social poise and tolerance to ambiguity. However, Runco (2007) was quick to point out that, having such traits does not automatically guarantee the occurrence of creative achievement without intrinsic motivation to stir up creative thinking. Because personality can be dynamic, Cropley (2016) opines that, creativity is not an inborn trait hence it is a fluid character that can be constantly improved through opportunity, encouragement and rewards.

The assessment of creativity using the personality approach is done by requesting a candidate to fill a self-report questionnaire. This questionnaire enquires him/her of his/her personality traits related to creativity. Examples of such personality-based creativity testing questionnaires are: how do you think?; the creative personality scale; how creative are you?; the creative behavior inventory and the creative achievement questionnaire.

According to Runco (2007), the person approach of measuring creativity is advantageous in that, it is easy to use, has standardized administration and scoring procedures and has high reliability. A person with the enlisted creativity characteristics is more likely to act creatively than one without the creativity personality traits. However, Miller (2014) critics the personality approach of defining and measuring creativity. He cites that it is faulty in assuming that, changeable personality traits are sufficient evidence of creative ability. He further critics that, no single person has all the listed creativity personality traits. Miller (2014) further argues that, a person can have the creativity traits but fail to generate creativity accomplishments because of lack of ability, proper attitude, motivation and a supporting environment. He also adds that, the personality model of creativity closes eyes to the notion that, creativity is a multidimensional construct.

Kaufman et.al. (2012) similarly disregards the personality approach of defining and measuring creativity by pinpointing that, self-reports have low validity and reliability. This was revealed following self-ratings of undergraduate students of their musical compositions. Their ratings were significantly different from expert ratings. Likewise, Kaufman et.al. (2012) asked fourth grade pupils to rate their level of creativity in four domains (science, mathematics, writing and art). The correlations between self-reported creativity level and experts' ratings of the learners' work on the domains were non-significant, ranging from 0.07 to 0.22.

According to Kaufman et.al. (2012), data on self-reports are subject to potential bias that endangers validity. Individuals may distort their responses on self-reports intentionally or unintentionally for many reasons. These reasons include: social desirability, consistency motive, mood state and implicit theories. Social desirability

is the tendency of people reporting about themselves in a favorable manner, regardless of their actual behavior. Consistency motive is the tendency of people not changing their responses. This self-determined consistency can result into artificially high relationships that may not exist in real life settings. Mood state is a temporary feeling that causes people to see themselves and the surrounding world in positive or negative terms not in the actual image. Implicit theories are personal conceptions (informal theories) underlying in the minds of individuals regarding a particular phenomenon which may eventually turn out to be false.

2.2.2.3 The Product Perspective of Creativity

The Product Perspective of Creativity defines creativity as the generation of original/unique and statistically rare adaptive products (Abraham 2016). Creativity products can be physical (capable of been detected by senses, especially touch and sight) or not physical. Physical creativity products are in most cases what people do with their hands like making, playing, drawing etc. The non-physical products of creativity are the mental works. These are ideas/thoughts. The covert mental operations mostly beget the overt physical outcomes. A creative thought may beget a creative physical product. The physical product is the embodiment of an individual's idea/thought in a tangible form.

The measurement of creativity in regard to product is done by subjecting the creative product of an individual to experts in its domain for judgment. According to Hennessey, Amabile and Mueller (2011), experts in the discipline rate the level of creativity of the product on a Likert scale ranging from not creative to very creative. The experts rate the products by comparing them with each other rather than against an absolute standard. Once the ratings are obtained, the degree of agreement among

the raters is determined using inter-rater reliability coefficient. Kaufman et.al (2012) reveals that, consensus among judges is affected by their expertise and personality. According to the taxonomy of creative design, any creative product can range from an imitation, variation, combination, transformation and at its best an original creation. Experts place a work at any of the five levels based on how far the piece steps away from its antecedents. When a piece of work is at the 5^{th} level, it is regarded as innovation. Understanding diverse and multiple ways of presenting a product is an essential life skill. Developing the ability in earlier years of a person assists the individual in developing innovative products and creative solutions in future life challenges. Competences associated with creativity and innovation are important elements of entrepreneurial activity. The European Union (2009) views entrepreneurship as the ability of turning ideas into action.

2.2.2.4 The Press Perspective to Creativity

According to Batey (2012), the press approach to creativity analyses the work environment where creativity is realized and the usefulness of the creative piece. The usefulness of a creativity outcome analyses the socio-moral context and intent of the creative output. Creativity outputs ought to be useful and hence socially acceptable/valuable for they add value to life. The assessment of environmental/social utility of creativity is done by enquiring people how the creative product/idea helps them. A product with high social/environmental utility is considered more creative than one with little/no social utility.

According to Paramithea and Indarti (2019), the impact of environmental variables on creative achievement particularly with respect to the initial exploratory stages of creative endeavors in which people need approval and support plays an important

role in motivating their efforts. The environments that foster creativity are secure, give rewards/motivation to creativity, allow for risk taking, provide resources and capacity builds people. Davies (2013) points out that, there is a positive correlation between environmental factors and creativity. The social environment also involves modeling. Bandura (2016) supports modeling for creativity by stating that, individuals who model unconventional styles of thinking and doing foster innovativeness in others. Likewise, Sharma (2016) investigated pedagogy and creativity levels and indicated that, a positive, open, democratic and free environment either at home or at school positively contributes in nurturing a child's creative potential.

2.3 CBC and Creativity Learning Outcomes

This section of literature review samples related literature on selected factors in the independent variable (CBC) and their effect to the dependent variable (creativity learning outcomes). This is in tandem with the research objectives.

2.3.1 Influence of Core Competencies in CBC on Creativity Learning Outcomes

As per KICD (2019), CBC seeks to inculcate seven core competencies as it strives to achieve its vision of "developing engaged, empowered and ethical citizens." The first four competencies are called the 4 Cs for they begin with letter C. They are: Communication and Collaboration, Critical thinking and problem solving, Creativity and imagination and the fourth competence is Citizenship. The last three competencies to be inculcated as CBC is implemented are: digital literacy, learning to learn and self-efficacy. The actualization of these competencies shall be through different subjects. Although an integrated approach is to be used, Communication shall be ingrained through literacy (linguistics). Collaboration shall be actualized

through life skills education. Critical thinking and problem solving shall be actualized majorly through subjects like Mathematics, Science, Business studies and Agriculture. Although Creativity and Imagination shall be integrated in all disciplines, it shall be mainstreamed majorly through creative, visual and performing arts as well as Sports and Physical Education. Citizenship shall majorly be inculcated through: Religious Education, Social Studies and Health & Environmental Education. The last three competencies shall be integrated in all subjects.

2.3.1.1 Influence of Communication and Collaboration on Creativity Learning Outcomes

Binkley, Erstad and Herman (2012) defined communication as the ability to use oral, written and non-verbal skills to share thoughts and ideas. Collaboration means working together. The two competences are interdependent since for people to work together, they must communicate. KICD (2017) views the two competences as speaking together to realize shared goals. The exchange of ideas and different perspectives enhances creative thinking. During collaborative learning experiences, learners build on each other's ideas. Hamalainen and Vahasantenen (2011) opines that, during student constructive negotiations, they are able to reach deeper understanding that was initially unavailable to any individual learner. A primary product of deeper learning is knowing how, why, and when to use and transfer knowledge, including content knowledge, to answer questions and solve problems which are indicators of creativity (Navarro & Gallardo, 2015). By encouraging learners to work together and allowing them the independence to explore the areas that interest them, learners gain the confidence to question, analyze, and solve problems (Slavin, 2015).

Saregar et al. (2021) determined the effectiveness of the Connecting, Organizing, Reflecting, and Extending (CORE) learning model on students' creative thinking skills on the topic of sound waves in science. The research targeted the eighth-grade students of an Islamic senior high school in East Lampung with a sample of 60 students using a purposive sampling technique. The research method used was a quasi-experimental design with a non-equivalent control group design. Data on creative thinking skills was collected using an essay test instrument. Based on the effect size test, the effectiveness value of the CORE model on students' creative thinking skills was 0.48, which was in the medium category. These results proved that, the CORE learning model to a moderate extent enhanced students' creative thinking skills on sound wave topic.

2.3.1.2 Influence of Critical Thinking and Problem solving on Creativity Learning Outcomes

Bensley (2010) described critical thinking as a multidimensional construct that if given good opportunity culminates in finding solutions to problems. The various sub-skills of critical thinking are: observing the different facets of a problem/issue, analyzing and evaluating any phenomena, producing inferences and lastly decision making. Sternberg (2015) enlisted the various dispositions of a critical thinker to be: curiosity, openness, flexibility in considering the opinions of others and the ability to reconsider opinions. Thinking critically requires learners to acquire, process, analyze, rationalize and eventually interpret large volumes of often conflicting information to the point of making informed decision(s) hence taking action in a timely manner. Critical thinking helps learners to think out of the box, a premise for creativity.

Elald and Batd (2015) aimed to compare the effectiveness of problem-based learning in terms of students' academic achievement and to find out other study characteristics related to its influence on creativity. In this context, 20 studies that met inclusion criteria were analyzed under using Comprehensive Meta-Analysis and the MetaWin statistical program. The results indicated that problem-based learning had positive effects on academic achievement.

Batlolona and Mahapoonyanont (2019) purposed to find out whether PBL was more effective in enhancing academic learning outcomes and creative thinking skills with different classes. This research was begun by compiling instruments, carrying out the learning process, analyzing data, and presenting it in reports. An independent sample T-test tested the average value to help reject or accept the hypothesis. The right-tailed T-test was used to determine whether the learning achievements of students taught through PBL were higher than those taught through the conventional method. The results showed that the average value of student learning achievement was higher in the experimental class than in the control class.

2.3.1.3 Imagination as the precursor of Creativity Learning Outcomes

According to Napier (2013), the imagination that begets creativity involves the mental consideration of useful but unexpected/unexploited information. This mental activity yields insights which when ultimately pursued materialize to creativity. Seeling (2012) claimed that, attitude, knowledge and imagination can spark and add to creativity. For a learner to be creative, s/he must have a depth of knowledge as a premise since knowledge is the tool box of fruitful imagination and ultimately invention. Imagination starts and maintains the cognitive process that results in formation of new ideas and is anchored in knowledge. In CBC implementation,

teachers should give learners opportunities to imagine and explain ideas to nurture creative thinking.

2.3.1.4 Influence of Citizenship Competence on Creativity Learning Outcomes

KICD (2017) conceptualizes the citizenship core competence to be developed in every learner to be great valuing of community and acting with respect for all. A learner with the Citizenship competence is patriotic and endeavors to contribute to the development of the nation. The inculcation of citizenship under the CBC shall be making learners alive to the Kenyan vision 2030. The vision is “transforming Kenya into a newly industrialized, middle-income country with a high quality of life for all citizens in a clean and secure environment.” Kenyan vision 2030 aligns with the global millennium development goals. Vision 2030 proposes intensified application of science, technology and innovation to raise productivity and efficiency across the economic, social and political governance pillars. The agenda four programme of the jubilee administration is a buildup to vision 2030. The desire to make Kenya globally competitive and prosperous shall stimulate learners to be creative. The creativity shall be directed to solving the myriad problems of the country.

2.3.1.5 Influence of Digital Literacy on Creativity Learning Outcomes

According to the Basic Education Act (2013), digital literacy is the ability to use ICT resources to support and enhance the attainment of curriculum outcomes. Learners should be able to use the following ICT facilities for learning: radio, television, memory cards, flash disks, DVDs, CDs, data cables, power cables, projector, phones, ipads, cameras, computer and the internet. Rumbley (2008) asserts that, ICT resources offer learners an opportunity for joint projects, research and collaboration which stimulates creativity. ICT is gradually replacing the traditional role of the

teacher especially through virtual learning. CBC envisages to equip learners with the ability to express their creative and innovative potential through digital media and technologies. Learners use ICT facilities to view educational photos and videos which is core in CBC implementation. The internet should be used as a space where peer learning and interaction with outside experts can occur. Robotics should be encouraged in schools. Giving learners opportunities of interacting with ICT facilities could optimize their understanding, motivating them to think critically and creatively.

2.3.1.6 Influence of Learning to learn (metacognition) on Creativity Learning Outcomes

Farington (2013) defines metacognition as the knowledge of cognition and action. Metacognition is therefore the ability of an individual to know and monitor their thinking and the products of their cognitive process. Sanz and Baquedane (2013) suggests that, creative thinking is part of metacognitive processes because a person has to monitor his/her thinking during the production of new and useful ideas. During the creative process, a person should also check his/her strategies and adjust them if needed in order to increase creative output.

Teaching and learning in CBC is designed to support the development of the ability of learners to learn by themselves. Learning to learn moves students from been passive receptors of information to active researchers of knowledge. This competence makes learners monitor their own understanding and hence strive to reinforce and extend it further. Farington (2013) points out that, pupils who employ metacognitive strategies that include self-regulated learning and goal setting are

better able to engage in cognitive processes and optimize learning, a premise for creativity.

2.3.1.7 Influence of Self Efficacy on Creativity Learning Outcomes

Bong, 2013 defines Self-efficacy as the ability of individuals to execute a particular task up to the desired targeted outcome. Bandura (2016) also described self-efficacy as a motivational condition in which the individual's self-esteem is measured by carrying out specific actions to achieve his goals. Academic self-efficacy refers to students' ability to organize and implement learning behavior to achieve the chosen academic achievement level, for example, to pass the exam (Turki & Al-Qaisi, 2012).

Individuals actively construct sources of self-efficacy beliefs through cognitive processes (reflective thoughts). The first source is mastery experience, which results from purposive performance (Bong, 2013). The next source is the vicarious experience, which is the experience of the effects produced by the actions for example the modeling of others (Rezaei, 2012). The third source is social persuasion, which develops when individuals create and develop self-efficacy beliefs due to the social messages they receive from others. The final source of self-efficacy information comes from an individuals' physiological and emotional feedback during his/her performance (Artino, 2012).

Intellectually gifted students tend to believe that they are competent to complete a task, and this confidence is a strong motivation for exceptional performance (Farmer & Tierney, 2017). As students' self-efficacy levels increase, their independence and intrinsic motivation translates into tremendous classroom success. Self-efficacy

functions as the internal motivator for gifted students to endure challenges and achieve goals. Huang (2015) reported that, self-believing ability is a vital characteristic of student success. Students with high self-efficacy show more persistence, spend more time learning and have higher educational attainment which can be a spring board of creativity.

A study by Bembenutty (2011) also unearthed a positive correlation between homework assignments given by teachers with self-confidence and the sense of responsibility in students. He stated that, the assignments and self-learning skills or self-regulated learning could help students' academic performance. It could also improve time management and learning environment effectively and maintain one's focus on learning. It can also help students improve their learning efforts leading to excellent academic achievement.

A study conducted by Li and Wu (2011) aimed to reveal the relationship between optimism, creative self-efficacy, and creative behavior among university students. The study sample consisted of 970 university students in Taiwan. The study results showed statistical significance between self-efficacy, and creative behavior that creative self-efficacy mediates the relationship between creative behavior and optimism. Chin (2013) also examined the relationship between creative self-efficacy and professional self-management. His study sample consisted of 158 university students in China. The results showed a positive correlation between creative self-efficacy and creativity.

2.3.2 Influence of Teaching and Learning Approaches Employed in CBC on Creativity Learning Outcomes

CBC champions for the application of innovative teaching to spur creative thinking in learners. In CBC, the teaching should among many other aims be geared to foster creativity learning outcomes. Cachia (2010) defines teaching for creativity to be a form of teaching intended to develop a learner's own creative thinking/behavior. Teaching for creativity should be done creatively. Teaching creatively involves the use of imaginative approaches to make learning more interesting and eventually effective. Teaching creatively involves the use of new methods, tools and content. Such teaching methods are interactive and learner centered. In learner centered teaching, the teacher becomes a guide, balancing between promoting a free environment and directing classroom situations when necessary to enhance creativity learning outcomes.

Lee (2012) points out that, learner centered pedagogical approaches are characterized by interaction, inquiry, problem solving, as well as been interdisciplinary to meet the myriad needs/interests of learners in an open/free environment. Such didactic practices foster students' autonomy, responsibility for own learning, cooperative work and long-term knowledge retention which may promote acquisition of creative thinking skills. One of the major learner-centered pedagogical approaches that fosters creativity learning outcomes is Inquiry Based Learning (IBL). IBL helps learners acquire different higher order thinking skills like self-reflection, critical thinking, ability to undertake independent inquiry and self-responsibility for intellectual growth as well as maturity. According to Lee (2012), IBL integrates research and teaching where the learner and teacher act as co-learners.

Rodríguez and Gemma (2019) examined the effectiveness of a professional IBL course that introduces a creativity workshop based on stimulatory techniques to develop creative and research skills. The study population was 529. Students' perceptions of learning processes and outcomes were assessed in surveys and focus groups by the authors of the study. The course teachers and the researchers also analyzed the final learning results from both groups of students. The results show that the open IBL approach promoted the development of creativity skills.

In Netherlands, Simon (2013) researched how secondary school students perceived their teachers' approaches to teaching in different disciplines and how this related to their learning approaches. Additionally, differences in teaching approaches between mathematics and language teachers were investigated. The participants in his study were 128 students randomly selected from two secondary schools in two different cities. Both schools were located in a city with more than 200,000 inhabitants. The students were spread across three different educational levels: lower secondary vocational education, higher secondary education, and academically-oriented vocational education. Hierarchical regression analysis was conducted to identify whether perceived teaching approaches predicted students' learning outcomes. Finally, analysis of variance (ANOVA) and analysis of covariance (ANCOVA) was carried out. Results indicated that teacher-centered approaches predict a surface approach to learning, and student-centered approaches predict a deep and extensive approach to learning. It was also found out that, students in Dutch-language courses perceive their teachers as more student-centered, and are hence more likely to adopt a deep approach to their learning. The study revealed that, when schools aim to support students in developing deep-learning, their attention levels increased.

In Nigeria, Oyelekan, Igbokwe, and Olorundare, (2017) examined science teachers' utilization of various teaching strategies in senior school science subjects. A sample of two hundred and fifty-six (256) science teachers was selected from secondary schools in Ilorin East, South, and West Local Government areas using a stratified random sampling technique. Data was obtained using a researcher-designed questionnaire known as the Innovative Teaching Strategies Questionnaire (ITSQ), which has a reliability index of 0.91 Cronbach alpha. Results showed that, out of the thirty-six (36) selected innovative teaching strategies, most science teachers frequently used only two (2), while the rest were rarely used. The results also showed no significant difference in science teachers' utilization of innovative teaching strategies based on experience and qualifications. It was recommended that, science teachers should apply the creative teaching strategies such as the use of ICT to improve the performance of their students (Oyelekan et al. 2017).

Chen (2021) discussed the results of an empirical study on college students' competencies in the engineering domain and their self-evaluation on their perception of creativity and creativity performance. The research was conducted through a testing questionnaire by theoretical literature review and focus group interviews with experts in engineering and education fields. The curriculum experience had the strongest correlation value (r=.55) in terms of effect to creativity achievements. The learning styles influenced school environments (r=.44). The self-evaluation by students beget a recommendation that, environmental improvement for learning institutions should remain a key agenda to be implemented as they develop creative strategic plans for management of students.

İlçin et al. (2018) aimed to investigate whether physiotherapy learning styles influence academic performance. The learning styles of 184 physiotherapy students were determined using the Grasha-Riechmann Student Learning Style Scales. The Kruskal-Wallis test compared academic performance among the six learning styles (Independent, Dependent, Competitive, Collaborative, Avoidant, and Participant). The researcher concluded that teaching strategies that encourage more participant-style learning might effectively increase academic performance among Turkish physiotherapy students.

Wegerif (2019) evaluated the impact of a newly developed two-day professional development training on primary school teachers' knowledge, attitude and behavioral intention towards teaching higher-order thinking skills. Participants in the study were twenty-seven primary school teachers divided into an experimental group (N = 13) and a control group (N = 14). The study entailed a quasi-experimental pretest-posttest control group design using questionnaires at two points in time. Results showed that, the training had a positive effect on the development of metacognitive knowledge. As a result of the training, positive effects were found on teachers' self-efficacy.

Isa et al. (2020) examined the relationship between teaching methods and the academic performance of secondary school students in Nigeria. The study adopted a descriptive research design with mixed data collection and analysis approaches. The target population comprised 180 students in Nassarawa Local Government. A total of 60 respondents were selected from three secondary schools. The research instrument was a questionnaire. The responses of the research questions were analysed using descriptive statistics. The hypotheses were subjected to inferential statistics tested at

0.05 confidence level. The study revealed that most of the teachers' teaching methods significantly affected students' academic performance.

According to KICD (2017), the Kenyan CBC advocates for the use of various learner centered teaching approaches. These include role play, field trips, debate, practicals, demonstration and teacher exposition. The instruction should be majorly hands-on, a total shift from lectures. Role play encourages empathy, speculation, collaboration, decision making ability and confidence. Such teaching approaches produce learners who are holistic, creative, innovative, analytical and cooperative. The teaching in CBC according to Komba and Mwandaji (2015) should be by discovery/inquiry. Such teaching should focus on real life issues in classroom, outdoor and lab activities so as to offer learners opportunity to investigate the issues as well as to construct their own verifiable truths hence stimulating creativity.

2.3.2.2 Questioning Teaching and Learning Technique

KICD (2017) proposes the use of Key Inquiry Questions (KIQs) in CBC implementation. KIQs prod learners' thinking to allow them create their own words and understanding. Apart from prodding for deeper meaning, KIQs set the stage for further questioning, help to focus learning and fosters the development of critical thinking and high order capabilities like problem solving. KICD (2017) argues that, as learners find answers to KIQs, they brainstorm without been dictated as to the direction or outcome of their thinking. This freedom allows learners explore ideas in an open-ended, non-judgmental, meaningful and purposeful way. The inquiry encourages collaboration among learners, teachers and community as they hypothesize as well as share ideas. The search for solutions may involve the use of ICT hence integrating technology to support the learning process. Questioning words

include: why, who, when, where, how, which and what among others. Effective questioning stimulates higher order thinking skills encouraging learners to apply their learning in future situations as they think of alternatives to solutions.

Elald and Batd (2016) did research to compare the effectiveness of various forms of learning methods, including creativity-based learning and problem-based learning on creativity outcomes of students as well as academic achievement. The study applied the pre-test and post-test control group model. It was analysed under three themes: creativity-based learning, problem-based learning, and differentiated instruction using Comprehensive Meta-Analysis and the MetaWin statistical program. The results indicated that creativity-based learning and problem-based learning positively affected learners' creativity and academic achievement.

Coakley and Sousa (2013) conducted an assessment of the changes applied to an introduction to a business course using active, experiential, and cooperative learning approaches. The scope of the data was broadened to include both quantitative and qualitative data. Students registered for the course were surveyed using pre-test and post-test instruments. The data analysis and interpretation indicated that, the application of the three learning approaches had a mixed impact on learning outcomes. Students perceived that; their knowledge of business concepts increased after the course was delivered using the learning approaches despite a challenging environment requiring applying theoretical concepts to practice. Students indicated that, the knowledge gained from experiential-based lesson delivery and cooperative learning approaches created an opportunity to reinforce and apply concepts. The research results also found out that, students perceived their understanding of the ideas to have increased. However, the integration of student qualitative feedback

supported each learning approach's benefits while also providing insight into which approach students found most influential in learning.

In Kericho, Kenya, Ng'eno and Chesimet (2016) investigated the effect of experiential learning approach on students' mathematical creativity in Kericho East Sub-County. Solomon Four Non-Equivalent Control Group Design under the quasi-experimental research methodology was used. A random sample of four district secondary schools was collected. In the experimental groups, the Experiential Learning Approach (ELA) was used while Conventional Teaching Methods (CTM) were used in the control groups. One experimental and one control group was pre-tested. At the end of the treatment, all the four groups were post-tested using Mathematical Creativity Test (MCT). The instruments were validated by experts in the Department of Curriculum, Instruction and Education Management of Egerton University and Mathematics teachers from selected secondary schools. MCT was pilot tested to estimate its reliability coefficient using Cronbach alpha, which was 0.778. Descriptive, as well as inferential statistics were used in data analysis. These included a mean score and ANOVA. All statistical tests were subjected to a test of significance at an alpha (α) level of 0.05. The results revealed that ELA had a significant effect on students' mathematical creativity (Ng'eno & Chesimet, 2016).

2.3.3 Influence of Teacher Induction into CBC on Creativity Learning Outcomes

Shen (2010) opines that, teachers are the linchpin in curriculum implementation. Pre-service preparation in teacher training institutions alone cannot fully prepare teachers to implement a curriculum. In-service professional development at all stages of the teaching career is highly needed for successful curriculum implementation. The

professional development should gravitate most to teachers' classroom practices and meeting learners' needs. Teachers should be provided with experiences that help them understand how students think and what they are capable of doing under scaffolding (supportive) instructional conditions. Teachers should continually develop and sustain their knowledge and practices to improve in lesson preparation, effective lesson delivery, crafting didactic materials, organizing student groups and guiding learners (Henrisken, Mishra & Fisser, 2016).

Teachers trained on creativity hold more positive views on the relationship between creativity and education. Such teachers according to Cachia (2010) are able to discern how a teaching method and activity can stifle or trigger creativity learning outcomes in their learners. Teachers trained in ICT are more likely to sustain new technologies important for stimulating learning outcomes. Teacher training programs should therefore be reviewed and revised to ensure that, they inculcate diverse and innovative teaching methods, digital competence as well as teaching cross curricular competences with plenty of hands-on classroom practices coupled with efficient learner guidance.

As teachers' understanding of creativity, creative teaching, and motivation increases following attendance of INSETs, they can help to enhance their learners' creativity learning outcomes. This is affirmed by Turner and Day (2012) who points out that, trained teachers do a better job than the untrained teachers. Indeed, more INSETs are needed to empower teachers with creative teaching methods especially in ICT. INSETs increase a teachers' expertise. Expert teachers are able to think on their feet (reflect in action) and encourage deep and wide learning. Such teachers are more likely to push learners beyond the boundaries of subject knowledge and hence

encourage creative thinking. Such sufficiently adept teachers are able to quickly perceive as well as interpret learners' cues and appropriately change content, methods and mood in their teaching service.

Munshi (2018) investigated the influence of Induction Programs to first time teachers. The study by Munshi interrogated the role that mentoring and professional development seminars play in developing novice teachers' self-efficacy and inquiry-based practices. The level of self-efficacy and shift in instructional practices among novice teachers was measured using surveys, an interview, and three mentoring session observations. His study revealed that, a large percentage of novice teachers leave the profession within the first five years. Data suggested that, mentors play an essential role in helping novice teachers engage in inquiry and reflection of their efforts in ways that highly support their growing sense of self-efficacy as professionals (Munshi, 2018).

Another study by Gilman (2017) evaluated the perceived effectiveness of the Mid-Atlantic School District new teacher induction and mentoring program, according to the input of new teachers and mentor teachers. The intended outcome of the study was to enhance the current new teacher induction program by identifying areas of strength and areas where improvements might be needed. The researcher used three focus areas of support in the evaluation: professional development, mentor engagement, and professional learning communities. The researcher found evidence that, the new teacher induction program had areas of strength and areas where improvement was needed. These areas included the need for more one-to-one mentoring, more focused professional development, and the expansion of professional learning communities. The contributions from this study included

enhanced positive perception of novice teachers for their professional development. These input affected the teachers' positive feelings regarding content-specific professional development. The teachers were also positive regarding professional development to various career stages.

Sokół and Figurska (2021) determined the knowledge and creativity of employees and their impact on the growth of innovative organizations. They reviewed the cognitive, theoretical, methodological, and empirical issues regarding developing creative knowledge of workers employed in creative organizations. The study results revealed significant relationships between the performance of creative activities and certain characteristics of knowledge among workers.

Warren (2016) examined the impact a two-year new teacher induction program had on teachers' feelings of support, satisfaction, and self-efficacy. The program purported that teachers' higher feelings of support, satisfaction, and self-efficacy would lower teacher attrition. In addition, the research showed that if teachers stay at a school, they are more likely to improve their instruction and positively impact student performance. Warren (2016) gathered data through an interview. Participants included eight teachers that had most recently completed the two-year induction program. The teachers reported feeling high levels of support, satisfaction, and self-efficacy following the two year induction program.

William-Jesse (2020) assessed the level of self-efficacy of beginning teachers across the domains of instructional strategies, student engagement, and classroom management before and after completing a newly designed district jurisdicted teacher induction program. The study explored the induction program's structure in a

large, suburban Kentucky school district to evaluate the extent of participant self-efficacy levels and to determine to what degree best practices in induction were utilized. Data was collected before, during, and after beginning teachers' participation in a five-month induction program. Results of the study indicated positive influence for beginning teachers' efficacy to implement high-yielding instructional strategies, effectively engaging students, and designing good and learner friendly classroom management systems to positively impact student success.

Young (2018) sought to determine whether a teacher induction program in a small, rural Appalachian school district helped first-year teachers to be more effective teachers as determined by the Tennessee Education Acceleration Model Level of Effectiveness (TEAMLOE) scores. He matched teachers for as many similarities as possible, including age, gender, grade taught, subject taught, and the school to which they were assigned. The study used a t-test for dependent samples to compare the means of the paired matches. Young (2018) hypothesized that, the treatment group would have better TEAM LOE scores than the control group. Contrastingly, the study found out that, the teacher induction program in a rural Appalachian school district did not benefit novice teachers by helping them become more effective teachers.

Ingersoll and Strong (2011) critically examined 15 empirical studies, conducted since the mid-1980s, on the influence of induction for beginning teachers. Most of the studies reviewed provided empirical support for the claim that, support and assistance for beginning teachers positively impacts three sets of outcomes: teacher commitment and retention, teacher classroom instructional practices, and student achievement. Most studies on commitment and retention showed that, beginning

teachers who participated in some induction had higher job satisfaction, commitment and retention. The majority of studies reviewed showed that, beginning teachers who participated in some induction performed better in various teaching aspects in classroom instructional practices. As far as student achievement is concerned, almost all of the studies showed that, learners taught by beginning teachers who participated in some induction program had higher scores or gains in academic achievement tests (Ingersoll & Strong, 2011). There were, however, exceptions to this overall pattern. This was cited in a large randomized controlled trial of induction for a sample of large, urban, low-income schools which found significant positive effects on student achievement, but no effects on either teacher retention or teachers' classroom practices.

Tupavali (2017) analysed how induction programmes influenced beginner teachers' personal growth and professional development in Namibia's Erongo Region. The study used qualitative research methodology. A total of 18 participants took part in the study. A purposive sampling method was employed in this study, and data was collected using in-depth face to face interviews. The data revealed a weak relationship between how teachers were trained in teacher education institutions and schools in providing personal and professional development. The study concluded that the absence of a policy on induction in the country had resulted in an erosion of the significance of induction in the teacher development.

In Zimbabwe, Mwande and Mpofu (2017) conducted a study on the preparedness of primary school teachers to implement the grade three new curriculum in the republic. The findings of the research revealed that, the teacher development training received did not satisfy teachers' needs while some teacher trainers were not conversant with

the demands of the new curriculum. The study recommended effective training for teacher trainers to ensure successful cascade of the curriculum. Such findings were similar to those emanating from another study conducted by Paulo (2014) whose purpose was to establish pre-service teachers' preparedness to implement the CBC in secondary schools in Tanzania. The findings showed that, since CBC was introduced in Tanzanian secondary schools in 2005, there was no evidence that, teacher education curriculum at the University of Dar es Salaam where majority of secondary school teachers for Tanzania are trained had changed to effectively cater for new training demands arising from the introduction of CBC in the country.

In Tanzania also, Makunja (2015) assessed whether, the adoption of CBC to improve secondary school education quality in the republic was a dream or a reality. The study employed a mixed research approach which utilized a descriptive survey design. Purposive and simple random sampling procedures were used to select 162 respondents from six public secondary schools in Morogoro Municipality, six heads of secondary schools, six student teachers, 102 class teachers, and 48 secondary school students. Questionnaire, interviews, and observation schedule were used to collect requisite information. Quantitative data was analysed using descriptive statistics to determine frequency and percentage, whereas qualitative data was subjected to content thematic analysis. The study established that, most teachers lacked requisite knowledge for implementing a CBC during the teaching and learning process. Based on these findings, the study concluded that, adopting a CBC to improve the quality of secondary education in Tanzania has yet to translate into quality secondary school education. Indeed, teachers, who are the significant implementers, lacked knowledge and skills to implement a CBC effectively

(Makunja, 2015). Therefore, the study recommended that, efforts be made by the government through the Ministry of Education and Vocational Training (MOEVT) to conduct immediate and regular INSETs to practising teachers to equip them with the necessary knowledge and skills for implementing CBC efficiently and effectively.

Kanyonga, Mtana and Wendt (2019) conducted a study whose aim was to determine how technical college trainers implement the Competence Based Education Training Curriculum (CBETC) in Arusha city, Tanzania. The study adopted a qualitative approach through case study design to get an in-depth understanding of the CBETC implementation process. A total of 24 trainers were selected through purposive sampling from three (3) Science and Allied Technology (SAT) technical colleges in the city. In-depth interviews and open-ended questionnaires were used to collect data for the study. The findings indicated that, though most of the trainers got in-service training, more than half had limited awareness and understanding about the meaning and aim of the CBETC. In addition, trainers showed little knowledge and skills for employing CBETC teaching and learning methods and conducting student assessments and evaluations. Lastly, it became apparent that, technical colleges in Arusha city had inadequate human and material resources to implement the CBETC effectively. The research concluded from its well analysed findings that, CBETC was introduced without relevant and necessary preparations.

In Zanzibar, Habibu (2017) conducted a study that purposed to investigate the administrative support of schools heads to the novice teachers at the Public secondary schools. The study employed a phenomenological research design embedded within a qualitative research approach. The researcher generated data through Focus Group Discussions with nine school heads and semi-structured

interviews with twenty-seven novice teachers. The study unveiled that major roles played by heads of schools in supporting novice teachers were the use of advisory committee in advising the novice teachers, provision of work facilities, assisting teachers in addressing their work-related problems and attaching novice teachers to panel leaders. Habibu (2017) concluded that the novice teachers in Zanzibar did not get enough administrative support to address the myriad challenges they face in their transition from teacher training colleges and universities to teach. The study recommendations stimulated an urgent need for school heads to provide proper administrative support to novice teachers.

Another study done by Kafyutilo, Rugambuka and Moses, (2012) recommended that, teacher training should be a priority in the actualization of the CBC educational reform. This is because CBC is calling for an enhanced teachers' role in providing opportunity for the learner to develop and realize his/her full potential. Teachers therefore more than ever require fundamental knowledge, skills and abilities to interact with all students, set manageable learning standards for each learner and choose instructional materials and methods that can accommodate each student at his/her educational level.

Waweru (2018) similarly conducted a study on the influence of teacher preparedness on the implementation of CBC in Kenyan primary schools. He established that, 98.8% of the sampled teachers were not prepared to implement CBC especially in new subjects. The study also unearthed that, over 50% of teachers needed support in inculcating creativity and imagination in learners. Kimosop (2019) conducted another study on teacher competence and preparedness in the implementation of early childhood education curriculum under the Kenyan CBC. The study established

that, majority of pre-primary school teachers in Kenya were not well prepared for the implementation of CBC.

Murithi and Yoo (2021) investigated the availability of ICT facilities, teacher capacity to integrate technology into their lessons, and teacher perceptions towards technology in schools. The study was informed by the constructivist learning theory and the Technology Acceptance Model. A total of 351 teachers completed an online questionnaire. Results of the study indicated that, teachers suggested that, ICT facilities were inadequate in schools, which presented a challenge in integrating technology during the implementation of the new curriculum. Most of the teachers answered that they received only basic computer literacy training. This capacity gap caused teachers to have difficulties integrating ICT in their lessons.

For successful CBC implementation teacher induction into the CBC should ensure that, teachers adopt learner centered didactic practices. Such well inducted teachers shall be more open minded, supportive to learners, flexible in responding to learners' interests, involve learners in hands on learning activities, discourage imitation as well as emphasize the complexity and interrelatedness of ideas which are all the springboards of creativity in their learners.

2.3.4 Influence of CBC Instructional Materials on Creativity Learning Outcomes

KICD (2017) conceptualizes learning resources to be the materials that help to facilitate the teaching and learning process. They include books, charts, realia, models, the immediate environment and ICT facilities. Instructional materials prompt a learner's reasoning and facilitates the development of competences like critical thinking, problem solving, creativity, imagination, collaboration and self-efficacy.

Instructional materials help in establishment of schemas in learners' minds. When a learner correctly sees, hears, smells and touches, then s/he can later put the learnt pieces together and get the picture without future teacher explanation. Such cognitive processes stimulated by interacting with properly prepared and effective instructional materials may foster development of creative learning outcomes.

In the USA, Bui and McDaniel (2015) investigated the influence of outlines and illustrative diagrams in enhancing learning. In the study that involved 144 undergraduate students carried out at Washington University, the researchers administered to students a 12-minute lecture on car brakes and pumps after dividing them into two groups and later exposed them to either an outline diagram or no learning aid at all. When students' understanding and retention of the taught concepts was tested at the end of the lecture, it was found out that, illustrative diagrams were instrumental in bringing better performance among students. Bui and McDaniel (2015) concluded that, illustrative diagrams describe components in close detail to help students build coherent mental representations, leading to better learning outcomes and consequently improving students' academic performance.

Vaughn and Wang (2009) studied the influence of user-controlled visual aids in improving students' understanding of introductory statistics course in the USA. The study exposed 18 students of the University of Texas to animated visual aids. The study findings showed that, animated visual aids significantly improved students' academic performance and confidence in applying knowledge. However, the researchers noted that, students' academic improvement was limited to applying their level knowledge, while students' remembering, understanding, and analyzing did not significantly improve. They recommended that, more success in students' learning

could be achieved by optimizing the use of animated visual aids to cover all levels of knowledge.

In the USA also, Carpenter and Olson (2011) examined the effect of teaching new vocabularies using pictures. Their research comprised 116 undergraduate students from Iowa State University. The researchers explored whether new words in a foreign language are learned better from pictures than from native language translations. The sample population was divided into two groups, where one group was given Swahili words paired with pictures, and others were given Swahili words paired with English translation. From the experiments conducted in the study, it was found out that, there was a significant influence in the recall of Swahili words from pictures compared with English translations.

In Japan, Addison (2013) investigated the effectiveness of visual instructional materials in scaffolding students' awareness of cultural content and vocabulary. The researcher used 18 university students from Japan University and employed questionnaires to collect data. The study results indicated that, students' vocabulary acquisition increased when visual aids, such as videos, were used. It was found out that, visual teaching aids stimulated students' participation in speaking and writing activities. The research findings suggested that, videos significantly helped improve students' understanding of content-specific cultural ideas while also improving their critical thinking about cultural content.

In Japan also, Lee, Hsiao, and Ho (2014) examined whether an e-learning curriculum involving various Multimedia Instructional Materials (MIMs) can stimulate learners' social perceptions. The study also purposed to establish whether the difference in

style had a specific effect on the students' emotional states (arousal, pleasure, and flow experience) that consequently affects the students' learning motivations and learning outcomes. They employed an experimental design to three groups of students and compared three types of presentation methods: (a) a PowerPoint presentation, (b) a PowerPoint presentation guided by a human-like animated character and (c) a PowerPoint presentation guided by a monster-like animated character. The analysis results revealed that, various types of MIMs result in various social cues that significantly affect the students' social perceptions, arousal, pleasure, flow experience, learning motivation, and learning outcomes.

In Malaysia, Melor, Hadi, and Dexter (2017) investigated teachers' perceptions of visual aids as a motivational tool to enhance students' interest in reading literary texts. Mixed-method research approach was used to conduct the study. Fifty-two English teachers from seven national secondary schools were selected. Five of the respondents were also randomly selected for the interview. The data analysis indicated that, most teachers had positive perceptions of the use of visual aids. Visual aids enabled the teachers to closely engage their students with the literary texts despite facilitating students of different English proficiency levels in reading the texts with interest.

Arop, Umanah and Effiong (2015) examined the effect of instructional materials on the teaching and learning of Basic Science in Junior Secondary Schools in Cross River State. The study examined the role of instructional materials in the science classroom and how instructional materials had affected the teaching and learning of Basic Science. The study employed a quasi-experimental design. Two research questions and two hypotheses guided the study. Two hundred and forty students were

randomly selected by simple random method from four secondary schools in Biase local government area of cross river state. A 20-item test called Diffusion Achievement Test (DAT) constructed by the researcher was used to collect data for the study. The test had a reliability of 0.86. Scores generated from pre-test and post-test were analyzed using mean, standard deviation and independent t-test. The study findings revealed that, instructional materials positively affected students' achievement in science concepts. The result also indicated a statistically significant difference in the mean achievement scores of students, with females having a slightly higher mean score than that of males.

Nyagorme, Enoch and Arkorful (2017) conducted a study to determine how Instructional Media (IM) was being utilized at the colleges of Education in Ghana and how IM utilization affected students' academic performance. The study adopted a quasi-experimental design. Stratified random sampling technique was used to select five colleges from the thirty-eight public colleges of Education in Ghana. The actual sample for the study was Sixty-Seven (67) tutors from the five selected colleges of Education, namely: Wiawso College of Education, St. Louis College of Education, Jasikan College of Education, Presbyterian Women's College of Education and Bagabaga College of Education. The instruments used for data collection were questionnaires and interviews. The collected data was analyzed using Statistical Package for Social Sciences (SPSS). The analysis revealed that instructional media were not adequately available in Colleges of Education in Ghana.

Bukoye (2019) conducted a research to investigate the utilization of instructional materials as tools for the effective academic performance of students. He used a survey research method, and the study sampled a total number of 100 respondents in

five selected secondary schools. The researcher used a questionnaire for data collection. The research findings revealed that, there was inadequate use of instructional materials in most schools. The majority of the teachers did not take cognizance of the importance of instructional materials while teaching. Those teachers that adopted the utilization of instructional materials did not use them appropriately resulting in a high number of students' failure in external examinations. Based on the research findings, the study recommended that, professional counselors in the state should sensitize all heads of schools and teachers through seminars and workshops on the importance and good utilization of instructional materials.

In Nigeria, Ibikunle and Dada (2018) investigated the influence of Audio-Visual Aids on teaching and learning. The study adopted a descriptive survey research design. The study population consisted students from public junior secondary schools in Ikere local government. A sample size of three hundred students was used for the study. These respondents were the students from public junior secondary schools. The data collection instrument for the study was a self-structured questionnaire. The data collected was analyzed using Chi-square statistical analysis. The analyses exposed that, audio-visual instructional materials promoted students' motivation in learning.

In Nigeria also, Otor, Ogbeba, and Ityo (2015) conducted a study that aimed to assess the influence of improvised instructional materials on chemistry students' performance. They also examined the differential performance among male and female chemistry students when the instructional materials were used in teaching chemistry. A descriptive survey design was used for the study. Data was collected

from 150 senior secondary school chemistry students using a simple random sampling procedure from eight secondary schools. Improvised Chemistry Teaching Aids Questionnaire developed by the researchers and validated by experts was used for data collection. Students taught using improvised instructional materials outperformed their counterparts taught with the conventional lecture method. There was also a better performance among the male chemistry students when compared with their female counterparts. They recommended that teaching chemistry using improvised instructional materials should be encouraged since it optimizes learning.

Olatoye (2017) investigated the effect of teaching using charts, real specimens, and videos on secondary school students' achievement in mammalian skeletal system concepts in Nigeria. A quasi-experimental design with control and experimental groups was employed for the study. Charts, real specimen, and videos were used to teach the experimental group, while the lecture method was used to teach the control group. A hundred and twenty randomly selected senior secondary school Biology students were drawn from four schools. The data was analyzed using Analysis of Co-variance (ANCOVA). Findings showed a significant influence of teaching using charts, real specimen, and videos on students' achievement in mammalian skeletal system concepts. The findings also indicated no significant difference in gender on students' achievement in mammalian skeletal system concepts. The study concluded that, real specimen and videos are the best instructional materials to be used in teaching since they tend to raise students' achievement.

Ajoke (2017) evaluated students' performance with instructional materials and gender influence in teaching aids in English classrooms. This study made use of a descriptive survey design. A total of 153 students of two public schools were

sampled using a simple random sampling technique. The population for the study covered all secondary school students in one district. Findings from this study revealed that the performance of the secondary school students not taught with the use of teaching materials was very poor. Findings also revealed no significant difference in students' performance in the English language based on gender and school type.

Hafiz and Lawal (2020) examined the effects of instructional materials on students' academic performance in technical education in Bunu Local Government Area of Kogi state. Data was collected from 75 respondents using a descriptive survey design questionnaire. The study revealed that instructional materials were significant for teaching and learning. Instructional materials facilitate effective learning of technical education and knowledge is more appreciated in using instructional materials in technical education.

Olayinka (2016) conducted a study whose aim was to establish the contribution of instructional materials to the academic achievement of secondary school students in Social Studies in Ekiti State. The total sample size was 180 comprising all Junior Secondary School Class II students. The instrument for the study was a 30 multiple-choice self-designed Social Studies Achievement Test (SSAT). Specialists validated the instrument in Social Studies Test and Measurement and Educational Management. Test-re-test method and estimation of internal consistency was used to ascertain the reliability of the instrument. The reliability coefficients for test-retest and internal consistency were 0.73 and 0.75 respectively. The study results tested four hypotheses of the research tested at the significance level of 0.05. The study found a significant difference in the pre-test and post-test scores of students in the

experimental group. The study also found out that, the gender effect was not statistically significant in social studies. The study concluded that students taught with instructional materials performed better than those taught without.

Lyimo, Too and Kipng'etich (2017) did a research whose aim was to investigate the availability of instructional materials and physical facilities in secondary schools of Arusha district, Tanzania. The study utilized a descriptive case study design, and data was collected using questionnaires, interview schedules and document analysis. The researchers used Simple random and purposive sampling to select a sample of 318 out of about 1049 school stakeholders in the Arusha District. The study concluded that there was an inadequate number of textbooks, reference books, maps and globes in the investigated schools resulting to underperformance of students. In addition, schools had inadequate physical facilities such as classrooms, desks, chairs and the available classrooms were poorly constructed with inadequate spacing.

In Kenya also, Wetende (2013) conducted a research to assess the availability and utilization of audio-visual teaching resources in teaching Oral Literature among high school students. The sample for the study comprised 25 head teachers and 63 Oral Literature teachers. The instruments for data collection were observation checklist, interview guides, and individually administered questionnaires. The study established that, most audio-visual instructional resources were unavailable in many schools. The common instructional resources identified were; textbooks, storybooks, poems, journals, narrative collections, drums, cassettes, and resources persons. The study recommended that, schools should invest more in the acquisition of modern audio-visual instructional media, and the government needs to support schools in acquiring audio-visual instructional media.

Okongo et al. (2015) carried out a study aimed at finding out whether the availability of teaching and learning resources influenced the implementation of inclusive education in pre-school Centers in Nyamira North sub-county. Efforts had been made to integrate the learners with special needs. Although the programme had encountered many challenges, policies had been implemented to achieve universal education and realize vision 2030. This was in the pursuit of achieving education for all amid the numerous challenges at a pre-school level both in Kenya and the world at large. The study employed a descriptive survey research design. The target population was the pre-school centers. Forty head teachers were randomly sampled to represent 30% of the centers. Another 134 pre-school teachers and 270 pre-school parents were sampled through stratified random sampling, while 12 Education Officers were sampled through systematic sampling. Data was collected using questionnaires and observation checklists. Research findings revealed that there was inadequate teaching and learning resources at the Nyamira North sub-county pre-school centers. Seventy-eight (78) per cent of the respondents revealed that inadequate resources affected the implementation of inclusive education.

Omuna, Onchera, and Kimutai (2016) conducted a study to establish the availability and use of instructional resources in teaching and learning English reading skills as well as to examine the correlation between the instructional resources and learning English reading skills in secondary schools in Kenya. Data was obtained from 440 respondents. The study adopted a mixed-method approach, and data was collected using questionnaires, semi-structured interview schedules, and classroom observation schedules. The results indicated that, textbooks were the most used instructional resources and availability of instructional resources positively correlated with the

scores of English reading skills among the students. The study exposed that, teachers do not use a variety of instructional resources when teaching English reading skills. It was recommended that, teachers who do not use various instructional resources should be sensitized to do so in order to improve English reading skills.

Muiruri and Kibui (2019) conducted a study to investigate the effect of instructional materials on children's performance on number writing among pre-school children in Kamukunji Sub-County, Nairobi county, Kenya. The study population comprised 450 children from 15 pre-schools selected by random sampling. The research design used was Quasi-experimental. It had both control and experimental groups. The study findings showed that the control group in both pre-test and post-test performed poorly posting scores of 29.50% and 32.1%, respectively. The investigators attributed the low scores to be precipitated by lack of instructional materials. The study also revealed that the learners were in most cases passive listeners. Data analysis exposed that, children in the experimental group which had used instructional materials in number writing performed better than those in the control group. The experimental group in the pre-test showed that the learners had low scores, but during the post-test where they used instructional materials, performance improved greatly to 81%.

Cheboi and Nyongesa (2020) also conducted a study to find out how the availability of instructional materials influences learners' literacy among Pre-Primary II (PP-II) learners in public primary schools in Webuye West Sub-County. A descriptive survey research design that adopted a mixed-methods approach was used. A sample of 86 pre-primary II teachers and 341 pre-primary II learners were randomly drawn, while 48 head teachers and 48 deputies were sampled using the purposive sampling

technique. The researcher collected data using questionnaires, interview guides and observation check lists. The study found out that, schools in the study area did not provide adequate and appropriate instructional materials to equip learners with literacy skills. The study further found out that, inadequate instructional materials affected pre-school learners' acquisition of literacy skills.

2.4 Theoretical Framework

A CBC anchors on Benjamin Bloom's taxonomy of educational objectives and his stress on mastery learning. According to Cohen (2005), CBC is designed around inductive as well as experiential instruction and learning outcomes. CBC implementation and its precipitation of creativity learning outcomes is informed by several educational theories. The major theories that informed this research were constructivism and discovery learning theories. The justification for using two theories in the study was that, creativity is a highly multifaceted phenomenon. The two theories embed and integrate the various elements of the dependent variable (creativity learning outcomes) as occasioned by the independent variable (CBC). The theories together with their relation to CBC and creativity learning outcomes are explained in 2.4.1 and 2.4.2, respectively.

2.4.1 Constructivism Theory

Constructivism is an epistemology, learning or meaning making theory that offers an explanation of the nature of knowledge and how human beings learn. It capitalizes on learner's abilities to construct viable/applicable knowledge (Kantar, 2013). A core notion of constructivism is that, individuals live in a world of their own personal experiences (Karagiorgi & Symeou, 2005). Based on this perspective, individual learning experiences plays a vital role in construction of knowledge because

knowledge cannot live on its physical form but in a specific entity (Qiong, 2010). Knowledge is acquired through involvement with the content. Constructivism results into a shift of paradigm from traditional teaching paradigm where teachers simply transfer information to learners to learning experiences that highly involve the learner in making the knowledge for him/herself. Constructivism strongly opposes students been passive receivers of knowledge and advances that learners should be actively involved in the education process at a personal level. Active involvement in learning makes a learner own the knowledge, skills, attitudes and values hence such learning becomes lifelong and transformative.

Constructivism does not view knowledge as universal truths that can be transferred from one person to another but instead sees knowledge as phenomena that must be unearthed in a gradual manner and emerging through many explanations and descriptions from an individual human beings' pursuit of understanding and been able to live productively in the universe. Thus, constructivism is an educational approach that holds that, knowledge involves an individual making meanings within his/her cultural and societal context (Colgan & Maxwell, 2019)

The basic premise of constructivism theory is that, people learn when they have gained experience from what they learn. That is, people create their meaning through experience. Constructivist thinking is rooted in several prepositions of Piaget and Vygotsky (Gul, 2016). Piaget coming from cognitive school of psychology developed cognitive constructivism. Piaget stressed that knowledge is self-constructed. He argued that, from birth human beings actively select and interpret information taken from the environment. The knowledge store in humans is not built through passive accumulation. Piaget believed that babies are born with the ability to

adapt to and learn from the environment. They do not have to be taught to crawl or walk, and later, they do not have to be taught about the permanence of objects or other physical laws. Piaget believed that cognitive development is the result of the interaction between the individual and the environment. Children construct higher levels of knowledge from elements contributed both by innate capacities and by environmental information.

Cognitive constructivists argue that, learners actively construct knowledge and that any knowledge account makes essential references to cognitive structures. Knowledge comprises active systems of intentional mental representations derived from past learning experiences. Each learner interprets experiences and information in the light of their stage of cognitive development, cultural background, personal history, and generally their environment. Learners use these meaning making factors to organize their experience and to select and transform new information for appropriate adaptation. Therefore, the learner's knowledge is actively constructed rather than passively absorbed and hence it is essentially dependent on how the learner approaches it.

Because knowledge is actively constructed, learning is presented as a process of active involvement. The instructor's role is not to drill knowledge into students through consistent repetition or to goad them into learning through carefully employed rewards and punishments. Instead, the teacher's role is to facilitate active involvement by providing learners with necessary resources and guiding them to assimilate new knowledge to old and modify the old to accommodate the new. Thus, teachers must consider the learner's knowledge when deciding how to construct the curriculum especially the presentation, sequencing, and structuring of new material.

The theory sees motivation as mostly intrinsic since it involves significant restructuring of existing cognitive structures. Successful learning therefore requires a significant personal investment by the learner. Learners must face the limitations of their existing knowledge and accept the need to modify or abandon existing beliefs. Without some internal drive on the learner's part, external rewards such as grades and punishments are unlikely to be effective in the long run.

For Vygotsky, constructivism was more concerned with understanding the influence of the social environment on the learning process. Because of his skewness to the social environment, his version of the concept is called "social constructivism." In Vygotsky's view, learning occurs as children get involved in collaborative discourse, and social interaction activities, along with an understanding of the historical context of information. In Vygotsky's perspective, knowledge creation is in not highly individualized. Vygotsky's approach was based on the assumption that, cognitive development is systematic, occurring at specific stages in personality development (Ruzic, 2011). He also believed that an educator's input is vital in understanding complicated subject matter that the learner would be unable to process independently. Social constructivism relies on individual logical reasoning as the dominant basis of knowledge, based on social interactions and communication. According to social constructivists, social communication and interaction can help formulate more extensive and more reliable knowledge based on a system of consensual sharing, testing, and evaluation (Semerci & Batdi, 2015). Social constructivists further claim that, individual meaning-making is less socially valued because the world's objects and events are primarily influenced by the general meanings of the society.

Social constructivists identify four primary principles that determine how knowledge is produced. The first principle contends that, the accumulation of knowledge is governed by the individual's cognition in an active rather than passive activity (Mishra, 2014). The second principle, which is based on the assumption that cognition is adaptable, suggests that, an individual's cognition will adjust itself as per the conditions in which it is operating. The third principle regards cognition as a fixed entity with an immutable, singular vision of the real world. Still, it is a mechanism that modifies itself as the individual develops cognitive awareness through experiences. The final principle contends that, information processing has its origins in both the biological and neurological elements. Knowledge itself is reliant on social and cultural interaction for its formation (Mishra, 2014). Generally, social constructivists opine that, understanding the external world, its meaning and value is primarily achieved through social interaction (Shah, 2019).

Several arguments have been developed to criticize constructivist approaches in teaching and learning. Kirschner, Sweller, and Clark (2006) posited the belief that, constructivism promotes a teaching style with unguided or minimally guided instructions for students. A common criticism is that, when students learn with minimal instructions, they become lost and frustrated. The practice of designing minimally-guided instruction ignores the importance and structure of working memory during learning. According to Kirschner et al. (2006), minimally-guided approaches as practiced through constructivist approaches ignore empirical studies. He critics that, unguided instructions are not useful in learning environments. Another concern is that in constructivism, learners need to connect their knowledge to tangible objects to ensure that they have acquired knowledge. These objects may

be unavailable. This criticism suggests that, constructivist approaches focus mainly on cognitive factors, ignoring other contributing environmental and technological factors (Mayer, 2014).

A further critique of constructivism claims that, constructivism views learners as interpreting the world differently. Instructions are not effective because critical concepts within the curriculum are not uniformly constructed among learners. These critics argue that, within constructivist-based pedagogies, giving learners curricula is ineffective because curricula are centered towards all learners in the classroom while every individual has different thinking (Shumba, Ndofirepi & Gwirayi, 2012). Other critics of constructivist approaches argue that, constructivism promotes group thinking and ignores students' individuality even though learning should promote individual rights (Thomas & Brown, 2011). Some psychologists criticize constructivism because dominant students may end up controlling classroom interactions, while average students might be ignored (Gupta, 2011).

In education, the constructivism theorists believe that, students learn to learn by giving them the training to take initiatives for their own learning in order to construct knowledge for themselves (Barbosa, Jofili & Watta, 2004). A number of teaching strategies are born from the constructivist learning perspective which mostly involves a teacher avoiding direct instruction but leading students through questions and other learning activities to discover, discuss, appreciate and verbalize the new knowledge. Learning activities encouraged by constructivists include experimentation, visualisation, research projects, field trips, observing films and class discussions. A constructivist's views of learning are in consonance with empirical findings concerning the inadequacy of traditional teaching approaches in

developing and changing students' fundamental understandings (Tyler, Waldrip & Griffiths, 2004).

Because of the emphasis on students as active participants, constructivist teaching and learning strategies are therefore learner-centered. The role of a constructivist teacher is to guide learners to discover their own meaning instead of lecturing and controlling all classroom activities. Learners consequently own the knowledge. A constructivist teacher understands present learner conceptions and uses them to guide learning. Such teachers encourage learners to constantly assess how activities help them gain understanding by questioning themselves about what they have learnt. A study by Geen and Gredler 2002 comments further that, when students are left alone with minimum supervision but with goal centered accomplishments, they can generate knowledge by constructing their own models of learning therefore developing their own new skills and competences. Students in constructivist classrooms are likely to become expert learners because they are taught how to learn. Such learners get meaningful learning following the construction of their own understanding and modification of pre-existing ideas in light of new gained knowledge and outcome of their explorations.

The rationale of using constructivism theory in this study was that, CBC advocates for giving learners opportunity to construct their own knowledge and skills. For CBC to nurture creativity in learners, the learners should be well involved in the learning process, taking initiative and generally been active learners. Constructivism theory also buttressed the study in that, the teaching and learning approaches suggested in CBC are learner centered. The teacher in CBC only guides learners and does not simply transfer knowledge to pupils, a premise for spurring creativity.

2.4.2 Jerome Brunner's Theory of Discovery Learning

Brunner's perspective points out that, students need to be accorded opportunity for creating their personalized knowledge through individual discovery (Brunner, 2009). The perspective resonates with the popular statement by Confucius (450 BC) highly used in teaching and learning: "tell me and I will forget, show me and I may remember, involve me and I will understand". Discovery Learning Theory is applied in ASEI lessons as recommended by SMASSE guidelines. This theoretical perspective emphasizes that, the outcomes of learning should be to become a better problem solver not absorbing concepts that one is unable to apply. The basis of Discovery learning is making enquiries. Learners learn by discovery if subjected to problem solving situations that demand the s/he draws from past experiences and accumulated knowledge to discover relationships, facts as well as new truths. (Brunner, 2009). Learners interact with their environment by making explorations, manipulation of objects, answering questions as well as conducting experiments. The interaction may cause learners to remember knowledge discovered by themselves. In discovery learning, the pupil is an active participant in concept development and performs the major tasks in the process. S/he should be cognisant of several options in any task and can even ask "what if" as s/he receives gets information (Brunner, 2009).

Brunner also distinguished between three modes of representation or systems of processing in physical (i.e. action) and mental (i.e. imagery and language) realms. In Brunner's view, growth necessitates and is facilitated by a manageable representation of recurrent features of the complex environments in which we live. Brunner referred to these three systems of processing as enactive, iconic, and symbolic. Enactive

representation refers to a mode of representing past events through appropriate motor responses. Iconic representation summarizes events by the selective organization of perceptions and images by the spatial, temporal, and qualitative structures of the perceptual field and their transformed images. A symbolic system represents things by design features that include remoteness and arbitrariness.

There are three main attributes of discovery learning. The first attribute of discovery learning is exploring and problem-solving to create, integrate, and generalize knowledge. Through exploring and problem-solving, students take on an active role to create, integrate, and generalize knowledge. Instead of engaging in passively accepting information through lecture or drill and practice, students establish broader applications for skills through activities that encourage risk-taking, problem-solving, and an examination of unique experiences (Bicknell-Holmes & Hoffman, 2000). In this regard, students rather than the teacher drive the learning. Expression of this discovery learning attribute essentially changes students' and teachers' roles. This is a radical change difficult for many teachers to accept (Hooks, 1994). The second attribute of discovery learning is student-driven, interest-based activities. Such activities encourage students to learn at their own pace (Bicknell Holmes & Hoffman, 2000). Through discovery learning, some degree of flexibility in sequencing learning activities can be achieved. The third attribute is that, learning is not a mere progression of lessons and activities. This attribute contributes significantly to student motivation and ownership of their learning. This attribute of discovery learning encourages incorporation of new knowledge into the learner's existing knowledge base. It is based on the principle of using existing knowledge as a basis to build new knowledge (Bicknell-Holmes & Hoffman, 2000). Scenarios with

which students are familiar allow them to build on their existing knowledge by extending what they already know to invent new and progressive ideas.

Discovery learning occurs in six stages. The first stage is the stimulation. This involves teachers starting the teaching and learning process by asking questions, reading a book, and other learning activities that lead to problem-solving (Hanafi, 2016). The stimulation in this stage provides interactive learning conditions, which could help students explore the material more actively. The second stage is problem statement. Here, the teacher gives chances to students to identify problems related to the learning material. One of the problems is chosen and stated in the form of a hypothesis (Hanafi, 2016). The third stage is the data collection. Here students conduct experiments or exploration, while teachers provide opportunities for the students to gather as much relevant information as possible to test the hypothesis. Data can be obtained through literature review, observing objects, interviewing sources, conducting experiments, and so on (Hanafi, 2016).

The fourth stage is data processing. This is an activity of analyzing the data and information that has been obtained by the students from interviews, observations, and so on. The processing facilitates data interpretation. The fifth is the verification stage. Here students perform a careful examination to prove whether the hypothesis can be accepted or rejected based on data results (Hanafi, 2016). The sixth is the generalization stage. It is the process of drawing a conclusion that can be used as a general principle that can apply to the same event or problem elsewhere.

Discovery learning perspective strongly suggests active learning in which the work of the teacher is to keep encouraging and guiding the learner, not giving them

answers. Brunner advocates for guided discovery learning where students work actively as the instructor aids them to become more productive. Kolb (1984), points out that when learners solve problems in the guidance of experienced peers or adults, it offers a framework used to identify personal as well as global rules and truths, while giving the learner opportunity to shape and construct the cognitive formations that form the foundation of his/her understanding. This forms the basis of personal autonomy, responsibility, intrinsic motivation, curiosity, problem solving and life-long learning.

The theory points five indicators which signal intellectual growth in a person. This are; capacity to respond to experiences in different styles not one, internalizing experiences in a reservoir correlated with his/her environment, improved ability in the use of language, proper interaction with an instructor as well as high level competence in dealing with numerous demands. Through discovery students are optimally motivated to make imaginations consequently promoting their creativity learning outcomes.

When learners discover, their creativity is spurred. This is because the discovery creativity causes students develop the ability to reflect, analyze as well as clarify concepts. Such mental operations are performed in most cases during brainstorming learning activities. It also promotes creative thinking since during the discovery learning, students are actively engaged in fielding questions, conducting investigations, performing experiments, solving problems and creating personal meanings to issues (Brunner, 2009). Through discovery learning, pupils get engaged in all their faculties (physical, intellectual, emotional, social and soul). Such

involvement yields in students a perception that what they learn task is authentic and consequently may generate creativity.

Balim (2009) investigated the effect of Discovery Learning on Students' Success and Inquiry Learning Skills. He investigated fifty pupils in grade seven from a public elementary school with a middle-class economic profile in Izmir, the third-largest city in Turkey. He employed a quasi-experimental research design with a pre-test and post-test. The study results revealed a significant difference in favor of the experimental group over the control group regarding the average academic achievement and scores of retention of learned content. Discovery learning method, which is one of the various teaching methods in which students are active and are guided by the teacher, is considered to increase students' success and inquiry learning skills more than the traditional teaching methods.

Discovery learning theory is criticized in that, it creates cognitive overload, can cause misconceptions (i.e. confusing the learner if no foundational framework is provided). This makes it difficult for tutors to identify learning problems and misconceptions. It is also resource (time and money) consuming.

The rationale for using Discovery Learning Theory to inform the study was that, it advocates for building knowledge by finding out (discovery) which is a precursor for nurturing creativity learning outcomes in pupils for successful implementation of CBC. It was also relevant for it advocates for the use of learner centered teaching approaches in which pupils get engaged in learning experiences such as practicals, project work, science and engineering fairs among others. This causes learners to be actively engaged in their learning consequently enjoying learning and becoming

independent life-long learners. Its strong emphasis on problem solving, inquiry, building relationships, manipulating of objects by learners (experiments), rendered the theory fit for informing this study. Pupils subjected to such learning experiences are more likely to be creative and consequently innovative, a major goal of CBC.

SUMMARY OF THEORETICAL FRAMEWORK

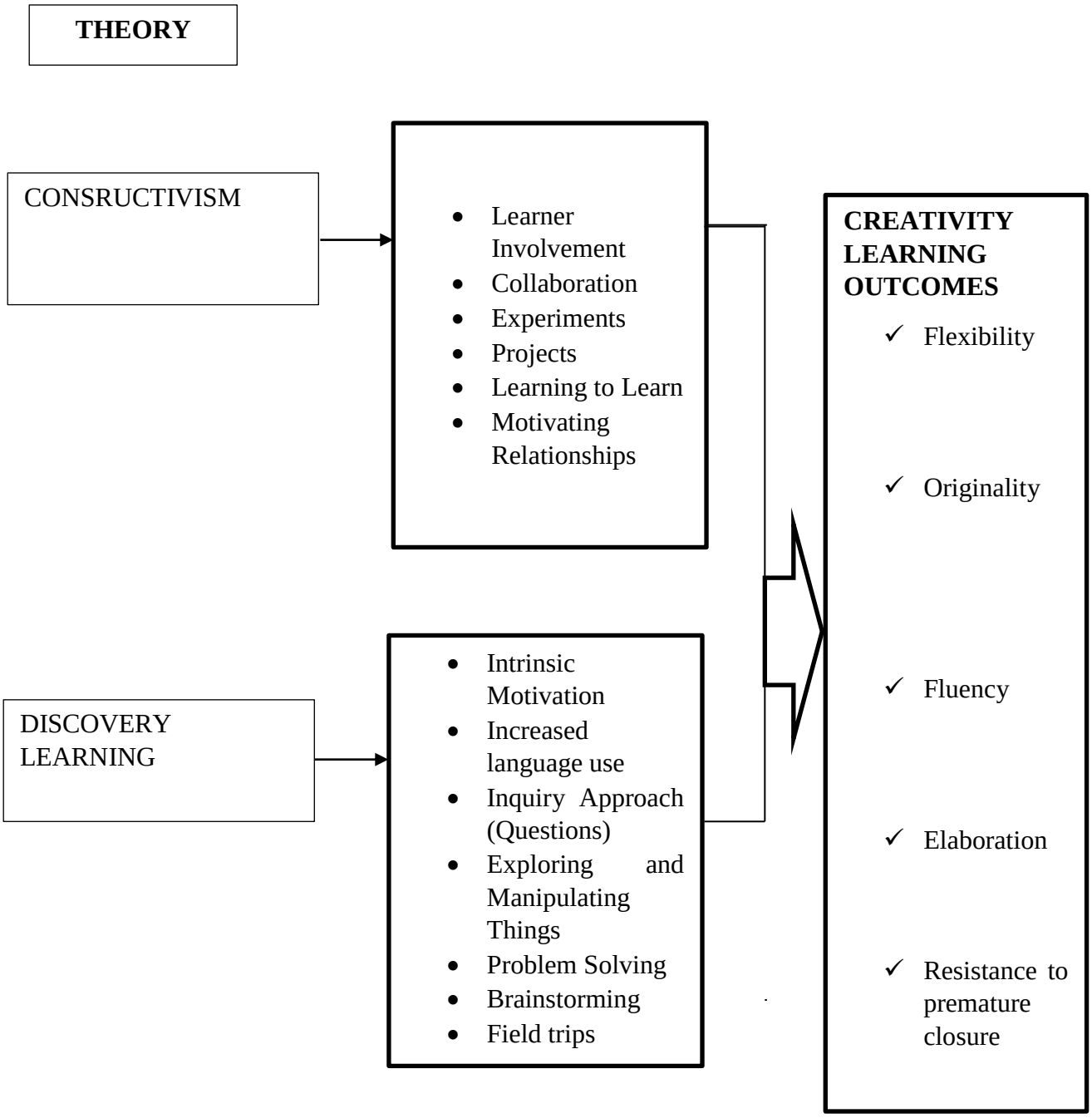


Figure 1: Theoretical Framework showing the theories that informed the study and the variables

Source: Researcher 2023

2.5 Conceptual Framework

A conceptual framework as shown in figure 2 is an analytical tool with the variables involved in the study. It is used to make conceptual distinctions and organize ideas in order to make the study more clear. The conceptual framework summarizes the study for it captures the independent and dependent variables in the study. It further unpacks the independent and the dependent variables in the study to smaller measurable aspects.

The independent variable in the study was CBC. As per the objectives, CBC was further subdivided into four smaller independent variables each with measurable indicators. The specific parts of the independent variable (CBC) were: core competences nurtured in CBC, teaching and learning approaches in CBC, teacher induction into CBC and CBC instructional materials. The four smaller specific parts of the independent variable formed the four objectives of the study. The hypotheses that were tested by data collection and analysis were derived from the four small parts of the independent variable which were further subdivided to source data.

The dependent variable in the study was creativity learning outcomes. The indicators of creativity learning outcomes were: flexibility, originality, fluency, elaboration and resistance to premature closure of a learner. The level of the five indicators were measured in the consumers of CBC who for this study were the grade four learners. Data for measuring the dependent variable was collected using creativity tests administered to the pupils and observation schedule for the learners.

Intervening variables in the study included, level of education for grade four teachers and school environment.

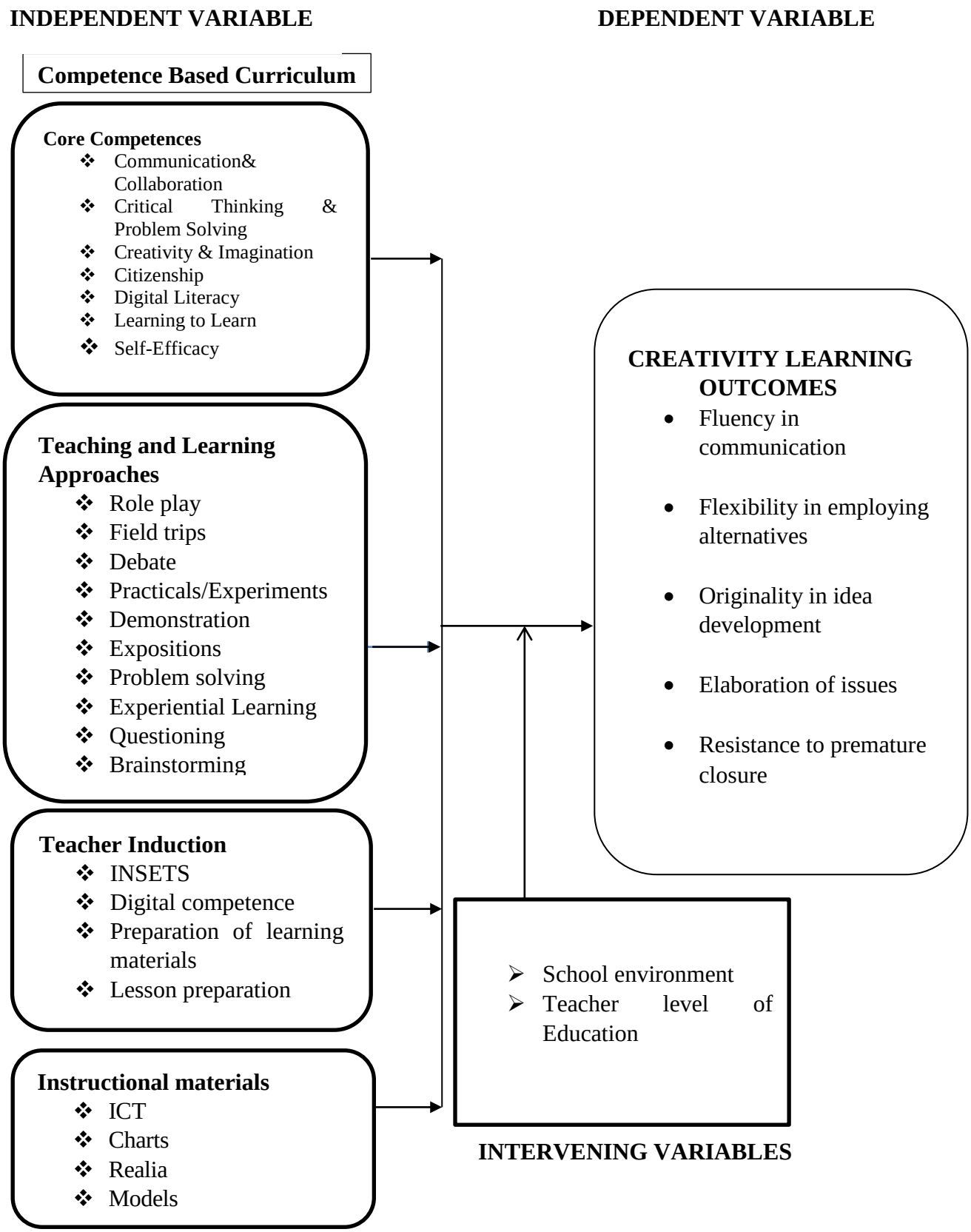


Figure 2: Conceptual framework illustrating relationship between variables
Source: Researcher 2023

2.6 Research Gaps

Most of the reviewed studies were undertaken in other countries not in Kenya. For example, Charteris (2014) did a study in New Zealand, Mahmoud (2017) in India, Simon (2013) in Netherlands, Oyelekan, Igbokwe, and Olorundare (2017) in Nigeria and Hangül (2017) in Turkey. None of the studies conducted in Kenya had entirely focused on the CBC and the creativity learning outcomes. Muasya and Waweru (2019) investigated the constraints likely to face the successful implementation of the CBC in Machakos County which borders Makueni County. The study adopted a descriptive survey design. The study established that, teachers were not adequately prepared for the implementation of the new curriculum. Infrastructure available in schools was not adequate for the successful implementation of CBC. Ng'eno and Chesimet (2016) did a study in Kericho, focusing on how the experiential learning approach influenced Maths creativity. The study for this research was done in Makueni County and focused on CBC and its influence on creativity learning outcomes.

Some of the reviewed researches employed only qualitative research methodology such as that conducted by Ehtiyar and Baser (2019), Hangül (2017), Ingersoll and Strong (2011), Elald and Batd (2016), and Charteris (2014). Boahin and Boahin (2018) also did a qualitative study by reviewing past researches and policy papers. Other investigators did a quantitative study only. They included Prasertcharoensuk, T., Somprach, K, & Tang, K. (2015) and Kisirkoi and Mse (2016). The current study employed mixed research methodology where both qualitative and quantitative approaches were integrated. A gap was also found in the targeted group of people where no such a study had ever been done. Some studies had concentrated on

secondary schools and tertiary institutions. For instance, Ozan and Kıncal (2018) focused on secondary schools, Komba and Mwandanji (2015), and Makunja (2015) targeted CBC in high schools in Tanzania. Oyelekan, Igbokwe, and Olorundare, (2017) targeted high schools in Nigeria while Simonds et al. (2017) case study was on tertiary institutions. These research only targeted grade four pupils in public primary schools.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter contains the techniques and procedures that were employed to conduct the study. It presents the research paradigm and design that were used, location of the study, target population, sampling procedures, sample size, research instruments, piloting, tests of validity as well as reliability for the data collection instruments, data collection and analysis techniques and finishes with the ethics that researcher observed in the course of the study.

3.2 Research Paradigm

The researcher employed mixed methods approach. Donald (2010) views mixed methods research as a study that integrates both qualitative and quantitative research methods. In Qualitative research data is collected inform of narratives. In Quantitative research, data is collected inform of numbers and accurately subjected to analytical statistical programs to draw numerical values.

The researcher used the research Paradigm for it optimizes the depth and breadth of required to either reject or accept research hypotheses. In addition, since quantitative and qualitative methods bear strengths and weaknesses, triangulating both allows the researcher to lower their weaknesses and maximize on strengths of the two methodologies. Something not captured by the quantitative method can be got by qualitative approach. In addition, the investigator used mixed methods approach since it aided answer varied study test items therefore scaling up external validity of the study outcomes.

Creswell (2013) points out that, one strength of mixed methodology is that, it offers the chance of triangulation in order analyse a particular research problem. A combination of quantitative and qualitative research approaches was used in data collection, analysis, interpretation and inferencing.

3.3 Research Design

According to Creswell (2013), a research design is a systematic guide providing an outline of a study, investigators' data compiling techniques, specifics regarding how a research draws its conclusions as well as the limitations of the study. The researcher employed the concurrent triangulation design. Concurrent triangulation design provides a study with a range of available options to consider that are well defined to facilitate the researchers' use of a solid approach for addressing the research problem and hence helps the researcher anticipate and resolve challenging issues. The concurrent triangulation design comprises simultaneous yet separate, gathering and analysis of qualitative and quantitative data so as to draw different but complementary conclusions on one topic to enable the investigator to understand the research area fully.

The concurrent triangulation design was therefore chosen for the research because it is efficient in optimizing deep and wide understanding of the research problem. The researcher unified the two data sets by integrating the separate research outcomes in the interpretation of data to assist in interpreting the two types of data (Creswell, 2013). Following the model, quantitative and qualitative data on CBC and its influence on creativity learning outcomes was gathered and analysed separately and then the different results were converged at the interpretation stage. The two types of data were gathered at the same period.

The concurrent triangulation design is diagrammatically shown in the figure 3.

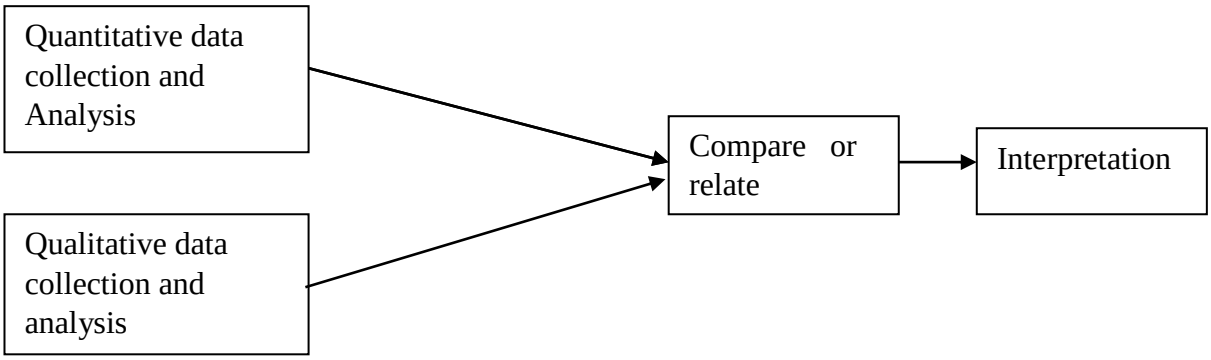


Figure 3: Concurrent Triangulation Design

The design was suitable since the researcher intended to directly compare and contrast quantitative statistical results with qualitative findings for corroboration and validation purposes. The concurrent triangulation design was chosen for it is very appropriate for mixed methodology and saves time.

3.4 Location of the Study

The locale of the study was Makueni County. The County borders Machakos, Kitui, Taita Taveta, and Kajiado counties to the North, East, South, and West, respectively. The planned Konza Techno city which is envisioned to be a great hub for creativity and innovation is in the County. Makueni County covers an area of 8009km^2. The County lies between latitude 1^0 and 3^0 South of the equator and longitude 37^0 and 38^0 East of the Greenwich meridian. In terms of education, the county is divided into nine sub-counties which are Makueni, Mbooni East, Mbooni West, Nzaui, Kilungu, Kibwezi, Makindu, Kathozweni, and Mukaa.

The county's population, as per the 2019 census is 1002979 people. The males are 488378 and the females are 514601. The population density is 125 people/KM^2. The county experiences semi-arid climatic conditions with minimal rainfall and average temperatures throughout the year. It is usually prone to frequent droughts. Small

scale Agriculture is the main economic activity of the people living in the county. Agricultural productivity is therefore low in Makueni County. According to the Kenya Integrated Household Budget Survey 2015/2016, the county experiences relatively high levels of poverty at 34%. The poor in the county have limited access to basic needs like food, shelter, clothing, health, water and education. The investigator employed purposive sampling so as to select Makueni County as the study area since for people living with fairly poor conditions as those of Makueni need their creativity to be boosted in order to increase their survival and improve their livelihoods.

The justification for doing an assessment of influence of CBC on creativity learning outcomes in Makueni county pupils was therefore to harness data that would help the county find out how its young population was been prepared in school to confront the challenges in their county. The choice of Makueni County was in tandem with its integrated development plan. The Makueni county integrated development plan (2018-2022) states that, the youth in the county account for 24% of its population. There is therefore need to equip the youthful population with competences that can help the county achieve its vision of been a prosperous value-based county with a high quality of life.

Among the values that the plan wishes to inculcate in its people are creativity and innovation. The objective of Makueni county integrated plan (2018-2022) is to guide the county to reach a sustainable path of economic growth and enhanced welfare of its citizens. One of the major pathways of gearing the county to achieve this objective is through CBC for its learners hence the need to assess whether CBC is helping to nurture creativity.

3.5 Target Population

The study targeted all grade four learners, all grade 4 teachers, all head teachers, all CSOs and all QASOs in public primary schools in Makueni County. Grade four learners were chosen for the study because they had been taught using CBC up to the time the researcher was planning to undertake the study. These learners could therefore give the best impression of how CBC had influenced their learning outcomes. There are 832 public primary schools in the county. Table 1 presents the target population for the study.

Table 1: Target Population of the Study

Sub-County	Head teachers	Grade 4 teachers	CSOs	QASOs
Makueni	103	408	5	1
Mbooni East	55	217	3	1
Mbooni west	91	361	4	1
Nzaui	119	467	5	1
Kilungu	48	194	3	1
Kibwezi	161	513	6	1
Makindu	67	274	3	1
Kathonzweni	81	327	4	1
Mukaa	107	419	4	1
Total	**832**	**3180**	**37**	**9**

Source: Makueni County Education Office 2023

3.6 Sampling Procedures and Sample Size

A sample is a subset of the population (Kothari, 2004). The type of sampling used in the research was probability sampling. In probability sampling, each individual has unknown and equal chance of been included in the sample. Probability sampling was used by the researcher for it lowers bias consequently enabling generalization of study findings.

According to Kothari (2004), a sample size should be economical and representative of the target population. Because of the large target population, the study used the following formula to determine the sample size by Krejcie and Morgan.

$$n = \frac{Z^2 pqN}{e^2(N-1) + Z^2 pq}$$

Where,

n = sample size

N= target population

p = estimated proportion of an attribute (0.5)

q = 1-p.

Z= level of significance (1.96)

e= Expected Error (0.05)

$$n = \frac{1.96^2\ X\ 0.5\ X\ 0.5\ X\ 38905}{0.05^2(38905-1) + 1.96^2\ X\ 0.5\ X\ 0.5}$$

$$n = \frac{37364.4}{98.2} = 380$$

n (sample size) =380 respondents.

After careful application of the formula, 17 primary schools were sampled using stratified sampling. The strata were the nine sub-counties constituting the County. The justification for using stratified sampling technique was to reduce homogeneity of the sample hence optimize external validity. Two primary schools from eight of the Sub-Counties were selected and one school in the sub-county with the least number of schools. In the eight sub-counties, two zones were randomly selected. In the selected zone, a school was randomly selected to be involved in the study. Only one school in the sub-county with least number of schools was randomly selected.

In each school, 19 grade IV pupils were systematically sampled to be administered the creativity test and be observed. This was done by listing the pupils using their

class numbers in the class register and picking every N^{th} pupil (which was be determined by class size in the sampled school). The first pupil was picked randomly to begin the systematic sampling process.

Since in grade four there are eleven subjects, pupils are taught by several teachers. Two grade four teachers per school were randomly selected to be administered the questionnaire in 14 primary schools with grade four pupil population of more than 45. One teacher per school in 3 primary schools with grade four pupil population of less than 45 was sampled. The head teachers in the 17 primary schools sampled using stratified sampling method were interviewed by virtue of being in charge of curriculum implementation in their schools. Six CSOs and three QASOs were randomly selected to be interviewed. Table 2 summarizes the sample size that was used for the research undertaking.

Table 2: Sample size

Category	Target population	Sample size	Sampling technique
Grade IV pupils	34,847	323	Systematic sampling
Grade 4 Teachers	3180	31	Simple random sampling
Head teachers	832	17	Stratified sampling
CSOs	37	6	Simple random sampling
QASOs	9	3	Simple random sampling

Source: Researcher 2023

3.7 Research Instruments

In this study, 4 data gathering tools were employed to solicit data pertaining to CBC and creativity learning outcomes. The data collection tools were: questionnaire for the grade four teachers, interview schedule for the CSOs, QASOs and head teachers

as well as observation sheets and tests for the grade four pupils. This was as per the concurrent triangulation research design.

3.7.1 Questionnaire for Grade Four Teachers

Questionnaires were administered because they provide the opportunity of collecting alot of information from a large number of people in a short period of time and in a relatively cost-effective manner. Questionnaires offered research participants freedom to express their opinions and provide suggestions since confidentiality was assured. Questionnaires are also advantageous in that, they can be filled in the researcher's absence and can be used in any of the research designs (Creswell, 2013). The investigator drafted questions for particular respondents to get responses appropriate to the research objectives. The investigation employed a Likert-type ordinal scale questionnaire to gather quantitative data by soliciting different attitude/opinion scores. The participants were humbly asked to indicate their level of agreement by ticking one among the provided response categories as per the key. They were administered through the drop-and-pick method to enhance the return rate.

3.7.2 Interview Guide for Head Teachers, CSOs and QASOs

Creswell, 2013 describes an interview as a one-on-one exchange of information between an interviewer and interviewee. The interviews were administered to gather qualitative data. One strength of an interview is that it potentiates oral fielding of questions in an encounter consequently enabling wide collection of data. Carter and Beaulieu (1992) point out that, informant interviews are qualitative in-depth interviews with people having knowledge of the happenings in a specific community. Informant interviews allowed the scholar to solicit data from people who had first-hand information about CBC and its resultant learning outcomes. Such informants

were people involved in fast tracking CBC implementation and auditing its performance to offer guidance to practicing teachers for successful implementation. The fielding of interview questions can be done either via phone or face-to-face interviews. In this research, face-to-face interviews were conducted.

The interview constituted carefully drafted open-ended questions. The QASOs, CSOs and head teachers answered various unstructured questions regarding CBC and its influence on grade four pupils' creativity learning outcomes. These participants were requested to freely air their feelings, opinions as well as attitudes on all the questions. Since the QASOs and CSOs are at the center of CBC implementation they answered slightly different questions compared to those of the Head Teachers. The interviewer recorded the responses in a notebook from all the respondents.

3.7.3 Observation Guide for Grade Four Pupils

The researcher visited the sampled primary schools to observe the learner's levels of creativity by offering them activities to perform. Direct observation was used to solicit both quantitative and qualitative data. The observation was done using observation sheets that had preset observation things for learners' creativity indicative acts. The researcher ticked what was observed and recorded any additional information.

3.7.4 Creativity Tests for Grade Four Pupils

The researcher drafted creativity tests adapted from the Torrance Test of Creative Thinking (TTCT) for the pupils. The test was modified to fit the context of the grade four learners in Makueni County. This was done by asking them relevant questions as per their age and environment but ensuring the items bring out the five creativity indicators. The test measured divergent thinking and problem solving which are the

precursors of creativity. It required the examinee to reflect upon their life experiences. Some were administered orally and responses recorded and others were administered by writing. These tests were used to portray the creativeness of the pupils.

The conducting of the adapted TTCT involved giving learners tasks to perform and based on their performance, the five scoring scales for creativity were deduced. The tasks were divided into three.

The first was verbal tasks using verbal stimuli. Here learners were tested by subjecting them to:

a) Impossibilities tasks. This involved asking learners as many impossibilities as they could get.
b) Consequences tasks. This involved asking learners the effect of something like what would happen if in their school they got a school bus.
c) Just suppose tasks. This was done to elicit a higher degree of spontaneity. The leaners were subjected with an improbable situation then asked to predict possible outcomes.
d) Situations tasks. This was done to assess the ability of the learner to figure out what needs to be done. Learners were given a problem and asked to state as many solutions as they could. An example of a test item for the situation task was, “if all schools were abolished, what would you do to become educated?”
e) Common problems and improvement tasks. This tested sensitivity to problems. This is the ability of the learner to see defects, needs as well as deficiencies and provide solutions to them. Learners were given an object like

a toy with defects and asked to state the defects and ways of improving the toy.

f) Imaginative stories task. This was done by asking learners to write or narrate an interesting story.

g) Unusual uses task. This was done by asking learners to state unusual uses of objects like bricks, cans, books etc.

The second group of tasks were verbal tasks using non-verbal stimuli. This majorly was ask-and-guess tasks. This was done by giving learners a picture and requesting them to ask questions from the picture. They were also asked to hypothesize/guess about the possible causes of the event depicted in the picture.

The third group of tasks were non-verbal tasks. They were majorly done using picture construction tasks. It was done by giving learners shapes to use to design and name a novel diagram.

3.8 Piloting of Research Instruments

Piloting aids in removing misconceptions caused by words after doing corrections after the piloting. The misconceptions caused by words that may happen if piloting is not carried out may cause confusion to the research participants therefore collecting invalid information that may not correctly answer research questions. Mugenda (2013) points out that, piloting aids in improving clarity of data collection test items. Piloting was executed in three primary schools in the nearby Machakos County each from a sub county. The researcher purposively ensured that one of the pilot schools was located in a township for most primary schools in the County are located deep in the villages. This was done to reduce homogeneity and optimize validity.

3.8.1 Validity of Data Collection Tools

Validity is the extent to which an instrument measures what it is supposed to measure and performs as it is designed to perform (Creswell, 2013). Content and construct validity was ascertained by experts and panelists. The data collection tools were first keenly studied by the supervisors to establish if their test items addressed all areas of the research as per the objectives. The constant consultation of the supervisor and other specialists by the researcher purposed to improve content and construct validities. The input from these experts was used to improve the content and construction of the data collection tools. Validity for the research tools was finally measured during piloting. Data collected during the piloting stage was analyzed to assess the accuracy of the questionnaires and interview guide. Once a data collection tool is properly validated, the results obtained from the subsequent sample can be generalized to the whole population since the tool has external validity.

3.8.2 Research Instruments Reliability

The extent to which an instrument consistently quantifies that which it is crafted to measure is termed as its reliability (Donald, 2010). This means that the test/instrument gives similar results over several repeated trials. A reliable instrument assures confidence that, scores got following administration of the tool are would be got when the tool would is administered again to the research sample. Reliability is crucial in studies since investigations aim at revealing truths to be used to come up with recommendations to advance humanity.

In order to optimize reliability, the investigator stove to lower errors in measurement by ensuring that, the data collection tools were crafted in the best quality as possible

and that the study participants were administered the test in the best conditions as could be got. Reliability of the tools of gathering data was assed at piloting phase. To test reliability, the split half internal consistency method was used. The researcher used the method since it was not realistic to give two tests to the same group of respondents. Internal consistency reliability was calculated employing Cronbach alpha technique. A reliability coefficient was computed to indicate the value of internal consistency and reliability of the questionnaire and the test done by pupils. According to Creswell (2013), if Cronbach Coefficient alpha is beyond 0.7, the data collection tool is deemed reliable. The reliability of the test items is as shown in table 3.

Table 3: Reliability

Variable	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Core Competencies	.865	.891	7
Teaching and learning approaches	.949	.949	10
Teacher induction	.902	.940	6
Instructional materials	.913	.931	5

The findings indicated that core competencies had a reliability coefficient of 0.865; teaching and learning approaches had a coefficient of 0.949; teacher induction had 0.902, and instructional materials had a coefficient of 0.913. All constructs depicted that the value of Cronbach's Alpha is above the recommended value of 0.7. The mean value of the reliability of all variables was 0.907 and thus, the study instruments were considered reliable.

3.9 Data Collection Procedures

The researcher pre-visited/called all the sampled schools in Makueni County. He introduced himself to the school administration and validated himself using the introduction letter from Post Graduate School of Machakos University, the research authorization NACOSTI and authorization letters from MoE especially from county education office. After explaining to the school administration his intent of conducting research in the primary school and amongst education officials, the researcher communicated the dates he intended to conduct the study and the respondents he wished to have in order that they were to be well prepared before the study was conducted.

After getting booking a school, the investigator went to the sampled school to gather data in way of administering data collection tools to the participants. After reaching in the school, the researcher again introduced himself to the officer directing school during the study in order to be permitted to conduct research. In a school, the researcher commenced by interviewing the head master. The interview room was properly prepared before the interview having a chair and table for the interviewee as well as the investigator. The investigator introduced the head master/CSO/QASO to the study and politely interviewed him/her, scripting the answers s/he gave for each item in a note book.

The researcher afterwards gave the randomly selected grade four teachers the questionnaire for filling. The researcher afterwards introduced the grade four teachers to the pupil observation sheet and creativity test to aid in their administration to the learners for they were freer with their teachers. Being assisted by grade four tutors, 19 pupils were systematically sampled, directed to a room,

introduced to the study exercise then administered the creativity test in writing or orally. All the data collection tools were be secured and put properly for subsequent analysis of data.

3.10 Data Analysis Procedures

After gathering data, the scholar scrutinized for completeness of the questionnaires and pupil tests. The data was arranged and grouped according to the specific research questions. Quantitative and qualitative data analysis methods were used to analyze data. Both descriptive and inferential statistics were used for quantitative data analysis. Quantitative data arising from Likert-type questions were coded and computer sheets developed which were used to enter data into the SPSS version 27 program for quantitative analysis. The SPSS package is known for its efficiency in handling large amounts of data. The descriptive statistics used included frequency, percentages, mean and standard deviation. The inferential statistics used in the study was regression to determine the relationship between selected factors in CBC implementation and the creativity learning outcomes in pupils of Makueni County. According to Creswell (2013), inferential statistics is concerned with making predictions or conclusions about a population from observations and analysis of a sample. Both simple linear regression and multiple linear regression models were employed. Linear regression is used to predict the value of a variable based on the value of another variable. The variable to be predicted is called the dependent variable. The variable used to predict the dependent variable's value is called the independent variable. A single independent variable was used in the simple linear regression to predict the value of a dependent variable. Multiple linear regression is an extension of simple linear regression. It predicts the value of a variable based on

the value of two or more other variables. Multiple regression was presented by the regression model below to determine coefficients of the independent variables in relation to the dependent variable. The confidence level was $\alpha=0.05$.

For this study, the multivariate regression model was:

$Y= \beta_0 +\beta_1 x_1 +\beta_2 x_2+\beta_3 x_3+\beta_4 x_4+e$

Y = Creativity Learning Outcome

β_0 = the constant

x_1 = Core Competencies

x_2 = Teaching and Learning Approaches

x_3 = Teacher Induction

x_4 = Instructional Materials

β_1, β_2, β_3 and β_4 are coefficients

e is the error term

Outcomes of the regression analysis were interpreted on the basis of R square, significance of F statistic and the significance of β values from the coefficients of the x variables.

Thematic Analysis (TA) was used to analyse qualitative data. Donald (2010) points out that, TA is a method that focuses on identifying patterned meaning arising from large piece of data that gives answers to research questions. Patterns are identified through a rigorous process of data familiarization, data coding, theme development and revision. One of the advantages of TA is that it's theoretically-flexible. This means it can be used within different frameworks, to answer quite different types of research questions. It is ideal for questions related to experiences of people, as well as perspectives.

Qualitative information emanating from the open-ended test items from the questionnaires was sorted and organized into similar groups. For the interview schedule, the analysis involved transcribing the interviews using a code sheet, recording direct quotes. Data from observation was sorted and used to enrich data

from the interviews, tests and questionnaires. The collected information was presented in form of narratives. The information from the data analyzed was scrutinized critically, and interpretations made based on the evidence of the results and sum-up of knowledge attained. Conclusions and recommendations were then drawn from the research outcomes.

3.11 Ethical Considerations

The researcher strictly adhered to following code of conduct in his research undertaking:

3.11.1 Obtaining Permission

Permission to conduct the research was got from Machakos University's graduate School, School of Education, NACOSTI, MoE (through the County Education Office), head teachers and teachers. Respondents to participate in the research were informed before conducting the study.

3.11.2 Confidentiality and Privacy

All information given by the study participants was kept confidential and anonymous. Research participants were notified that, the information they provided would be applied only for the study research no third party would be privy get to know it to assure confidentiality. The scholar also assured the participants that their identities would not be disclosed at all to any third party. The study participants got assurance that no data that would make them to be known would be disclosed in any form of communication.

3.11.3 Voluntary and Informed Consent

The researcher did explain to the respondents all aspects of the study, their roles as well as the procedures of the research in order for them to make an informed decision

so that they would participate in the study voluntarily/willingly. Consent from the grade four pupils who are minors was sought from their teachers after explaining to them in the pre-visit before the data collection day. Parents/guardians were communicated by the head teacher that their children would be involved in a study.

3.11.4 Honesty

The researcher conducted himself with utmost honesty in the gathering of data, its recording as well as its presentation and publication of research outcomes. The investigator did not personally create, cheat or present erroneous data.

3.11.5 Integrity

The investigator ensured that he did not break promises and agreements. He conducted himself with utmost truthfulness and ensured consistency in all his research undertaking.

3.11.6 Openness

The researcher was open to positive criticism and new ideas so as to improve the study. He also shared the research findings to others through publication and seminars.

3.11.7 Respect for Intellectual Property

The scholar acknowledged all citations to avoid academic theft. The investigator also respected patents, copyrights and all other forms of intellectual property. The researcher did not use unpublished data, methods or findings.

3.11.8 Social Responsibility

The investigator ensured that the study did not cause any problem to the society. The study was conducted with absolute obedience to all relevant laws and guidelines.

This involved nondiscrimination of any form and protection of human subjects by respecting human dignity.

3.11.9 Carefulness

The researcher avoided errors and any form of negligence so as to produce quality research findings and hence impactful recommendations. This was achieved through critical examination of the work and proper record keeping of all the research activities.

3.11.10 Responsible Publication

The researcher avoided wasteful and duplicative publication of research findings.

This was done by ensuring that the published articles were original.

3.11.11 Credibility of Qualitative Data

Credibility is based on the richness of the information collected but not the quantity of information gathered. Saunders and Lewis (2007) posits that, credibility revolves around establishing that the results of any study are believable. The researcher established credibility of qualitative data by employing triangulation where he used multiple analysts and experts.

3.11.12 Dependability of Qualitative Data

Dependability ascertains that results from any research are consistent and if the study is done again, similar findings shall be deduced. It is assessed by the standard to which the study is done, analyzed and presented. The researcher established dependability of qualitative data collection process by reporting in detail to ensure that, if the research is repeated, similar results would be obtained.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

This chapter presents the study outcomes and analysis of the findings of the assessment of influence of competency-based curriculum on creativity learning outcomes among grade four pupils in Makueni County, Kenya. The chapter starts with the instruments return rate and the respondents' demographic information. Both quantitative and qualitative data was analysed anchoring on the four study objectives. The researcher employed descriptive data analysis using frequencies, percentages, mean as well as standard deviation for the quantitative data.

The outcome of quantitative data analysis after feeding the raw data into SPSS for descriptive analysis was presented in APA styled tables. Thematic analysis was used to bring together and integrate the findings of qualitative data. Qualitative data accrued from interviews was thematically analysed and presented in form of narratives. The chapter terminates by presenting a discussion and triangulation of the study outcomes.

4.2 Questionnaire Return Rate and other Instrument Complete Response Rate

The researcher sampled 380 respondents: grade four pupils, grade four teachers, head teachers, CSOs, and QASOs. A total of 296 participants fully responded to the research in way of complete answering of questions in the presented research instruments. Table 4 shows questionnaire return rate and other instruments complete response rate.

Table 4: Questionnaire Return Rate and other Instrument Complete Response Rate

Category of respondent	Sample size	Respondents	Rate (%)
Grade IV pupils	323	248	76.7
Grade 4 teachers	31	31	100
Head teachers	17	14	82.4
Field officers (CSOs and QASOs)	9	3	33.3
Total	**380**	**296**	**77.9**

Source: Research Data, 2023

Table 4 shows that, the return rate of grade 4 teachers' questionnaires was 100%, while complete response rate for grade 4 learners creativity test was 76.7%. It further portrays that 82.4% of the head teachers and 33.3% of the field officers (CSOs and QASOs) fully answered the interview questions. Generally, 77.9% of the respondents fully answered the research questions which is quite adequate for analysing the data collected. This quantum of research instrument return/response rate is satisfactory for analysis since Richardson (2005) asserts that, a 50% return rate is acceptable for data analysis in social research while questionnaire return rate above 70% is classified as very good.

4.3 Demographic Information

The information gathered was on the gender of the respondents, age of the pupils, and duration that the grade four teachers had taught CBC as presented in tables 5,6 and 7.

Table 5: Gender of Grade four Teachers and Pupils

Gender	Teachers		Pupils	
	Frequency	Percent (%)	Frequency	Percent (%)
Male	8	25.8	120	48.4
Female	23	74.2	128	51.6
Total	31	100.0	248	100.0

Source: Research Data, 2023

As depicted in Table 5, the study found out that majority of the grade four teacher respondents (74.2%) were female, while males were just 25.8%. Most pupils who fully responded were girls (51.6%), while boys comprised 48.4%. The research findings show that, gender was fairly balanced when carrying out the research. According to West and Zimmerman (2007), there is a need to balance gender when undertaking research as it may affect the study results especially external validity.

Table 6: Grade four Pupil's Age

Age	Frequency	Percent (%)
10 Years	68	27.4
11 Years	124	50.0
12 Years	52	21.0
13 Years	4	1.6

Source: Research Data, 2023

It was important to establish the age of the respondents as it could influence the study results. Table 6 shows that, 50% of the pupils who participated in the study were 11 years old. Pupils who were 10 and 12 years old were 27.4% and 21%, respectively. Only 1.6% of the pupils were 13 years old. Thus, the average age of the grade four pupils who responded to the study was 11 years.

Table 7: Number of Years that Grade four Teachers had Taught CBC

Number of years	Frequency	Percent (%)
less than 1 year	8	25.8
2-3 years	21	67.7
3-5 years	2	6.5
Total	31	100.0

Source: Research Data, 2023

Table 7 shows that, 21 (67.7%) of the respondents had taught CBC for 2 to 3 years while eight (25.8%) respondents had taught for less than one year. Only 2(6.5%) respondents had taught for between 3-5 years.

4.4 Creativity Learning Outcomes

The study collected data on the dependent variable (grade four pupils' creativity learning outcomes) by observing and recording grade four pupils' performance in a creativity test. The creativity test measured the five major indicators of creativity: learners' fluency in communication, flexibility in employing alternatives, originality in idea development, elaboration of issues, and resistance to premature closure. The pupils' scores were awarded in four levels similar to the scoring rubrics in CBC and presented in tables 8, 9, 10, 11 and 12.

Table 8: Fluency in Communication (n=248)

Competence tested		BE	AE	ME	EE	Mean	Std. Dev
Ability to produce many ideas on an issue	F	16	172	60		2.177	.5254
	%	6.5	69.3	24.2			
Ability to switch between concepts	F	60	180	8		1.790	.4808
	%	24.2	72.6	3.2			
Ability to communicate with clarity	F	4	40	204		2.807	.4349
	%	1.6	16.1	82.3			

Key: BE=Below Expectation, AE=Approaching Expectation, ME=Meeting Expectation, EE=Exceeding Expectation

Source: Research Data, 2023

The research findings as depicted in table 8 shows that, on the ability to produce many ideas on an issue, 69.3% of the sampled pupils were approaching expectation, 24.2% met expectation, and 6.5% were below expectation. On ability to switch between concepts, 72.6% of the sampled pupils were approaching expectation, 24.2% were below expectation, and 3.2% met expectation. Finally, on the ability to

communicate with clarity, 82.3% met expectation, 16.1% approached expectation, and 1.6% were below expectation. Generally, the grade four pupils' fluency in communication was approaching expectation since the average for the means of the three aspects of fluency was 2.258.

Table 9: Flexibility in Employing Alternatives (n=248)

Competence tested		BE	AE	ME	EE	Mean	Std. Dev
Ability to generate a variety of ideas	F	24	200	24		2.000	.4408
	%	9.7	80.6	9.7			
Ability to come up with different interpretations	F	76	156	16		1.758	.5601
	%	30.6	62.9	6.5			
Ability to go beyond cultural boundaries	F	112	132	4		1.565	.5284
	%	45.2	53.2	1.6			

Key: BE=Below Expectation, AE=Approaching Expectation, ME=Meeting Expectation, EE=Exceeding Expectation

Source: Research Data, 2023

The research findings as presented in table 9 show that, on the ability to generate a variety of ideas, 80.6% of the sampled pupils approached expectation, and 9.7% each met expectation and were below expectation. On ability to come up with different interpretations on any issue, 62.9% approached expectation, 30.6% were below expectation, and 6.5% met expectation. Further, on the ability to go beyond cultural boundaries, 53.2% approached expectation, 45.2% were below expectation, and 1.6% approached expectation. Overall, learners' flexibility in employing alternatives was approaching expectation since the mean for the three aspects of flexibility tested was 1.74 in a range of 1-4. Possession of flexibility ingredient of creativity is vital since Sternberg (2015) indicated that, a cognitively flexible individual can consider an idea from different angles. Flexibility enhances an individuals' adaptability.

Table 10: Originality in Idea Development (n=248)

Competence tested		BE	AE	ME	EE	Mean	Std. Dev
Ability to give unique/rare responses	F	52	172	24		1.887	.5430
	%	21	69.3	9.7			
Ability to take risks	F	72	152	24		1.807	.5925
	%	29	61.3	9.7			
Ability to come up with unexpected ideas	F	80	144	24		1.774	.6082
	%	32.2	58.1	9.7			

Key: BE=Below Expectation, AE=Approaching Expectation, ME=Meeting Expectation, EE=Exceeding Expectation

Source: Research Data, 2023

The research findings as shown in table 10 depict that, on the ability to give unique/rare responses, 69.3% of the sampled pupils approached expectation, 21% were below expectation, and 9.7% met expectation. On the ability to take risks, 61.3% of the sampled pupils approached expectation, 29% were below expectation, and 9.7% met expectation. Further, on the ability to come up with unexpected ideas, 58.1% of the sampled pupils approached expectation, 32.2% were below expectation, and 9.7% met expectation. The originality of the sampled grade four pupils generally was approaching expectation since the mean for the three aspects of originality was 1.83.

Table 11: Elaboration of Issues (n=248)

Competence tested		BE	AE	ME	EE	Mean	Std. Dev
Ability to offer many details on an asked issue	F	60	180	8		1.790	.4808
	%	24.2	72.6	3.2			
Ability to go beyond what others have done	F	120	116	12		1.565	.5865
	%	48.4	46.8	4.8			
Ability to analyse an issue into parts	F	48	180	20		1.887	.5124
	%	19.4	72.6	8.1			

Key: BE=Below Expectation, AE=Approaching Expectation, ME=Meeting Expectation, EE=Exceeding Expectation

Source: Research Data, 2023

The research findings as presented in table 11 show that, on the ability to offer many details on an asked issue, 72.6% of the grade four pupils approached expectation, 24.2 were below expectation and 3.2% met expectation. On ability to go beyond what others have done, 48.4% were below expectation, 46.8% approached expectation, and 4.8% met expectation. Generally, on the ability to analyse an issue into parts, 72.6% approached expectation, 19.4% were below expectation, and 8.1% met expectation. Generally, the sampled pupils were approaching expectation in regard to elaboration domain of creativity since the mean for the three aspects of elaboration indicator was 1.747.

Table 12: Resistance to Premature Closure

Competence tested		BE	AE	ME	EE	Mean	Std. Dev
Ability to consider other pupils ideas	F	88	152	8		1.677	.5331
	%	35.5	61.3	3.2			
Ability to do corrections	F	52	164	32		1.919	.5775
	%	21	66.1	12.9			

Key: BE=Below Expectation, AE=Approaching Expectation, ME=Meeting Expectation, EE=Exceeding Expectation

Source: Research Data, 2023

Study findings as presented in table 12 show that, on the ability to consider other pupils' ideas, 61.3% of the sampled pupils approached expectation, 35.5% were below expectation and 3.2% met expectation. On ability to do corrections, 66.1% of the sampled pupils approached expectation, 21% were below expectation and 12.9% met expectation. Generally, Learners' resistance to premature closure approached expectation since the mean for the two aspects of premature closure was 1.798. According to Hahm, Kim, and Park (2019), resistance to premature closure ensures that a person considers many aspects of an issue before deciding or concluding.

4.5 Influence of Core Competencies on Grade four Pupils' Creativity Learning Outcomes

The first objective of this study was to find out the extent to which the core competencies nurtured in CBC influence creativity learning outcomes among grade four pupils in Makueni County. The data obtained was analysed descriptively, thematically and inferentially. Triangulation and interpretation of both quantitative and qualitative data followed the data analysis.

4.5.1 Descriptive Statistical Analysis

The data was derived from 5-point likert questions that sought the views of grade four teachers on the influence of core competencies to their pupils' creativity learning outcomes. The results of their opinions are summarized in Table 13.

Table 13: Grade four Teachers' Response on the Influence of Core Competencies on Pupils' Creativity Learning Outcomes (n =31)

Core competencies		VLE	LE	ME	GE	VGE	Mean	Std. Dev
Communication	F		1	12	11	7	3.774	0.8449
	%		3.2	38.7	35.5	22.6		
Collaboration	F			9	14	8	3.968	0.7521
	%			29	45.2	25.8		
Critical	F		2	13	15	1	3.484	0.6768
Thinking	%		6.5	41.9	48.4	3.2		
Problem-solving	F		1	13	17		3.516	0.5699
	%		3.2	41.9	54.8			
Imagination	F	1	5	8	16	1	3.355	0.9146
	%	3.2	16.1	25.8	51.6	3.2		
Citizenship	F		5	6	16	4	3.613	0.9193
	%		16.1	19.4	51.6	12.9		
Digital literacy	F		2	17	8	4	3.452	0.8099
	%		6.5	54.8	25.8	12.9		
Learning to	F			9	20	2	3.774	0.5603
learn	%			29	64.5	6.5		
Self-efficacy	F			12	15	4	3.742	0.6816
	%			38.7	48.4	12.9		

Key: VLE =Very Low extent, LE =Low Extent, ME =Moderate Extent, GE= Great Extent, VGE =Very Great Extent

Source: Researcher, 2023

As shown in Table 13, twelve of the respondents (38.7%) indicated that, communication nurtured in CBC influenced grade four pupils' creativity learning outcomes to a moderate extent, while eleven (35.5%) pointed out that, it influenced to a great extent. Further, other seven respondents (22.6%) said that, communication influenced pupils' creativity learning outcomes to a very great extent, while only one, (3.2%) indicated a low extent influence. Thus, communication influenced pupils' creativity learning outcomes to a great extent (mean=3.774, SD=0.8449).

The majority of the respondents (n=14, 45.2%), indicated that, collaboration influenced pupils' creativity learning outcomes to a great extent, while nine (29%) pointed out that it influenced to a moderate extent. Further, other eight (25.8%) said that, collaboration influence on pupils' creativity learning outcomes was to a very great extent. Thus, collaboration core competence influenced pupils' creativity learning outcomes to a great extent (mean 3.968, SD= 0.7521).

These study Findings are supported by Shorofat (2007) who revealed that collaborative writing strategy has helped students in generating their writing ideas and activating the students' background knowledge of the topics assigned to them to develop in their writings. The researcher used mixed-method study consisting of 80 students from a public senior high school in West Sumatra, Indonesia. The current study is unique in that, it was based on a smaller sample (N=31) of primary school teachers.

Research findings by Pham (2021) also support this study results as they showed that, collaborative writing had great effects on students' writing fluency in both collaboratively written papers and individually written papers. Pham (2021) study

used sixty-two sophomore English-major students at a university in Ho Chi Minh city, Vietnam. His study was on university students while the current study was unique in that it was on grade four (primary school) learners.

Fifteen of the respondents (48.4%) indicated that, critical thinking nurtured in CBC influenced grade four pupils' creativity learning outcomes to a great extent, while thirteen (41.9%) were of the view that it had an influence of moderate extent. In addition, other two respondents (6.5%) were of the opinion that, critical thinking influenced pupils' creativity learning outcomes to a low extent, while a minority respondent (n=1, 3.2%) indicated a very great extent of influence. Generally therefore, critical thinking nurtured in CBC influenced grade four pupils' creativity learning outcomes to a fairly moderate extent (mean=3.484, SD=0.6768).

More than half of the respondents (n=17, 54.8%) opined that, problem-solving core competence influenced pupils' creativity learning outcomes to a great extent, while some thirteen (41.9%) indicated a moderate extent influence. In addition, only one (3.2%) was of the opinion that, problem solving influenced pupils' creativity learning outcomes to a low extent. Thus, problem-solving core competence nurtured in CBC influenced grade four pupils' creativity learning outcomes to a great extent (mean=3.516 SD=0.5699). These research findings are congruent to those of Batlolona and Mahapoonyanont (2019) that unearthed that, the average value of student learning achievement was higher in their experimental class compared to the control class. Batlolona and Mahapoonyanont (2019) explored whether Problem Based Learning (PBL) was more effective in enhancing academic learning outcomes and creative thinking skills with different classes. The investigators did an independent sample T-test then tested this average value and the hypothesis. The

right-tailed T-test was used to determine whether the learning achievements of students taught through PBL were higher than those taught through the conventional method.

About half (n=16, 51.6%) of the respondents indicated that, imagination competence nurtured in CBC influenced grade four pupils' creativity learning outcomes to a great extent. Other eight (25.8%) pointed a moderate extent level of influence and few (n=5, 16.1%) opined a low extent level of influence. The remaining (n=1, 3.2%) of the respondents said that imagination influenced pupils' creativity learning outcomes to both a very low extent and a very great extent. Hence, imagination core competence nurtured in CBC influenced pupils' creativity learning outcomes to a moderate extent (mean=3.335 SD=0.9146).

About half (n=16, 51.6%) of the respondents indicated that, citizenship core competence nurtured in CBC influenced pupils' creativity learning outcomes to a great extent, while six respondents (19.4%) indicated that it had a moderate extent level of influence. Other respondents (n=5, 16.1%) and (n=4, 12.9%) had the view that, citizenship core competence influence to grade four pupils' creativity learning outcomes was to a low extent and a very great extent, respectively. Therefore, citizenship core competence nurtured in CBC influenced grade four pupils' creativity learning outcomes to a great level of extent (mean=3.613, SD=0.9193).

More than half (n= 17, 54.4%) of the respondents indicated that, digital literacy core competence fostered in CBC influenced grade four pupils' creativity learning outcomes to a moderate extent. Eight (25.8%) indicated that it influenced to a great extent, and four, (12.9%) pointed out that it had a very great level extent of influence.

In comparison, the remaining two respondents (6.5%) indicated a low extent level of influence. Generally, digital literacy core competence in CBC influenced grade four pupils' creativity learning outcomes to a moderate level of extent (mean=3.452, SD=0.8099). These study findings regarding digital literacy core competence and its influence to creativity learning outcomes are in line with an investigation done by Ruhama and Purwaningsih (2018) that revealed that synectic model of teaching using audiovisual media is able to increase students' ability in writing descriptive texts.

A high number of respondents (n= 20, 64.5%) were of the view that, learning to learn core competence nurtured in CBC influenced grade four pupils' creativity learning outcomes to a great extent whereas about a quarter (n=8, 29%) indicated that it had a moderate extent level of influence. In comparison, the remaining two respondents (6.5%) noted that it had a very great extent level of influence. Generally, learning-to-learn core competence in CBC influenced pupils' creativity learning outcomes to a great extent (mean=3.774, SD =0.5603).

Many respondents (n=15, 48.4%), indicated that self-efficacy core competence in CBC influenced grade four pupils' creativity learning outcomes to a great extent while some twelve (38.7%) pointed to a moderate extent level of influence. Other four respondents (12.9%) said that self-efficacy influence on pupils' creativity learning outcomes was to a very great extent. Generally, self-efficacy core competence in CBC influenced grade four pupils' creativity learning outcomes to a great level of extent (mean=3.742, SD=0.6816). These study findings rhyme those of Li and Wu (2011) that showed statistical significance between self-efficacy, and creative behavior. This was exposed in a study they conducted whose aim was to reveal the relationship between optimism, creative self-efficacy, and creative

behavior among university students. The study sample comprised 970 university students in Taiwan unlike the current study which had a sample of 323 pupils.

4.5.2 Inferential Statistics on the Influence of Core Competencies on Grade four Pupils' Creativity Learning Outcomes

The researcher further conducted a simple linear regression to establish the extent to which core competencies nurtured in CBC influenced pupils' creativity learning outcomes. The study regressed the mean variable of core competencies against the mean variable of creativity learning outcomes derived from the creativity test. The synthesis is illustrated in Table 14.

Table 14: Regression Coefficients of Core Competencies

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1.541	.399		-3.865	.001
	Core competencies	.446	.109	.890	10.503	.000

a. Dependent Variable: Creativity learning outcomes

Table 14 shows that, the core competencies nurtured in CBC had a significant positive influence on grade four pupils' creativity learning outcomes. A beta value of.446 indicates that a unit increase in core competencies will lead to a .446 increase in creativity learning outcomes ($\rho < .001$, $\alpha = .05$). These study results mirror the research findings from a study conducted by Chin (2013) that revealed a positive correlation between creative self-efficacy and creativity. His study sample consisted

of 158 university students in China while the current study focused on grade four pupils in Makueni county, Kenya.

4.5.3 Thematic Analysis on the Influence of Core Competencies on Grade four Pupils' Creativity Learning Outcomes

Qualitative data collected using interviews was analysed thematically. The analysis was directed by the research objectives and was executed to corroborate the information collected using the quantitative likert tests.

4.5.3.1 Research Findings from Interviews with Head Teachers and Field Officers

Head teachers and field officers were asked to provide their views on how core competencies ingrained in CBC influenced creativity learning outcomes of learners in their school. From the interviews done to head teachers and field officers (CSOs and QASOs), 85.7% of the respondents indicated that communication core competence was well inculcated in CBC. They showed a positive influence of communication core competence in CBC on grade four pupils' creativity learning outcomes. On communication core competence of CBC head teacher D said that:

> *"Communication ensures that, all learners are well involved."*

Respondent H supported the same views by saying:

> *"When a child knows how to communicate, creativity comes automatically and that when a child can speak, he or she has a wide spectrum of new responses that were far from reach."*

The head teachers and field officers alike indicated that, collaboration was fairly inculcated in CBC. They indicated a positive influence of collaboration born from communication on pupils' creativity learning outcomes as sharing is also achieved

through collaboration. On collaboration head teacher K, M and field officer A in that order opined that:

> *"When learners sit in groups, it ensures that all share including those who are not free to talk. The teacher can monitor the work and prod their thinking further by asking questions to open the learners' minds."*
>
> *"Learners can share knowledge as they work together in a team, eventually achieving objectives."*
>
> *"Pupils get the freedom to talk to each other and can discuss other things as they wish."*

Respondents also indicated that collaboration contributed to the formation of ideas among learners. In regard to influence of collaboration core competence on pupil's creativity learning outcomes, field officer C pointed out that:

> *"Collaboration makes learners come up with new ideas. A learner can compose his/her personal ideas and make things."*

From the interview responses, the head teachers and field officers indicated that, critical thinking and problem-solving in CBC were fairly inculcated. They further noted that the competence had a positive influence on the creative learning outcomes of the grade four pupils as it made them innovative.

On critical thinking and problem-solving, field officer B as well as head teacher B and K said the following:

> *"Critical thinking causes learners to analyse issues eventually solving problems."* (Field officer B). *"When a learner is independent, they can do most things on their own. Learners think ahead and start solving problems without the intervention of the teacher."* (Head teacher B). *"Learners can*

> *handle difficult issues by thinking deeper to solve problems through envisioning."* (Head teacher K).

These study findings are in tandem with those of Elald and Batd (2015) that unearthed that problem-based learning had positive effects on academic achievement. Elald and Batd (2015) aimed to find out the effectiveness of problem-based learning on students' academic achievement and to also establish other academic contributions among learners brought by creativity. A total of 20 studies that met inclusion criteria were analyzed under using Comprehensive Meta-Analysis and the MetaWin statistical program. The study found out that, problem based learning positively affected academic achievement scores.

On the same core competence of critical thinking and problem solving, head teacher G and J pointed out that:

> *"Critical thinking and problem-solving core competence makes learners more able to reason and solve problems without assistance of the teacher."* (Head teacher G). *"When a child is solving problems by trial and error, s/he can eventually achieve his/her target."* (Head teacher J).

All (100%) the head teachers and field officers indicated that imagination was well inculcated in CBC. They further noted that, it had a positive influence on creativity learning outcomes of grade four pupils. They generally opined that, imagination helps learners in boosting their thinking since learners get the ability to pre-think before undertaking a task hence improving their comprehension. Through imagination, learners' recall capability is also enhanced.

This was supported by head teacher F and field officer A who revealed that:

> *"Imagination enables pupils to think beyond limits, creating a lot of learning since they consider many factors and see how they affect what they are doing."* (Head teacher F). *"Imagination helps learners recall incidences found elsewhere and can match with the current situation. Learners could learn on their own through imagination. It helps them learn from known-to-unknown."* (Field officer A).

Both the field officers and head teachers indicated that citizenship core competence was fairly inculcated in CBC. They further noted that it had a positive influence on the creativity learning outcomes of grade four pupils. They exposed that, teaching citizenship helped learners to be patriotic and accept others regardless of tribe. On citizenship core competence and its influence to creativity, field officer A as well as head teacher J and B pointed out that:

> *"Kenyan national anthem and the East African song inculcates national unity and cohesion. Through citizenship, learners can know how issues are solved in different ethnic groups hence solve issues better."* (Field officer A). *"Citizenship also prepared learners to do their best as it stimulates learners to think nationally, e.g., see water for a whole community and therefore not pollute it."* (Head teacher J). *"Citizenship helps learners to work with others harmoniously and to care for community resources."* (Head teacher B).

Almost all interviewees (92.9%) indicated that, digital literacy was fairly inculcated in CBC. They further noted that it had a positive influence on creativity learning outcomes of their pupils. They stressed that digital literacy motivated learners.

These sentiments were aired by field officer C as well as head teacher N and H who said that:

> *"Digital literacy motivates learners to learn. It increases interest and joy hence pupils can properly understand concepts therefore they can work on their own. Digital literacy eases learning for example developing new methods of solving maths problems."* (Field officer C). *"Healthy digital content provokes thinking hence helping learners get answers to their numerous problems."* (Head teacher N). *"Digital learning exposes learners enabling them to learn by imitation. It helps learners to be more involved, imitate others, and interact with fellow learners."* (Head teacher H).

From the responses adduced from the interviews of both field officers and head teachers, learning to learn CBC core competence was fairly inculcated in pupils. They further noted that, it had a positive influence on creativity learning outcomes of the grade four pupils. They stated that learning to learn helped learners move from known-to-unknown. Respondents further added that, learners' interest is also boosted by the desire of wanting to learn more. Learning to learn also helps learners in knowledge application.

This was supported by head teacher B and C as well as field officer C who said that:

> *"Learning new things increases pupils' interest, making them eager to know more. Learners can read ahead of the teacher and acquire knowledge."* (Head teacher B). *"It helps learners discover many things in the school, which helps them improve the methodology of handling things and improving efficiency of doing things hence learning with ease."* (Head teacher C). *"Learners can apply an activity elsewhere then link the activity with a current activity."* (Field officer C).

From the responses adduced from the interviews, 85.7% of the head teachers and field officers indicated that, self-efficacy core competence of CBC was fairly inculcated in CBC. They further noted that it had a positive influence on creativity learning outcomes of the grade four pupils. On self-efficacy, head teacher C and field officer B said that:

> *"Learner's confidence is enhanced by self-efficacy. A learner with self-confidence can express freely hence give his/her views."* (Head teacher C). *"Self-efficacy makes learners have confidence as well as raise self-esteem which heightens their ability and performance since they know they can do a task successfully."* (Field officer B).

The desire to learn is also increased through self-efficacy. This was supported by head teacher D, I and F who alluded that:

> *"Self-efficacy makes learners have the desire to complete a task. A learner can identify what he or she is good at and concentrate on it."* (Head teacher D). *"Self-efficacy prepares learners to learn since they are always ready to tackle tasks. It helps each learner to be more exposed to discover his/her talent and use it"* (Head teacher I). *"When a child works independently, they can perform more duties without the help of anybody."* (Head teacher F).

The respondents noted a big difference between pupils in the competency-based curriculum and the old outcome-based curriculum. Respondents for example indicated that, CBC enhanced learner's interaction. This was supported by field officer B as well as head teachers M, K and F who pointed out that:

> *"Pupils under CBC can communicate clearly, speaking using the official languages because of acquiring literacy skills compared with those under the*

old KBC. Pupils under CBC are creative, more confident, improvise, more influential, apply knowledge, and understand things better." (Field officer B). *"Pupils under CBC can solve many problems practically, while pupils under KBC are more theoretical. Pupils under CBC do collaborate and discuss whereas pupils under KBC are less creative, confident, collaborative and hold few discussions since learning in the old curriculum is individualised."* (Head teacher M). *"Pupils under CBC are able to do a lot of work, more independently and can work with digital gadgets. Pupils under CBC are better in reading, comprehension, and creativity. Pupils under CBC can read at early grades."* (Head teacher K). *"Under KBC, pupils are exam-oriented and less in improvisation."* (Head teacher F).

4.5.4 Triangulation and Interpretation of Quantitative and Qualitative Data on the Influence of Core Competencies on Grade four Pupils' Creativity Learning Outcomes

Statistical descriptive analysis showed that communication core competence influenced grade four pupils' creativity learning outcomes to a great extent (mean=3.774). Thematic analysis indicated a positive influence of communication core competence on pupils' creativity learning outcomes. Both quantitative and qualitative data were congruent that Communication ensures that learners are well involved, have a wide spectrum of new responses and ideas, and read for understanding.

Statistical descriptive analysis showed that collaboration core competence which is a subset of communication competence influenced pupils' creativity learning outcomes to a great extent (mean 3.968). Thematic analysis indicated a positive influence of

collaboration on pupils' creativity learning outcomes. Both quantitative and qualitative data indicated that, Collaboration core competence nurtured in CBC encouraged sharing as learners would work together in a team. CBC learners were found to be freer and talking to each other compared to those under the 8-4-4 curriculum hence were easily monitored by the teacher.

Results from statistical descriptive data analysis of the quantitative data showed that, critical thinking core competence nurtured in CBC influenced pupils' creativity learning outcomes to a moderate extent (mean=3.484). Descriptive data analysis also showed that problem-solving core competence in CBC influenced grade four pupils' creativity learning outcomes to a great extent (mean=3.516). Problem solving is premised on critical thinking. In the same breath, thematic analysis of the qualitative data similarly indicated a positive influence of critical thinking and problem solving on creativity learning outcomes of pupils as it makes them innovative and independent. These research findings paralleled those of Bandura (2016) that revealed that, individuals who modelled unconventional thinking do foster innovativeness in others.

Descriptive data analysis of data collected using the quantitative method showed that, imagination core competence of CBC influenced pupils' creativity learning outcomes to a moderate extent (mean=3.335). Imagination is the precursor of creativity. Similarly, thematic analysis of the qualitative data indicated a positive influence of imagination on creativity learning outcomes of grade four pupils. Research findings exposed that, Imagination competence helps learners boost their thinking since they can pre-think before undertaking a task. Both quantitative and qualitative data rhymed in pointing out that, Imagination enhances learners' recall

capability as well as the capacity to learn independently since they move from known-to-unknown.

Statistical descriptive data analysis showed that, citizenship core competence of CBC influenced pupils' creativity learning outcomes to a great extent (mean=3.613). Thematic analysis indicated a positive influence of citizenship core competence on the creativity learning outcomes of grade four pupils. Both quantitative and qualitative data exposed that, Citizenship core competence helped learners to be patriotic, embrace others regardless of tribe, and know how to unite through the national anthem and East African song. It was found out that, citizenship prepares learners to care for resources and work with others harmoniously.

Statistical descriptive data analysis of the quantitative data gathered using questionnaires exposed that, learning-to-learn core competence of CBC influenced pupils' creativity learning outcomes to a great extent (mean=3.774). Thematic analysis of qualitative data indicated that learning-to-learn had a positive influence on creativity learning outcomes of pupils. The two types of data pointed out that, learning-to-learn helped pupils move from known to unknown, boosted interest in learning, as well as discovery of new things, improved their methodology of handling things as well as efficiency, and caused learners apply acquired knowledge.

Statistical descriptive data analysis showed that, digital literacy core competence nurtured in CBC influenced pupils' creativity learning outcomes to a moderate extent (mean=3.452). Qualitative data thematically analysed corroborated with quantitative data in indicating a positive influence of digital literacy on creativity learning outcomes of the sampled pupils. Digital learning was found to motivate learners and

increase their interest and joy. Digital learning also eased pupils' understanding and stimulated them to develop new methods of solving problems.

Statistical Descriptive data analysis of the quantitative data revealed that, self-efficacy core competence of CBC influenced pupils' creativity learning outcomes to a great extent (mean=3.742). In the same breath, thematic analysis of qualitative data gathered through interviews indicated that self-efficacy had a positive influence on creativity learning outcomes of the pupils. Respondents alluded that, self-efficacy enhances learners' self-confidence since it enabled them express themselves freely. Self-efficacy increases the desire to learn, helps each learner to be more exposed to discover their talent and hence use it. These findings on self-efficacy corresponded to those of William-Jesse (2020) that revealed positive influences for beginning teachers' efficacy to implement academically high-yielding instructional strategies, effectively engaging students, and designing classroom management systems to impact student success. William-Jesse (2020) assessed the level of self-efficacy of beginning teachers across the domains of instructional strategies, student engagement, and classroom management before and after completing a newly designed district induction program. The study explored the induction program's structure in a large, suburban Kentucky school district to evaluate the extent of participant self-efficacy levels and to establish to what degree best practices in induction are utilized, as were defined in the literature review. Data was collected before, during, and after beginning teachers' participation in a five-month induction program.

Thematic analysis of qualitative data revealed a big difference between learners studying through competency-based curriculum and those under the old outcome-

based curriculum. CBC enhanced interaction and learners' innovation. Pupils under CBC were found to be more confident as they collaborated and engaged in discussions. In addition, CBC pupils could do a lot of work, be independent, and work with ease with digital gadgets.

Finally, inferential statistics showed a very great positive significant influence of core competencies on grade four pupils' creativity learning outcomes (r=.446, ρ< 0.001). This led to the rejection of hypothesis one of the research: There is no statistically significant relationship between the core competencies inculcated in CBC and creativity learning outcomes among grade four pupils in Makueni County.

This was in tandem with research findings of Saregar et al. (2021) that revealed that Connecting, Organizing, Reflecting, and Extending (CORE) learning model effectively enhanced students' creative thinking skills on sound wave topic in Physics. The study by Saregar et al. (2021) determined the effectiveness of the CORE learning model on students' creative thinking skills on sound waves topic. The research targeted the eighth-grade students of an Islamic senior high school in East Lampung with a sample of 60 students using a purposive sampling technique. The research approach applied was the quasi-experimental methodology with a Non-Equivalent Control Group Design. Data on creative thinking skills was collected using an essay test instrument. Based on the Effect Size Test, the effectiveness value of the CORE model on students' creative thinking skills on a scale of 0-1was 0.48, which was in the medium category.

4.6 Influence of Teaching and Learning Approaches on Grade four Pupils' Creativity Learning Outcomes

The second objective of this study was to determine the relationship between teaching and learning approaches employed in CBC and creativity learning outcomes among grade four pupils in Makueni County. As was done for objective one, the data collected was analysed using descriptive, thematic, and inferential analysis. Triangulation and interpretation of data was executed after the analysis.

4.6.1 Descriptive Statistical Analysis

The data was derived from 5-point Likert questions and is presented in Table 15.

Table 15: Teachers' Response on the use of Teaching and Learning Approaches to Influence Grade four Pupils' Creativity Learning Outcomes (n=31)

		N	R	S	F	VF	Mean	Std. Dev
Teaching methods								
Role play	F			12	17	2	3.677	0.5993
	%			38.7	54.8	6.5		
Field trips	F	1	14	11	4	1	2.677	0.8713
	%	3.2	45.2	35.5	12.9	3.2		
Debates	F	2	8	17	2	2	2.807	0.9099
	%	6.5	25.8	54.7	6.5	6.5		
Experiments	F			8	15	8	4.000	0.7303
	%			25.8	48.4	25.8		
Demonstration	F			4	11	16	4.387	0.7154
	%			12.9	35.5	51.6		
Teacher exposition	F			10	12	9	3.968	0.7952
	%			32.3	38.7	29		
Learning methods								
Problem-solving	F			10	14	7	3.903	0.7463
	%			32.2	45.2	22.6		
Experiential learning	F		4	10	11	6	3.613	0.9549
	%		12.9	32.2	35.5	19.4		
Answering questions	F			1	15	15	4.452	0.5679
	%			3.2	48.4	48.4		
Discussions	F			7	12	12	4.161	0.7788
	%			22.6	38.7	38.7		

Key: N=Never, R=Rarely, S=Sometimes, F=Frequently, VF=Very Frequently
Source: Researcher, 2023

As seen in Table 15, many respondents (n=17, 54.8%) indicated that, role play teaching approach was frequently used to influence pupils' creativeness. Other twelve, (38.7%) indicated that, it was sometimes used, while two (6.5%) said that, role play was used very frequently. Thus, role play teaching approach was frequently

used to influence creativity (mean=3.677, SD=0.5993). Less than a half of the respondents (n=14, 45.2%) indicated that, field trips as teaching approach were rarely used to influence pupils' creativity learning outcomes, while eleven (n=11, 35.5%) indicated that, it was used sometimes. Only one respondent (3.2%) each were of the view that, field trips were very frequent and never used to influence creativity learning outcomes. Therefore, field trip teaching approach was sometimes used to influence creativity learning outcomes (mean=2.677, SD=0.8713).

Majority of the respondents (n=17, 54.7%) indicated that, debates as teaching approach were sometimes used to influence grade four pupils' creativity learning outcomes, while some eight (n=8, 25.8%) indicated that debates were rarely used. The other two (6.5%) each stated that, debates were sometimes, never, and frequently used to influence pupils' creativity learning outcomes. Hence, debates were sometimes used to influence pupils' creativity learning outcomes (mean=2.807, SD=0.9009). About half of the respondents (n=15, 48.4%) said that, performing experiments teaching approach was frequently used to influence pupils' creativity learning outcomes. The rest eight (n=8, 25.8%) indicated that experiments were either used sometimes or frequently. So, experiments were frequently used to influence creativity learning outcomes (mean=4.000, SD=0.7303).

A significant number (n=16, 51.6%) of the respondents indicated that, demonstration teaching approach was very frequently used to influence pupils' creativity learning outcomes. However, other 11 (35.5%) and four (12.9%) noted that demonstrations were used frequently and sometimes respectively to influence pupils' creativity learning outcomes. Generally, demonstration teaching approach was frequently used

to influence grade four pupils' creativity learning outcomes (mean=4.387, SD =0.7154).

Twelve respondents (38.7%) indicated that, teacher exposition teaching approach was frequently used to influence pupils' creativity learning outcomes, while other 10 (32.3%) indicated that the approach was used sometimes. Nine respondents (29%) indicated that, teacher exposition was frequently used to influence pupils' creativity learning outcomes. Hence, teacher exposition teaching approach was frequently used to influence pupils' creativity learning outcomes (mean=3.968, SD =0.7952).

Slightly below half of the respondents (n=14, 45.2%) indicated that, problem-solving learning method was frequently used to influence grade four pupils' creativity learning outcomes, while some ten respondents (32.3%) stated that it was used sometimes. In addition, other seven respondents (22.6%) declared that problem-solving was very frequently used to influence creativity learning outcomes. Generally, problem-solving learning method was used frequently to influence creativity learning outcomes by the learners (mean 3.903, SD=0.7463).

Eleven respondents (35.5%) said that, experiential learning method was frequently used to influence creativity learning outcomes. Additionally, other ten (32.2%) indicated it was used sometimes, and some six (19.4%) indicated that experiential learning was frequently used while the rest four (12.9%) revealed that, experiential learning was rarely used. Hence, experiential learning method was frequently used to influence creativity learning outcomes by the grade four learners (mean=3.613, SD =0.9549). These research findings were in line with the findings of, Ng'eno and Chesimet (2016) that revealed that, experiential learning approach significantly

affected students' mathematical creativity. Ng'eno and Chesimet (2016) investigated the effect of experiential learning approach on students' mathematical creativity in Kericho East Sub-County using random sample of four district secondary schools. In the experimental groups, the Experiential Learning Approach (ELA) was used while Conventional Teaching Methods (CTM) were used in the control groups. The researchers pre-tested one experimental and one control group. At the end of the treatment, they post-tested all the four groups using a Mathematical Creativity Test (MCT). Their study was carried out on secondary school students while the current one involved primary schools in a different education system.

About half of the respondents (n=15, 48.4%) said that answering questions learning method was either frequently or very frequently used to influence pupils' creativity learning outcomes. Only one respondent (3.2%) indicated that, answering questions learning method was used sometimes. In overall, answering questions was frequently used to influence grade four pupils' creativity learning outcomes (mean=4.452, SD=0.5679). This study findings were in harmony with those of Rodríguez and Gemma (2019) that showed that, the open IBL approach promoted the development of creative and research skills. Rodríguez and Gemma (2019) had examined the effectiveness of an inter-professional IBL course that introduces a creativity workshop based on stimulatory techniques to develop creative and research skills. The study population was 529. Students' perceptions of learning processes and outcomes were assessed in surveys and focus groups by the authors of the study. The course teachers and researchers also analyzed the final learning results from both groups of students.

A total of twelve respondents (38.7%) indicated that, discussion learning method was either frequently or very frequently used to influence pupils' creativity learning outcomes. The rest seven (22.6%) noted that it was used sometimes. Generally, discussion learning method was frequently used to influence grade four pupils' creativity learning outcomes (mean=4.161, SD=0.7788).

4.6.2 Inferential Statistics Regarding the Influence of Teaching and Learning Approaches on Grade four Pupils' Creativity Learning Outcomes

The researcher conducted a simple linear regression to establish the relationship between teaching /learning approaches and pupils' creativity learning outcomes. The researcher regressed the mean variable of teaching and learning approaches against pupils' creativity learning outcomes derived from the creativity test. The inferential statistical synthesis is illustrated in table sixteen.

Table16: Regression Coefficients on Teaching and Learning Approaches

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.739	.690		1.072	.293
	Teaching and learning approaches	.499	.182	.455	2.750	.001

a. Dependent Variable: Creativity learning outcomes

Source: Research Data, 2023

Table 16 attests that, CBC teaching and learning approaches had a significant positive influence on grade four pupils' creativity learning outcomes. A beta value of 0.499 ($\rho < .001$, $\alpha = .05$) implies that, a unit increase in teaching and learning approaches will lead to a 0.499 increase in pupils' creativity learning outcomes.

4.6.3 Thematic Analysis on the Influence of CBC Teaching and Learning Approaches on Grade four Pupils' Creativity Learning Outcomes

The analysis in these part was illuminated by the research objectives and was executed to corroborate the information collected using the quantitative likert tests. The thematically analysed study outcomes sprang from interviews with head teachers and field officers.

4.6.3.1 Research Findings from Interviews

The head teachers were asked to indicate the teaching approaches employed in their grade four classes in a span of two weeks. Their response is summarized in Table 17.

Table 17: Teaching Methods and Frequency of use per two week

Teaching method	Frequency of use
Practicals	8
Group work	4
Field trip	1
Play cards	1
Adventure walk	2
Discussion	8
Question and answers	5
Experiments	4
Demonstration	7
Role-play	2

Table 17 indicates that, the most commonly used CBC teaching methods were practicals (f=8), discussions (f=8) followed by demonstrations (f=7). The use of question and answer (f=5), group work (f=4) as well as experiments (f=4) were

average. Other teaching methods such as adventure walk (f=2), role play (f=2), field trips (f=1) as well as play cards (f=1) were rarely used. This contradicted with the study findings of Oyelekan, Igbokwe, and Olorundare (2017) which opined that, most teachers frequently used only two teaching methods. In Nigeria, Oyelekan et al. (2017) examined science teachers' utilization of various teaching strategies in senior school science subjects. They used a sample of 256 science teachers from secondary schools in Ilorin East, South, and West Local Government. Data was obtained using a researcher-designed questionnaire.

Respondents answered how teaching approaches in CBC influenced creativity learning outcomes among pupils in schools. They indicated that teaching aids helped the learners involve all their senses. This was supported by head teacher J and field officer C who said:

> *"Discussion makes learners be involved in talking with the teacher and among themselves."* (Head teacher J). *"Through discussions, pupils express themselves and hence become more able to construct sentences. This highly improves their communication."* (Field officer C).

On the same issue of discussion, head teacher M stated that:

> *"Discussion causes learners to learn from each other hence increasing their knowledge on what they were discussing."*

Teaching methods also helped learners replicate what they had learned in the classroom. This was supported by head teacher F and J who noted that:

> *"Practicals help learners in retaining and applying what has been learned."* (Head teacher F). *"When doing practicals, learners see what they are doing and through that, they think practically."* (Head teacher J)

Head teacher N and F added that:

> *"Through practicals, learners can interact with objects in a guided way to get final results." "Experiments helps learners grasp the concept been taught in a better way hence understanding fully."*

CBC teaching approaches helped learners to be independent. This was supported by field officer B as well as head teacher C and J who voiced that:

> *"Through demonstrations, learners develop skills for independent working."* (Field officer B). *"Demonstration makes learners get self-confidence since learners see what the teacher is doing and what fellow learners are doing."* (Head teacher C). *"Through experiments, a child can do other duties in the absence of the teacher. Demonstrations also help learners in proper understanding of concepts."* (Head teacher J).

CBC teaching approaches also contributed in improving learners' communication skills. This was supported by field officer C who opined that:

> *"Through questions and answers, learners can express themselves as they answer the questions."*

On debate teaching approach, head teacher J stated that:

> *"Debates help learners in formulating and communicating ideas".*

Learners also get in touch with reality through CBC teaching approaches. This was supported by the opinions of head teacher B and D as well as field officer A who said that:

> *"Field trips gave learners a natural reality."* (Head teacher B) *"Pupils learn by seeing through field trips, which may be transferred to their homes making them more creative."* (Head teacher D) *"Fieldwork evokes interest and*

exploration. Through projects, learners get the opportunity to apply the acquired knowledge and skills to real-life situations." (Field officer A).

Interview respondents were also asked whether the CBC teaching approaches were sufficient in nurturing pupils' creativity. The majority indicated that, the teaching approaches were not enough. They stated some challenges such as unavailability of teaching and learning resources, lack of funds as well as fewer methods of instruction. However, some respondents alluded that, the CBC teaching and learning approaches would be sufficient if applied correctly. The responses of respondents on the sufficiency of CBC teaching approaches are presented in Table 18.

Table 18: Sufficiency of CBC Teaching Approaches

Opinion	%
Sufficient	28.6
Not sure	21.4
Not sufficient	50.0

As seen in Table 18, half of the respondents (50%) were of the opinion that, the CBC teaching approaches were not sufficient in nurturing creativity in grade four learners. They explained that, more needs to be done if teaching in CBC shall make learners creative and innovative. This was supported by field officer A and head teacher M who said that:

"Kenya needs to invest a lot in practical teaching as done by the industrialized countries." (Field officer A). *"More teaching methods should be brought in if CBC is to succeed in making learners innovative. ICT integration in teaching and learning should be given priority."* (Head teacher M).

Similar findings were drawn by Munawaroh (2017) following a study he conducted that unearthed that teachers' teaching methods and learning environment influenced students' learning achievement. Munawaroh (2017) investigated the influence of teachers' teaching methods and learning environment on learning achievement among grade XI learners focusing on the competency of accounting in the subject of entrepreneurship. The population of students in grade XI with accounting expertise for his study was 108 students. He used quantitative and qualitaive data collected through questionnaires, interviews, and observations. Multiple regression analysis tests were

used to explain the influence of teachers' teaching methods and students' learning environment on students' learning achievement in grade XI. The findings of the current study are in agreement to those of Munawaroh though the level of learners are different.

4.6.4 Triangulation and Interpretation of Data on the Influence of CBC Teaching and Learning Approaches on Grade four Pupils' Creativity Learning Outcomes

Descriptive data analysis revealed that, role play (mean=3.677), experiments (mean=4.000), demonstration (mean=4.387), teacher exposition (mean=3.968), problem-solving (mean 3.903), experiential learning (mean=3.613), answering questions (mean=4.452), and discussion (mean=4.161) approaches were frequently used to influence creativity in the sampled learners. Statistical data analysis unearthed that, field trips (mean=2.677) and debates (mean=2.807) were used sometimes. These study findings were in tandem to those of Coakley and Sousa (2013) who indicated that, the knowledge gained from experiential-based lesson

delivery and cooperative learning approaches created an opportunity for teachers to reinforce and cause learners to apply learned concepts.

Thematic analyses showed that the most commonly used CBC teaching methods were practicals and discussions followed by demonstrations. The use of group work, experiments as well as question and answer approaches were minimal. The teaching methods rarely used were field trips, play cards, adventure walk, and role-play. The Kenyan CBC advocates using various learner-centred teaching approaches such as role-play, field trips, debate, practicals, demonstration as well as teacher exposition (KICD, 2017).

Thematic analysis revealed that, CBC teaching methods help learners replicate what they learn in the classroom. Through discussions, learners can talk with the teacher or other pupils, express themselves, and improve their knowledge hence influencing their creativity. These findings resonate with those of Isa et al. (2020) who established that most teaching methods greatly affect students' academic performance. Isa et al. (2020) examined the relationship between teaching methods and the academic performance of secondary school students in Nigeria. The study adopted a descriptive research design with mixed data collection and analysis approaches. It was conducted in three secondary schools. The target population comprised 180 students in Nassarawa Local Government, Kano. A total of 60 respondents were selected. The research instrument was a questionnaire. The research data was analysed using descriptive statistics. The hypotheses were subjected to inferential statistics and tested at the significance level (α) of .05. This study revealed that most of the CBC teaching methods greatly affect students' academic performance.

Through practicals, learners retain and apply what they have learned. This is because practicals give learners an opportunity to interact with objects. CBC teaching and learning approaches also help learners to be independent. The study found out that through demonstrations, learners develop skills for independent working. Demonstration makes learners get self-confidence since learners see what the teacher is doing and what fellow learners are doing. Through demonstrations and experiments, pupils can do other duties without the teacher.

CBC teaching and learning approaches also contribute to improving learners' communication skills. The study revealed that, through debates, questions and answers, learners can express themselves through answering questions. Learners also get in touch with reality when CBC teaching and learning approaches are applied. This was supported by the research findings. Respondents declared that, field trips gave learners a natural reality. Through field trips, pupils learn by seeing, which may be transferred to pupils' homes to be creative. Respondents also opined that, fieldwork evokes interest and exploration. Through project work, learners can apply the acquired knowledge and skills to real-life situations.

The study unearthed that, CBC teaching and learning approaches were not sufficient in fostering creativity. Respondents cited some challenges such as unavailability of teaching and learning resources, lack of funds and fewer methods of instruction. Some suggested that, the CBC teaching and learning approaches would be sufficient if executed correctly. Inferential statistics showed that the teaching and learning approaches significantly influenced creativity learning outcomes ($r=0.499$ $\rho< 0.001$). The study therefore rejected the second hypothesis: "There is no statistically significant relationship between teaching and learning approaches used in CBC and

creativity learning outcomes among grade four pupils in Makueni County." The study results agree with those of İlçin et al. (2018) that teaching strategies that encourage more participant-style learning might effectively increase academic performance. İlçin et al. (2018) aimed to investigate whether the learning styles influence academic performance. The learning styles of 184 physiotherapy students were determined using the Grasha-Riechmann Student Learning Style Scales. The Kruskal-Wallis test compared academic performance among the six learning style groups (Independent, Dependent, Competitive, Collaborative, Avoidant, and Participant). The current study is unique in that, it focused on learners in their basic education (grade IV) and used different methodology and statistical methods of analysis.

4.7 Influence of Teacher Induction into CBC on Grade four Pupils' Creativity Learning Outcomes

The third objective of this study was to evaluate the extent to which teacher induction into CBC contributes to creativity learning outcomes among grade four pupils in Makueni County. The accrued data was analysed descriptively, thematically and inferentially. Triangulation and interpretation of data was done after the analysis.

4.7.1 Descriptive Statistical Analysis

The frequencies, percentages, mean and standard deviation were computed from values derived from 5-point Likert questions. The statistical analysis of the responses is presented in Table 19.

Table 19: Teachers' Response on the Influence of Teacher Induction into CBC on Creativity Learning Outcomes of their Pupils (N=31)

Induction on:		VLE	LE	ME	GE	VGE	Mean	Std. Dev
Teaching with ICT	F	2	9	10	5	5	3.065	1.1814
	%	6.5	29	32.3	16.1	16.1		
Preparation of teaching aids	F			7	18	6	3.968	0.6575
	%			22.6	58.1	19.3		
Preparation of schemes of work	F			1	11	19	4.581	0.5642
	%			3.2	35.5	61.3		
Lesson planning	F			2	10	19	4.548	0.6239
	%			6.5	32.2	61.3		
Lesson delivery	F			4	10	17	4.419	0.7199
	%			12.9	32.3	54.8		
Pupil assessment	F			3	8	20	4.548	0.6752
	%			9.7	25.8	64.5		

Key: VLE=Very Low Extent, LE=Low Extent, ME=Moderate Extent, GE=Great Extent, VGE=Very Great Extent

Source: Researcher, 2023

As shown in Table 19, ten respondents (32.3%) indicated that, induction on teaching with ICT influenced pupils' creativity learning outcomes to a moderate extent. Nine respondents (n=9, 29%) indicated that, it influenced pupils' creativity to a low extent. Other five respondents (n=5, 16.1%) said that, teaching with ICT influenced pupils' creativity learning outcomes to both a great and very great extent respectively. The remaining ten (n=10, 6.5%) indicated that, teaching with ICT influenced pupils' creativity learning outcomes to a very low extent. Thus, teaching with ICT

influenced grade four pupils' creativity learning outcomes to a moderate extent (mean=3.065, SD =1.1814).

These research findings on influence of ICT on creativity learning outcomes concurred with a study conducted by James (2017) that pointed out that, students feel motivated through the specific use of technology in the classroom, whether for pedagogical purposes or accommodations required by an individual's education plan. James (2017) determined students' motivation to learn and the effects technology has on inclusionary education. The research was conducted at an urban charter school on a population of 348 students at the time of technology intervention. The researcher performed a student survey to gauge student perception and motivation.

More than a half (n=18, 58.1%) of the respondents indicated that, induction on preparation of teaching aids influenced pupils' creativity learning outcomes to a great extent. The remaining seven respondents (n=7, 22.6%) and six (n=6, 19.4%), were of the view that, induction on preparation of teaching aids went along way to influence their pupils' creativity learning outcomes to moderate extent and very great extent, respectively. Therefore, induction on preparation of teaching aids influenced pupils' creativity learning outcomes to a great extent (mean=3.968, SD =0.6575).

A great number of the respondents (n=19, 61.3%) revealed that, induction on preparation of CBC compliant schemes of work influenced creativity learning outcomes of pupils to a very great extent while less than half (n=11, 35.5%) indicated a great extent level of influence. Only one respondent (3.2%) indicated a moderate extent level of influence. Generally, induction on preparation of CBC

compliant schemes of work influenced grade four pupils' creativity learning outcomes to a great extent (mean=4.581, SD=0.5642).

Many respondents (n=19, 61.3%) indicated that, lesson planning part of CBC induction went on to influence their pupils' creativity learning outcomes to a very great extent. Other ten respondents (n=10, 32.3%) stated that, induction on CBC lesson planning influenced pupils' creativity learning outcomes to a great extent. The remaining respondents (n=2, 6.5%) indicated that, lesson planning influenced creativity learning outcomes to a moderate extent. Hence, lesson planning part of CBC induction influenced pupils' creativity learning outcomes to a great extent (mean=4.548 SD=0.6239).

Many respondents (n=17, 54.8%) said that, the segment of CBC induction on lesson delivery had a cascading effect of influencing their pupils' creativity learning outcomes to a very great extent. Ten (n=10, 32.3%) indicated that, it had a great extent level of influence. Other respondents (n=4,12.9%), suggested that the influence of induction on CBC lesson delivery on pupils' creativity learning outcomes was moderate. The study findings established that, lesson delivery part of CBC induction for practicing teachers bore fruits by influencing their pupils' creativity learning outcomes to a great extent (mean =4.419 SD=0.7199).

Quite a good number of the respondents (n=20, 64.5%) indicated that, the part of CBC induction on pupil assessment influenced their learners' creativity learning outcomes to a very great extent, while (n=8, 25.8%) of them pointed out that, it influenced to a great extent. The remaining three respondents (n=3, 9.7%) noted that CBC induction on pupil assessment influenced pupils' creativity learning outcomes

to a moderate extent. Generally, CBC induction on pupil assessment influenced pupils' creativity learning outcomes to a great extent (mean=4.548, SD=0.752).

4.7.2 Inferential Statistics on the Influence of Teacher Induction into CBC on Grade four Pupils' Creativity Learning Outcomes

The researcher conducted a simple linear regression to establish the relationship between teacher induction into CBC and grade four pupils' creativity learning outcomes. The researcher regressed the mean variable of teacher induction derived from the statistical analysis of quantitative data accrued from questionnaires against the mean variable of creativity learning outcomes as measured using the creativity tests. The results are presented in table 20.

Table 20: Regression Coefficients of Teacher Induction into CBC

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.676	.782		2.142	.041
	Teacher induction	.225	.185	.220	1.216	.234

a. Dependent Variable: Creativity learning outcomes

Table 20 shows that, teacher induction into CBC had a significant positive influence on grade four pupils' creativity learning outcomes. A beta value of 0.225 ($\rho < .001$, $\alpha = .05$) implies that, a unit increase in teacher induction will lead to a 0.225 increase in pupils' creativity learning outcomes. These results led to the rejection of the third hypothesis of the study: There is no statistically significant relationship between teacher induction into CBC and creativity learning outcomes among their grade four pupils in Makueni County, Kenya.

Contrary to these findings on teacher induction, Young (2018) found out that the teacher induction program in a rural Appalachian school district did not benefit

novice teachers by helping them become more effective teachers. Young (2018) set out to find out whether a teacher induction program in a small, rural Appalachian school district helped first-year teachers be more effective teachers as determined by their Tennessee Education Acceleration Model (TEAM) Level of Effectiveness (LOE) scores. He matched teachers for as many similarities as possible, including age, gender, grade taught, subject taught, and the school to which they were assigned. The study used a t-test for dependent samples to compare the means. Young (2018) hypothesized that the treatment group would have better TEAM LOE scores than the control group. The current study differs from that of Young (2018) in that, as far as teachers are concerned it majored on those teaching grade four learners and regressed the mean of the learners' creativity with the level of influence of the current curriculum as cited by their teachers.

4.7.3 Thematic Analysis on the Influence of Teacher Induction on Pupils' Creativity Learning Outcomes

The analysis in this part was informed by the research objectives and was executed to corroborate the data garnered using the 5-point quantitative Likert tests. The study outcomes analysed were from interviews with field officers and head teachers.

4.7.3.1 Research Findings from Interviews

The field officers were asked to identify the major foci of the teacher inductions. On this, field officer B and C said that:

> *"Teachers are mostly inducted on the structure of CBC, its theories and principles guiding its implementation."* (Field officer B). *"Both class room teachers and head teachers are mostly trained on preparation of professional documents, lesson delivery, pupil assessment as well as integration of ICT in teaching and learning."* (Field officer C).

The field officers who mostly man the CBC trainings were also asked how frequent the trainings are done. On frequency of trainings, field officer A and C said:

> *"CBC trainings are done once every term. There are designated training centres for each zone."* (Field officer A). *All head teachers have been trained and some are picked to train teachers."* (Field officer C).

The field officers declared that attendance for the training by the teachers was mandatory therefore the attendance was 100%. They also pointed out that, the training was manned and reviewed by KICD.

Only a few head teachers indicated that teachers were well trained on the implementation of CBC. The majority stated that, the training was not sufficient. This mirrored the research findings from Mwande and Mpofu (2017) that revealed that, the teacher development training received did not satisfy teachers' needs while some teacher trainers were not conversant with the demands of the new curriculum. Mwande and Mpofu (2017) conducted a study on the preparedness of primary school teachers to implement the grade three new curriculum in Zimbabwe.This reality was supported by head teacher A and D who said:

> *"The training is fairly done but the time is not fully sufficient for teachers to properly understand the details of CBC."* (Head teacher A). *"Some teachers have not learned curriculum areas such as PE and technology. Telling them to teach areas they have not been trained in is giving them a problem. Such teachers are not therefore fully able to implement CBC in schools."* (Head teacher D).

Other head teachers mentioned that, the induction process was rushed, hence less time was dedicated to the CBC induction. This was captured from the statements of head teacher L and M who stressed that:

> *"The trainers go for only one week for training of trainers then they should cascade the same to teachers in 1 or 2 days. They basically come to dictate notes which is a challenge in digital literacy."* (Head teacher L). *"The trainers do not cover some areas well."* (Head teacher M).

Since head teachers are more close to teachers and do practically teach, they were also queried on whether teacher induction into CBC was well done. Their responses are presented in Table 21.

Table 21: Rating on Teacher Induction

Teacher induction	Frequency	%
Well done	2	11.7
Fairly done	8	47.1
Poorly done	7	41.2

Table 21 shows that, two (11.7%) of the head teachers opined that, teacher induction into CBC was well done. Other eight, (47.1%) were of the opinion that it was fairly done while seven (41.2%) said it was poorly done. These research findings resonated with those of Makunja (2015) that established that, most teachers lacked the requisite knowledge for implementing CBC during the teaching and learning process. However his study was conducted on secondary school students while the current one was done among primary school pupils. Makunja (2015) assessed the adoption of a CBC to improve the quality of secondary school education in Tanzania with an intent of finding out whether it was a dream or a reality. The study employed a mixed research approach that utilized a descriptive survey design and simple random sampling procedures. The researcher selected 162 respondents from six public

secondary schools in Morogoro Municipality. The respondents included heads of secondary schools, teachers, class teachers and students. Questionnaire, interviews and observation schedules were used to collect requisite information. Makunja (2015) concluded that adopting a competency-based curriculum to improve the quality of secondary education in Tanzania has yet to translate into quality secondary school education.

The respondents were also asked to say how teacher induction into CBC contributed to creative learning outcomes among pupils. The majority indicated that it helped teachers to improve their instruction. This was backed by head teacher A who said:

> *"During the CBC inductions, teachers learn new teaching methods and go to implement them among pupils and hence pupils improve in studies because of the new methods taught during training."*

On the same issue of benefit of teacher induction into CBC, head teacher E and H added that:

> *"CBC trainings added more knowledge and skills to teachers especially on how to handle learners."* (Head teacher E). *"Teachers get more methods, skills and generally learn more hence can impact learners."* (Head teacher H).

Head teacher K and M opined that:

> *"When the teacher knows how to direct, it's easy for the teacher to offer guidance."* (Head teacher K). *"The more teachers are trained, the more they understand CBC."* (Head teacher M).

These research findings from qualitative data were congruent to assertions of Wegerif (2019) who exposed that training had a positive effect on the development of metacognitive knowledge. Wegerif (2019) evaluated the impact of a newly developed two-day professional development training on primary school teachers' knowledge, attitude and behavioral intention towards teaching higher-order thinking skills. Participants in this study were twenty-seven primary school teachers divided into an experimental group (N = 13) and a control group (N = 14). The study employed a quasi-experimental pretest-posttest control group design using questionnaires at two points in time. His study is comparable to the current since both studies focused on primary school pupils

Through the study it was unearthed that, teacher induction into CBC also changed teachers' perspectives on teaching especially the new curriculum. This was backed by head teacher C, J, N and D who said:

> *"CBC trainings bring positive understanding to teachers, especially on the new teaching methodologies."* (Head teacher C). *"CBC trained teachers apply the training to learners, changing their perspectives."* (Head teacher J). *"Learners become independent as they are not spoon-fed."* (Head teacher N). *"Teachers acquire knowledge and skills for approaching the syllabus appropriately."* (Head teacher D).

The respondents were further asked to state the difference between teachers exposed to CBC to those less exposed. They noted that teachers exposed to CBC did better lesson preparation.

Head teacher I, A and D said:

> *"A teacher more exposed to CBC is more competent especially in lesson preparation and is more real."* (Head teacher I). *"A teacher more exposed to CBC can make professional records better."* (Head teacher A). *"A teacher can teach with efficiency since s/he can teach both subjects and activities as is the case in CBC."* (Head teacher D).

These research findings were in line with those of Gilman (2017) that revealed a positive perception of novice teachers to professional development sessions. The teachers were also positive regarding professional development courses for career development. Gilman (2017) evaluated the perceived effectiveness of the Mid-Atlantic School District new teacher induction and mentoring program. The researcher used three focus areas of teacher support in the evaluation: professional development, mentoring, and professional learning communities (associations).

The research also revealed that, inducted teachers related well with learners. This was supported by head teacher M, B and G who stated that:

> *"A teacher more exposed to CBC is able to handle learners well in class and give tasks as per the CBC requirements."* (Head teacher M). *"A teacher more exposed to CBC is able to handle CBC learners well and is friendly while that not exposed to CBC is not friendly."* (Head teacher B). *"Teachers who are exposed to CBC are more conversant with CBC. This makes them know how to handle learners better."* (Head teacher G).

These research findings were congruent to those of Sokół and Figurska (2021) that revealed significant relationships between the performance of creative activities and

acquired knowledge by workers. Sokół and Figurska (2021) determined the knowledge and creativity of employees and their impact on the growth of innovative organizations. They reviewed the cognitive, theoretical, methodological, and empirical issues regarding developing creative knowledge of workers employed in creative organizations.

The study further revealed that, teachers exposed to CBC would readily use CBC teaching aids. This was echoed by head teacher E, B and N who said that:

> *"CBC inducted teachers use CBC teaching methods well."* (Head teacher E). *"CBC trained teachers apply more methods of teaching, are learner-centred as well as being more practical."* (Head teacher B). *"CBC Inducted teachers can incorporate many teaching aids in the teaching-learning process since they have digital literacy.* "*Teachers exposed to CBC use practical approach, take less time to achieve a certain lesson objective and easily assess learners."* (Head teacher N).

These research findings rhymed with those from a study by Ingersoll, and Strong (2011) that uncovered that, beginning teachers who participated in some induction performed better in various teaching aspects in classroom instructional practices. Ingersoll and Strong (2011) examined 15 empirical studies, conducted since the mid-1980s, on the effects of support, guidance, and orientation programs collectively known as induction for beginning teachers. Most of the studies reviewed provided empirical support for the claim that support and assistance for beginning teachers positively impact three sets of outcomes: teacher commitment and retention, teacher classroom instructional practices, and student achievement.

Interviewees noted that teachers less exposed to CBC had difficulties in their teaching. This was noted by head teacher A, K, G and M who opined that:

> *"Non-inducted teachers teach with difficulties."* (Head teacher A). *"Non-inducted teachers can't make CBC compliant lessons."* (Head teacher K). *"A teacher not exposed to CBC does not know CBC lesson presentation, finds it difficult in class for they use methods that do not work well with CBC learners and is generally not competent in class."* (Head teacher G). "*A non-inducted teacher somehow gets confused and feels the system is confusing and tiresome."* (Head teacher M).

These research findings resonate with those of Wiysahnyuy (2021) who unearthed that, the majority of the teachers found it difficult to implement the CBC because of inadequate knowledge and skills, overcrowded classrooms, limited teaching hours, the bogus nature of the syllabuses and insufficient teaching and learning materials. He revealed that an appreciable percentage of teachers who graduated from teacher training colleges before the Cameroon school system introduced the CBC had not fully acquired knowledge and skills on implementing CBC. The research design used for the study was a cross-sectional survey. He used convenient and purposive sampling techniques to select a sample of 145 respondents from five public schools.

4.7.4 Triangulation and Interpretation of Data on the Influence of Teacher Induction into CBC on Grade four Pupils' Creativity Learning Outcomes

Descriptive data revealed that induction on: preparation of teaching aids (mean=3.968), preparation of schemes of work (mean=4.581), lesson planning (mean=4.548), pupil assessment (mean=4.548), and lesson delivery (mean =4.419) parts of CBC induction influenced grade four pupils' creativity learning outcomes to

a great extent. Teaching with ICT (mean=3.065) influenced pupils' creativity learning outcomes to a moderate extent. Thematic analysis showed that the in-service training process was not sufficient, it was rushed and hence less time was dedicated to effective CBC induction.

The findings from these study mirror those of a study conducted by Warren (2016) to establish the influence of a teacher induction program to practicing teachers. The teachers inducted reported feelings of high levels of support, satisfaction, and self-efficacy. Warren (2016) examined the impact a two-year new teacher induction program had on teachers' feelings of support, satisfaction, and self-efficacy. Warren (2016) gathered data through an interview. Participants included eight teachers that had most recently completed the two-year induction program.

Through the responses from interviews, teacher induction was seen to help the teachers improve their instruction since they learnt new methods. Induction adds more knowledge and skills to handle learners. Teacher induction was found to change teachers' perspectives on CBC teaching as it brought a positive understanding, especially on CBC teaching methodologies. Once the training was applied to learners, it positively changed their perspective to education.

From the interview responses it was noted that, teachers exposed to CBC did better lesson preparation, were more competent, and easily made professional records. Such teachers would teach efficiently since they taught both subjects and activities as stipulated by CBC. Teachers less exposed to CBC were found to have difficulties teaching and could not prepare and deliver CBC compliant lessons. Interview responses exposed that, CBC inducted teachers related well with learners and could

handle learners well in class. Further, it was noted that teachers exposed to CBC would readily use teaching aids than those not exposed to CBC who mostly used lecture method of teaching. CBC inducted teachers applied more teaching methods, were learning-cantered, and were more practical.

It was exposed that, non-inducted teachers got confused and felt that the system was confusing and tiresome. Teachers exposed to CBC used a practical approach, took less time to achieve lesson objectives as well as easily assessed and evaluated learners. The inferential statistics showed that, teacher induction had a significant positive (0.225, $\rho < .001$, $\alpha = .05$) influence on grade four pupils' creativity learning outcomes. These research findings are in tandem to those of Chen (2021) that revealed that curriculum experience had the strongest correlation value ($r = .55$) to affect students' creativity achievements. His study discussed the results of an empirical study on college students' competencies in the engineering domain and their self-evaluation on their perception of creativity and creativity performance. The research was conducted through a testing questionnaire by theoretical literature review and focus group interviews with experts in engineering and education fields.

4.8 Influence of CBC Instructional Materials on Grade four Pupils' Creativity Learning Outcomes

The fourth objective of this study was to examine the relationship between competency-based curriculum instructional materials and creativity learning outcomes among grade four pupils in Makueni County. The statistical information collected was analysed at descriptive, thematic, and inferential levels. Triangulation and interpretation of data was done after the analysis.

4.8.1 Descriptive Statistical Analysis

The analysed data was accrued from 5-point Likert questions to grade four teachers on frequency of use of CBC instructional materials to influence their pupils' creativity learning outcomes. The statistical analysis concerning the variables is provided in Table 22.

Table 22: Teachers' Responses on Frequency of use of CBC Instructional Materials to Influence their Pupils' Creativity Learning Outcomes (n=31)

CBC Instructional Materials	N	R	S	F	VF	Mean	Std. Dev
Charts	F		7	18	6	3.968	0.6575
	%		22.5	58.1	19.4		
Realia	F		6	16	9	4.097	0.7002
	%		19.4	51.6	29		
ICT	F	11	12	6	2	2.968	0.9123
	%	35.5	38.7	19.4	6.4		
Models	F	4	12	12	3	3.452	0.8501
	%	12.9	38.7	38.7	9.7		
Books	F		2	7	22	4.645	0.6082
	%		6.4	22.6	71		

Key: N=Never, R=Rarely, S=Sometimes, F=Frequently, VF= Very Frequently
Source: Researcher, 2023

As shown in Table 22, over half of the respondents (n=18, 58.1%) indicated that, charts were frequently used to influence pupils' creativity learning outcomes while other seven (22.5%) stated that charts were used sometimes. Also, other six (9.45%) said that, charts were very frequently used to influence pupils' creativity learning outcomes. Generally, charts were frequently used to influence grade four pupils' creativity learning outcomes since the mean was 3.968 (SD=0.6575). Half the respondents (n=16, 51.6%) indicated that, realia were frequently used to influence pupils' creativity learning outcomes, and nine (29%) indicated that, realia were used very frequently to influence pupils' creativity learning outcomes. Six (19.4%) of the respondents indicated that, realia were sometimes used to influence pupils' creativity

learning outcomes. Generally, realia were frequently used to influence pupils' creativity learning outcomes (mean=4.097, SD =0.7002).

Less than a half of the respondents (n=12, 38.7%) indicated that ICT was sometimes used to influence pupils' creativity learning outcomes, while eleven (35.5%) stated that ICT was rarely used to influence pupils' creativity learning outcomes. Other six respondents (19.4%) indicated that, ICT was frequently used to influence pupils' creativity learning outcomes. Only two respondents (6.4%) indicated that ICT was very frequently used to influence pupils' creativity learning outcomes. Therefore, ICT was sometimes used to influence pupils' creativity learning outcomes (mean=2.968, SD=0.9123).

A fair number of the respondents (n=12, 38.7%) indicated that, models sometimes and frequently were used to influence pupils' creativity learning outcomes, while four (n=4, 12.9%) indicated that models were rarely used to influence pupils' creativity learning outcomes. The remaining three respondents (n=3, 9.7%) indicated that, models were very frequently used to influence pupils' creativity learning outcomes. Thus generally, models were sometimes used to influence grade four pupils' creativity learning outcomes rarely (mean=3.452, SD =0.8501).

More than three quarters of the respondents (n= 22, 71%), indicated that, books were frequently used to influence pupils' creativity learning outcomes, while seven (n=7, 22.6%) indicated that books were used frequently. Additionally, other two respondents (6.4%) indicated that, books were sometimes used to influence pupils' creativity learning outcomes. In summary, books were frequently used to influence

grade four pupils' creativity learning outcomes since they generally had a mean of 4.645 (SD =0.6082).

The study findings indicated that, the commonly used instructional materials were realia and books. The reason for less use of other materials could be lack of interest by the teachers. This was in line with Bukoye (2019) who noted that, majority of the teachers do not take cognizance of the importance of instructional materials while teaching. Bukoye (2019) investigated the utilization of instructional materials as tools for the effective academic performance of students. He used a survey research method, and in his study he sampled a total of 100 respondents in five selected secondary schools using a questionnaire for data collection.

Minimal use of instructional materials could also be explained by unavailability of such resources in schools. This is in tandem with study findings by Nyagorme, Enoch and Arkorful (2017). This researchers conducted a study that revealed that, instructional media were not adequately available in Ghana. Their study aimed to investigate how Instructional Media (IM) were utilized at the Colleges of Education in Ghana. The study adopted a quasi-experimental methodology. Stratified sampling technique was used to select five Colleges from the thirty-eight (38) public Colleges of Education in Ghana at the time of the study. The actual sample size used for the study was Sixty-Seven (67) tutors from the five selected Colleges of Education, namely: Wiawso College of Education, St. Louis College of Education, Jasikan College of Education, Presbyterian Women's College of Education and Bagabaga College of Education. The instruments used for data collection were questionnaires and interviews. The current study focused on primary school teachers while the one cited used college tutors. In both studies it was unearthed that, instructional media

was a challenge to educational institutions hence a lot should be done to provide them with these crucial curriculum support materials.

Cheboi and Nyongesa (2020) also found out that schools did not provide adequate and appropriate instructional materials to equip learners with literacy skills. Cheboi and Nyongesa (2020) investigated the availability of instructional materials and their influence to learners' literacy among Pre-Primary II learners in public primary schools in Webuye West Sub-County. They used a descriptive survey research design that adopted a mixed-methods approach and a sample of 86 pre-primary II teachers, 48 deputy head teachers and 48 head teachers.

4.8.2 Inferential Statistics on the Influence of CBC Instructional Materials on Grade four Pupils' Creativity Learning Outcomes

The researcher conducted a simple linear regression to establish the relationship between CBC Instructional materials and grade four pupils' creativity learning outcomes. The researcher regressed the mean variable of CBC Instructional materials against the mean variable of creativity learning outcomes. The results are depicted in table 23.

Table 23: Regression Coefficients on the Influence of CBC Instructional Materials on Grade four Pupils' Creativity Learning Outcomes

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.675	.624		1.082	.288
	CBC Instructional materials	.508	.161	.505	3.148	.001

a. Dependent Variable: Creativity learning outcomes

Table 23 exposes that, CBC Instructional materials had a significant positive influence on grade four pupils' creativity learning outcomes. A beta value of 0.508 ($\rho < .001$, $\alpha = .05$) implies that, a unit increase in CBC Instructional materials will lead to a 0.508 increase in pupils' creativity learning outcomes. The study therefore rejected the 4^{th} hypothesis of the research: There is no statistically significant relationship between instructional materials used in CBC and creativity learning outcomes among grade four pupils in Makueni County.

These findings are in line with those of Arop, Umanah and Effiong (2015) who found out that, instructional materials positively affect students' achievement in science concepts. Arop, Umanah and Effiong (2015) examined the effect of instructional materials on the teaching and learning of Basic Science in Junior Secondary Schools in Cross River State. The study examined the role of instructional materials in the science classroom and how instructional materials had affected the teaching and learning of Basic Science. The study employed a quasi-experimental design. Two research questions and two hypotheses guided the study. The sample size was 240 students and data was collected using a 20-item test called Diffusion

Achievement Test. The current study is unique in that it had 323 pupils and used a 12 item creativity test.

4.8.3 Thematic Analysis on the Influence of CBC Instructional Materials on Grade four Pupils' Creativity Learning Outcomes

The analysis in this part was similarly lead by the research objectives and was done to corroborate the data collected through the quantitative Likert tests. The outcomes were thematically analysed from interviews with head teachers, QASOs, and CSOs in Makueni county.

4.8.3.1 Research Findings from Interviews

The interviewees were asked to name the teaching and learning materials that they used in their schools. They responded that they mainly used textbooks and improvised materials followed by digital gadgets. Respondents said that, the less frequently used teaching and learning materials were charts, locally available materials, and purchased materials. These data is presented in table 24.

Table 24: Teaching and Learning Materials

Teaching and learning materials	Frequency in a week
Digital gadgets (laptops, desktops, tablets, phones)	5
Textbooks	20
Charts	3
Improvised materials	8
Locally available materials	3
Purchased materials	1

Table 24 depicts that many schools used textbooks (f=20) followed by improvised materials (f=8), then by digital gadgets such as laptops, desktops, tablets, phones (f= 5). The less used instructional materials were locally available materials and charts (f=3). The least used instructional materials were purchased materials (f=1). Thus, textbooks, and improvised materials were the most commonly used teaching and learning materials in the sampled schools.

These research findings mirror those of Olatoye (2017) who discovered that, real specimen and videos were the best instructional materials that can be used in teaching for they tend to raise the students' achievement. Olatoye (2017) investigated the effect of teaching using charts, real specimens and videos on secondary school students' achievement in mammalian skeletal system concepts. He used a pre-test, post-test quasi-experimental design with control group by sampling 120 Biology students. He used a Mammalian Skeletal System Achievement Test (MSAT).

The interviewees were also asked to respond on how often the various teaching aids were used to influence creativity in their school. This is illustrated in table 25.

Table 25: Frequency of use of Teaching Aids

Frequency of use of teaching aids	Frequency	Percentage (%)
Daily/always	5	35.7
Often	5	35.7
Depends	4	28.6

Table 25 shows that, majority of the interviewees (n=5, 35.7%) indicated that teaching aids were often used to influence pupils' creativity learning outcomes. This was backed by head teacher K and J who said that:

> *"CBC teaching and learning aids were often used since they exposed learners. The commonly used teaching and learning materials were the readily available materials such as manila papers and improvised materials."* (Head teacher K). *"We use improvised materials always since parents are willing to make them."* (Head teacher J).

Another group of the respondents (n=5, 35.7%) said that, teachers always/daily used teaching aids. The teaching aids used daily included ICT and textbooks. This was voiced by head teacher J who declared that:

> *"We use natural materials always since they do not involve expenses and are available."*

These study findings resonated with those of Nurlela (2018) that showed that, textbooks influenced learners creative thinking. Nurlela (2018) aimed to develop a textbook on learning strategies to think creatively and develop course materials applying creative thinking skills in the Bachelor Program of Culinary Arts. The study

employed developmental research using the 4-D (Define, Design, Develop, and Disseminate) development model. The subjects were the students of the program. The data was collected using observation and questionnaires and analyzed using descriptive and quantitative methods. The textbook's comprehensibility was assessed by the undergraduate students.

Few respondents (n=4, 28.6%) revealed that, the use of teaching aids depended on several factors. This was captured from the sentiments aired by head teacher D that:

> *"The use of CBC teaching and learning aids depended on learners' interest, strand and sub-strand."*

CBC instructional materials were said to influence creativity learning outcomes among learners in several ways especially developing their innovativeness. This was supported by several of the interviewees who stated that:

> *"By using CBC instructional materials, children have developed innovations."* (Head teacher A). *"Textbook diagrams and photographs make learners more creative. Materials such as realia make learners inquisitive and stimulate them to make their own things."* (Head teacher A). *"CBC instructional materials provoke a lot of thinking, making learning interesting."* (Field officer A).

On the same issue of CBC instructional materials and their influence to creativity learning outcomes among learners, head teacher C and L further added that:

> *"Learning has become more interesting. Teachers' and pupils' motivation has increased."* (Head teacher C). *"Some of the textbooks are learner friendly since they have more pictures unlike the previous ones that lacked or*

had few. CBC instructional materials create interest, and with such materials, it is easy to give assignments." (Head teacher L).

CBC instructional materials were found to be more involving hence capturing learners' interest. This was backed by head teacher G and field officer C who said that:

"Teachers even take pupils out for example during PE lessons. Pupils make things like ropes." (Head teacher G). *"Learners are taken to the garden, and they get to know irrigation and how to hold a jembe to dig".* (Field officer C).

CBC instructional materials were also praised for playing a role in learners' knowledge retention. This was supported by head teacher M and field officer B who pointed out that,

"When a pupil reads a book, s/he extracts knowledge from the book. Charts help retention of knowledge since they help learners to continually see what had been covered in class since most are hanged or adhered on the classroom walls." (Head teacher M). *"Digital gadgets help pupils gain intense knowledge on a particular topic/activity as well as getting skills of looking for more information using the devices."* (Field officer B).

4.8.4 Triangulation and Interpretation of Data on the Influence of CBC Instructional Materials on Grade four Pupils' Creativity Learning Outcomes

Descriptive data analysis revealed that charts (mean=3.968), realia (mean=4.097) and textbooks (mean=4.645) were frequently used to influence pupils' creativity learning outcomes. ICT (mean=2.968) and models (mean=3.452) were used sometimes. Thematic analysis of the qualitative data showed that, teaching aids were used often. The aids were often used since they made learners more exposed and were readily

available. Through data accrued from interviews, CBC instructional materials were said to influence creativity learning outcomes among learners in several ways especially developing innovativeness. Materials such as realia were reported to make learners more interested in learning hence provoked their thinking stimulating them to make their very own materials. Both quantitative and qualitative data therefore agreed hence the rejection of the fourth hypothesis.

These study findings contradict those of Lyimo, Too and Kipng'etich (2017) that concluded that, there was inadequate number of textbooks, reference books, maps and globes in most schools. Lyimo et al. (2017) had investigated teachers' perception of instructional materials and physical facilities in secondary schools of Arusha district, Tanzania. The study utilized a descriptive case study design. They used questionnaires, interview schedules and document analysis. They used simple random and purposive sampling to select a sample of 318 selected school stakeholders.

Interviewees revealed that, CBC instructional materials made learning more interesting as some of the textbooks were learner friendly since they had more pictures. CBC instructional materials were found to be more involving hence capturing learners' interest. CBC instructional materials were also praised for playing a role in learners' knowledge retention. The inferential statistics showed that, CBC instructional materials had a significant positive ($r=0.508$, $\rho< .001$, $\alpha=.05$) influence on grade four pupils' creativity learning outcomes. In the same tone, Hafiz and Lawal (2020) noted that instructional materials were significant for teaching and learning. They stated that, instructional materials facilitated effective learning of technical education. Hafiz and Lawal (2020) examined the effects of instructional

materials on students' academic performance in technical education in Bunu Local Government Area of Kogi state. They collected data from 75 respondents using a descriptive survey design questionnaire. The current study was unique in that, it studied influence of a newly introduced curriculum (CBC) to primary school learners in Makueni County, Kenya.

4.9 Multiple Regression Analysis

The independent variables in the study were core competencies nurtured in CBC, teaching and learning approaches employed in CBC, teacher induction into CBC, and CBC instructional materials. To statistically relate the four independent variables with the dependent variable, a multiple regression model was applied.

The regression model was as follows:

$Y= \beta_0+\beta_1 x_1 +\beta_2 x_2+\beta_3 x_3+\beta_4 x_4 +e$

Where:

Y = creativity learning outcomes

β_0 = the constant

x_1 = core competencies

x_2 = teaching and learning approaches

x_3 = teacher induction

x_4= CBC instructional materials

β_1, β_2, β_3 and β_4 are coefficients

e is the error term

Table 26: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.900[a]	.810	.740	.25997

a. Predictors: (Constant), Core Competencies, Teaching and Learning approaches, Teacher Induction, and CBC Learning Materials

The coefficient of determination is represented by Adjusted R^2. It is used to mathematically illustrate how varying the independent variable causes a change in the dependent variable. It is the coefficient of determination because it also depicts to researchers how creativity learning outcomes vary with core competencies, teaching and learning approaches, teacher induction, and CBC instructional materials. From the research data inferentially analysed and presented in table 26, value of adjusted R^2 is 0.740. This implies a 74% contribution of creativity learning outcomes by core competencies nurtured in CBC, teaching and learning approaches employed in CBC, teacher induction into CBC, and CBC instructional materials. Therefore, the four variables in this study explained 74% of the variation in Y. The remaining 26% cause of creativity in the sampled grade four learners can be accounted by intervening variables.

Table27: ANOVA to test significance of the model

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	7.471	4	1.868	27.637	.000[b]
	Residual	1.757	26	.068		
	Total	9.228	30			

A. Dependent Variable: Pupils' Creativity Learning Outcomes

B. Predictors: (Constant), Core Competencies, Teaching and Learning Approaches, Teacher Induction and CBC Instructional Materials

Table 27 shows that, the coefficient of determination derived from the multiple regression model is statistically significant. It therefore establishes that, a variation in the dependent variable can be explained by the changes in the independent variables. An F significant value of ρ lower than 0.05 was established (ρ< .001, α=.05). Consequently, the model is statistically significant in illustating the influence of CBC on grade four pupils' creativity learning outcomes in public primary schools of Makueni County, Kenya.

The multiple linear regression is presented in table 28.

Table 28: Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	-1.306	.476		-2.746	.011
Core competencies	1.144	.143	.889	8.007	.000
Approaches	0.117	.128	.106	.916	.368
Teacher induction	-0.174	.123	-.170	-1.416	.169
Instructional materials	0.016	.134	.016	.116	.908

a. Dependent Variable: pupils' creativity learning outcomes

From the values of the computed multiple regression the linear regression equation becomes:

$Y = -1.306 + 1.144 x_1 + 0.117 x_2 - 0.174 x_3 + 0.016 x_4$

Where;

The constant (-1.306) shows that, if core competencies, teaching and learning approaches, teacher induction, and CBC instructional materials were all rated as zero, changes in pupils' creativity learning outcomes would be -1.306.

B_1=1.144 implies that, one unit change in core competencies inculcated in CBC results in 1.144 units increase in pupils' creativity learning outcomes.

B_2=0.117 implies that, one unit change in CBC teaching and learning approaches results in 0.117 units increase in pupils' creativity learning outcomes

B_3=-0.174 indicates that, one unit change (failure to induct) in teacher induction results in -0.174 units decrease in creativity learning outcomes

B_4=0.016 signifies that, one unit change in CBC instructional materials results in 0.016 units increase in pupils' creativity learning outcomes.

The regression analysis results therefore indicate that, pupils' creativity learning outcomes are precipitated by a confluence of all the four independent variables of the study.

CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.1. Introduction

The chapter consists of the summary of the research findings, conclusions and the study recommendations.

5.2 Research Outcomes Summary

A condensation of the major study findings is well illustrated as per the four study objectives.

5.2.1 Influence of Core Competencies on Pupils' Creativity Learning Outcomes

The study findings exposed that, communication and collaboration core competences nurtured in CBC influenced pupils' creativity learning outcomes to a great extent (mean=3.774 and 3.968 respectively). Communication ensured that learners were well involved, had a wide spectrum of new responses and ideas, and read to understand questions. Collaboration encouraged sharing as learners could work together and were free to talk, and the teacher could easily monitor them.

The study findings also showed that, citizenship core competence of CBC influenced pupils' creativity learning outcomes to a great extent (mean=3.613). Citizenship caused learners to be patriotic, embrace others regardless of tribe, and know how to unite as enshrined in the National Anthem and East African song. Citizenship equipped learners to care for resources and to work with in harmony with others.

Research findings also revealed that, learning to learn core competence of CBC influenced pupils' creativity learning outcomes to a great extent (mean=3.774). It helped learners move from known to unknown, boosted interest in learning, and discovery of new things. It helped them improve the methodology of handling things, improving efficiency, and applying knowledge.

Self-efficacy core competence also influenced pupils' creativity learning outcomes to a great extent (mean=3.742). Self-efficacy enhanced learners' self-confidence as they could express themselves freely. It increased the desire to learn and helped each learner to be more exposed to discover their talent.

Research results further exposed that, critical thinking and problem-solving core competences nurtured in CBC influenced pupils' creativity learning outcomes to a moderate extent (mean=3.484 and 3.516 respectively). Critical thinking made learners innovative and independent. Imagination core competence influenced pupils' creativity learning outcomes to a moderate extent (mean=3.335). Imagination caused learners boost their thinking before and during performance of tasks. It enhanced learners' recall capability since it made them learn independently as they moved from known-to-unknown. Digital literacy core competence was found to

influence pupils' creativity learning outcomes to a moderate extent (mean=3.452). Digital learning motivated learners, increased interest and eased learning.

There was a big difference between the pupils under competency-based curriculum and the old knowledge-based curriculum as indicated by 50% of the respondents. CBC enhanced interaction and learners' innovation. Pupils under CBC were confident and collaborative. In addition, CBC pupils could do a lot of work, were found to be more independent, and easily worked with digital gadgets. Generally, there was a great positive significant influence ($r=.446$, $\rho < .001$, $\alpha=.05$) influence of the core competencies nurtured in CBC on pupils' creativity learning outcomes.

5.2.2 Influence of CBC Teaching and Learning Approaches on Pupils' Creativity Learning Outcomes

Research findings revealed that, the main teaching and learning approaches employed in CBC were answering questions (mean=4.452), demonstrations (mean=4.387) and discussions (mean=4.161). They were followed by experiments (mean=4.000), problem-solving (mean 3.903), role play (mean=3.677) and experiential learning (mean=3.613). The least used teaching and learning approaches were debates (mean=2.807) and field trips (mean=2.677).

Research findings showed that, CBC teaching and learning approaches helped learners replicate what they had learned in the classroom. Discussion helped learners in conversation with the teacher or other pupils. As they expressed themselves, they improved their knowledge. Practicals helped learners retain, apply what has been learned, and interact with objects. Teaching approaches such as demonstration helped learners to be independent as they developed skills for independent working.

Demonstrations made learners self-confident as they saw what the teacher and other pupils were doing.

The study findings also pointed out that CBC teaching and learning approaches such as demonstration and experiments helped pupils do other duties in the teacher's absence. CBC teaching and learning approaches contributed to improving learners' communication skills. Through debates, questions and answers, learners could express themselves as they answer questions. Learners could get in touch with reality through CBC teaching and learning approaches. Field trips for example gave learners a natural reality since they would learn by seeing. Fieldwork evoked interest and exploration. Through projects, learners could apply the acquired knowledge and skills to real-life situations. However, research findings revealed that, CBC teaching and learning approaches were not sufficient as indicated by 57.1% of the respondents. There were some challenges such as unavailability of teaching and learning resources, lack of funds as well as fewer methods of instruction. Study findings indicated that teaching and learning approaches had a significant positive influence ($r=0.499$, $\rho < .001$, $\alpha=.05$) on creativity learning outcomes of the sampled pupils.

5.2.3 Influence of Teacher Induction into CBC on Pupils' Creativity Learning Outcomes

The study findings revealed that, preparation of teaching aids (mean=3.968), schemes of work (mean=4.581), lesson planning (mean=4.548), pupil assessment (mean=4.548), and lesson delivery (mean =4.419) induction elements for practising teachers eventually influenced their pupils' creativity learning outcomes to a great

extent. Teaching with ICT influenced pupils' creativity learning outcomes to a moderate level of extent (mean=3.065).

Thematic analysis showed that, the training process was not sufficient, and it was rushed as less time was dedicated to the induction. Through the responses from interviews, teacher induction was seen to help teachers improve their instruction since they learned new teaching methods. CBC inductions were found to add more knowledge and skills to practising teachers especially on how to handle learners. Teacher induction changed teachers' perspectives on teaching and brought a positive understanding, especially on CBC teaching methodologies. After applying what they were trained to learners, the pupils greatly changed their perspective to education increasing their interest hence boosting their creativity.

The study's outcome also pinpointed out that, the teachers exposed to CBC did better lesson preparation, were more competent, and made CBC compliant professional records. CBC exposed teachers could teach efficiently and related well with learners since they could handle learners well in class. Further, it was noted that teachers exposed to CBC would readily use CBC teaching aids than those not exposed according to the head teachers and field officers. CBC inducted teachers were found to apply more teaching methods, being learner-centred, and were more practical. Teachers exposed to CBC used a practical approach, took less time to achieve a certain objective, and easily assessed and evaluated learners. The non-inducted teachers had difficulties in their teaching and got confused. Generally study findings revealed that, teacher induction into CBC had a significant positive influence of ($r=.225$ $\rho < .001$, $\alpha=.05$) on creativity learning outcomes of the sampled pupils.

5.2.4 Influence of CBC Instructional Materials on Pupils' Creativity Learning Outcomes

Research findings unearthed that, the frequently used CBC instructional materials were books, charts and realia. Others were ICT and models, which were used sometimes. The teaching aids were often used since they made learners more exposed and were readily available. CBC instructional materials were said to influence pupils' creativity learning outcomes especially by developing innovativeness. Materials such as realia made learners curious to make their material and provoked their thinking.

CBC instructional materials made learning interesting as some of the textbooks were learner friendly since they had pictures. CBC instructional materials were found to be more involving hence capturing learners' interest. CBC instructional materials were also praised by 35.7% of the respondents for playing a role in learners' knowledge retention. Digital gadgets helped learners gain intense knowledge in a particular topic/activity since pupils sought for more information by using the devices. Generally, CBC instructional materials had a significant positive influence of 0.508 ($\rho < .001$, $\alpha = .05$) on creativity learning outcomes of the sampled pupils.

5.3 Study Conclusions

These research purposed to determine influence of competency-based curriculum on grade four pupils' creativity learning outcomes. The focus was on the four variables in competency-based curriculum namely: core competencies nurtured in CBC, teaching and learning approaches employed in CBC, teacher induction into CBC, and CBC instructional materials. The study's findings concluded that, competency-based

curriculum contributed to creativity learning outcomes among CBC learners. However, there were some challenges in some of the approaches used.

5.3.1 Influence of Core Competencies on Pupils' Creativity Learning Outcomes

The seven core competencies nurtured in CBC were the most contributing variables in CBC to the influencing of pupils' creativity learning outcomes. Through their nurturance, learners acquired communication, collaboration, imagination, critical thinking, citizenship, learning to learn, self-efficacy, and digital literacy skills. This study concludes that grade four learners had fairly acquired most of these skills having a score of 3 (approaching expectation). Communication and collaboration encouraged sharing among learners and teachers. Critical thinking made learners innovative and more independent. Imagination helped learners to think and improve their ability to recall. Citizenship helped learners to be patriotic, embrace others and hence unite. Digital literacy motivated learners, increased their interest to studying and consequently eased their learning. Learning to learn core competence helped learners move from known to unknown. Self-efficacy enhanced learners' self-confidence. The study therefore concludes that, more effort should be made to ensure that, all learners acquire the core competences nurtured in CBC to ensure that their creativity is honed. This will ensure that they live successful and productive lives.

5.3.2 Influence of Teaching and Learning Approaches on Pupils' Creativity Learning Outcomes

The frequently used CBC teaching and learning approaches were experiments, demonstrations, problem-solving, experiential learning, answering questions, and discussions. The least used teaching and learning approaches were field trips, play cards, adventure walk, and debates. Findings revealed that, CBC teaching and

learning methods helped learners replicate what they had learned in the classroom, helped learners in conversation and improved their knowledge retention. CBC teaching and learning approaches improved learners' communication skills and helped them to be independent and self-confident. CBC Teaching and learning approaches helped pupils do other duties in the teacher's absence. CBC Teaching and learning approaches helped learners to get in touch with reality as learners got a natural reality. They evoked interest and exploration, and learners could apply the acquired knowledge and skills to real-life situations. However, results uncovered that, CBC teaching approaches were not sufficient. This was because there were some challenges such as unavailability of teaching and learning resources, lack of funds and fewer methods of instruction. Since the study rejected the second hypothesis it concludes that, the CBC teaching and learning approaches should be up scaled to ensure that, all learners acquire the core competences nurtured in CBC and consequently develop their creativity.

5.3.3 Influence of Teacher Induction into CBC on Pupils' Creativity Learning Outcomes

Teacher induction into CBC had a significant positive influence on pupils' creativity learning outcomes. Preparation of teaching aids, schemes of work, lesson planning, pupil assessment, and lesson delivery greatly influenced pupils' creativity learning outcomes. However, the training process was insufficient as less time was dedicated to the induction. Teacher induction was found to help teachers improve their instruction since they learned new instructional methods. Teacher induction was found to add more knowledge and skills especially on how to handle learners. The trainings changed teachers' perspectives on teaching and brought a positive

understanding on CBC. Teachers exposed to CBC did better lesson preparation, were more competent and made CBC compliant professional records. Inducted teachers were also found to relate well with learners and readily used teaching aids. CBC inducted teachers used a practical approach in their teaching, took less time to achieve lesson objectives, and easily assessed and evaluated their learners. Since induction into CBC was found to be useful, it can be concluded that teachers can produce excellent results if induction skills were incorporated into pre-service training of teachers in both universities and teacher training colleges.

5.3.4 Influence of CBC Instructional Materials on Pupils' Creativity Learning Outcomes

CBC Instructional materials were found to have a significant positive influence on pupils' creativity learning outcomes. The common CBC instructional materials were charts and realia. Others included ICT, models, and books. The teaching aids were often used since they made learners more exposed and were readily available. CBC instructional materials were found to influence creativity learning outcomes among learners through enhancing innovativeness. Instructional materials such as realia made learners curious to make their own materials and provoked learners' thinking. CBC instructional materials made learning more interesting as some of the textbooks were friendly since they had pictures. CBC instructional materials were found to be more involving hence capturing learners' interest. CBC instructional materials for instance books and charts, helped retain knowledge. Digital gadgets were found to help learners gain intense knowledge in a particular topic/activity and to look for more information using the devices. The study therefore concludes that, a lot of

investment by the government through MoE should be done to acquire adequate teaching and learning resources to ensure successful implementation of CBC.

5.4 Practice based Recommendations

Based on the findings of the study, the researcher puts forward the following recommendations:

1. Results showed that the influence of core competencies on pupils' creativity learning outcomes was the highest. However, not all core competencies were fully inculcated in grade four learners. There is thus the need for the ministry of education to ensure that all the core competencies are well inculcated in CBC. The relevant teachers and the school heads should ensure that, these skills are well nurtured.
2. The study noted a variation in the CBC teaching and learning approaches used across the various schools in Makueni County. Such differences may mean that, learners get different exposure in their learning. Therefore, the ministry of education needs to guide on how and when to use these approaches. The parents and the school heads should also help ensure that, learners get the best experiences in their learning, such as taking field trips or engaging in practical work.
3. The ministry of education needs to do follow-ups on teacher training in CBC-related fields. There was reduced effectiveness in CBC caused by challenges such as crash programme in training that the teachers undertook. The ministry of education needs to plan when and where the training of CBC teachers takes place. Teachers need to be motivated to participate in those training by getting some rewards, promotions, and stipends when they attend. The

ministry of education also needs to ensure that the trainers are experienced and do efficient training.

4. Creativity among CBC learners is also influenced by the instructional materials used. Schools need to ensure that they have as many instructional materials as possible. The ministry of education can also play a role by ensuring that all schools have enough funding to purchase instructional materials. Parents also need to chip in and help learners gather the locally available resources on a need basis.

5.5 Recommendations for Further Research

The researcher recommends that the following areas be researched further:

i. From the study's findings, the area of core competencies needs to be exhaustively covered. Since several skills determine the core competencies, future academicians need to determine how each skill contributes to creativity learning.

ii. The research focused on grade four learners only, and it would be advisable to conduct a different study that would address other learners in different grades, both in lower and upper grades. Determining the effectiveness of core competencies in lower grade pupils would help uncover the areas that need improvement or alteration before learners move to upper classes.

iii. The present study focused only on grade four learners in Makueni county. If the same study was replicated in other counties in Kenya, it would help compare the strong and weak areas of the learners. Thus, it will be

possible to conclusively tell whether there may be differences between learners across the country.

iv. Based on the study's R square, it was established that other factors come into play in influencing creativity learning outcomes. Though core competencies play a great role in impacting pupils' creativity learning outcomes, it would be wise for future academicians to focus on these factors. Determining other factors influencing creativity learning outcomes would help various educational bodies, especially those dealing with CBC implementation, make wise and concrete decisions

REFERENCES

Abraham, A. (2016). Gender and Creativity: An Overview of Psychological and Neuroscientific Literature. *Brain Imaging & Behavior,* 10, 609-618

Ajoke, A. (2017). The Importance of Instructional Materials in Teaching English as a Second Language. *International Journal of Humanities and Social Science Invention* 6(9), 36-44.

Al-bwli, Q. (2006). *The effectiveness of using brainstorming strategy in developing creative thinking in Islamic Education among Third secondary students in Tabouk City.* Masters Thesis. Mut'a University, Krak. Jordan.

Al-qarni, F. (2011). *Measuring the effectiveness of using brainstorming strategy in city. developing creative thinking in science among third intermediate students in Qurayyat* Unpublished Master thesis. Al-balqa Applied University. Salt. Jordan.

Anisha, M. (2018). Induction Programs, Teacher Efficacy, and Inquiry Practices in Novice Teachers. Dissertations. 18. DOI: https://doi.org/10.31979/etd.pk8d-cyvt https://scholarworks.sjsu.edu/etd_dissertations/18

Arop, B., Umanah, F., & Effiong, O. (2015). Effect Of Instructional Materials on The Teaching and Learning of Basic Science in Junior Secondary Schools in Cross River State, Nigeria. *Global Journal of Educational Research*, 14, 67-73.

Artino, A. (2012). Academic self-efficacy: From educational theory to instructional practice. *Perspective Medical Education, 1*(1), 76-85.

Aud, B. , McCammon, L.& O'Farrell, L. (2007). Creative teaching – teaching creatively. *Caribbean, Quarterly*, 53, 205-215.

Balim, A. (2009). The Effects of Discovery Learning on Student's success and Inquiry Learning Skills. *Egitim Arastirmalari Journal of Educational Research*, 35, 1-20.

Bandura, A. (2016). *The Power of Observational Learning through Social Modelling* Cambridge University Press.

Barbosa, R., Jofili, Z. & Watta, M. (2004). Cooperating in constructing knowledge: Case studies from chemistry and citizenship. *International Journal of Science Education* 26(8), 935-949.

Barbot, B., Besancon, M. & Lubart, T.I. (2015). Creative potential in educational

settings: Its nature, measure and nurture. *Education.* 3, 3-13

Batey, M. (2012). The Measurement of Creativity: From Definitional Consensus to the Introduction of a New Heuristic Framework. *Creativity Research Journal,* 24, 55-65.

Batlolona, J & Mahapoonyanont, N. (2019). Academic learning outcome and creative thinking skills on projectile motion topic. *Jurnal Pendidikan Indonesia*, 8(1), 1-15.

Becker, G.S. (2009). *Human Capital. A Theoretical and Empirical Analysis with Special Reference to Education.* University of Chicago Press

Bembenutty, H. (2011). Meaningful and maladaptive homework practices: The role of self-efficacy and self-regulation. *Journal of Advanced Academics, 22* (3), 448-473.

Benjamin, K. , Chepchumba, E. (2020). Teachers' Competence as a Cornerstone on the Implementation of CBC in Kenya: A Case of Lower Primary Schools in Nakuru

County. *International Journal of Education & Research* 34, 677-689.

Bensley, D.A. (2010). A Brief Guide for Teaching and Assessment of Critical Thinking in Psychology. *Observer Vol* 23 no. 10, 49-53.

Bicknell-Holmes, T. & Hoffman, P.S. (2000). Elicit, Engage, Experience, Explore: Discovery Learning in Library Instruction. Reference Services Review. 28(4), 313-322.

Binkley, M., Erstad, O. & Herman, E. (2012). *Defining 21st Century Skills.* McGraw. New York. USA

Blamiresa, M. & Peterson, A. (2014). Can Creativity be Assessed? Towards an Evidence Informed Framework for Assessing and Planning Progress in Creativity. *Cambridge Journal of Education.* 44, 147-162

Boahin, P., & Boahin, P. (2018). Competency-Based Curriculum: A Framework For Bridging The Gap In Teaching, Assessment And The World Of Work. *International Journal of Vocational and Technical Education Research,* 4(2), 1-15

Bong, M. (2013). *Self-efficacy*. In: J. Hattie and E.M. Anderman (eds.). International guide to student achievement, pp.64-67. New York: Routledge.

Braund, P. & Campbell, B. (2020). Learning to Teach about Ideas and Evidence in Science. The student Teacher as change Agent. *Research in Science Education*, 40, 203-209

Bruner, J. (2009). *The process of education*. Harvard University Press.

Bui, C., & McDaniel, M. (2015). Enhancing learning during lecture note taking using outlines and illustrative diagrams. *Journal of Applied Research in Memory andCognition, 4* (2), 129.

Bukoye, R. (2019). Utilization of Instruction Materials as Tools for Effective Academic Performance of Students: Implications for Counseling. *Proceedings* 2019, *2,* 1395; doi:10.3390/proceedings2211395.

Cachia, R., Farrari, A., Ala-Murka, K. & Punie, Y. (2010). *Creative Learning and Innovative Teaching: A final Report on the Study on Creativity and Imagination in Education in the EU Member States.* Institute of Prospective Technological Studies. Servile, Spain.

Carpenter, S. K. & Olson, K. M. (2011). Are pictures good for learning new vocabulary in a foreign language? Only if you think they are not. *Journal of*

Experimental Psychology: Learning, Memory, and Cognition, 38(1), 1- 10.

Carter, K. A., & Beaulieu, L. J. (1992). *Conducting a community needs assessment: Primary data collection techniques* (CD-27). Florida Cooperative Extension Service.

Charteris, J. (2014). Learner Agency, Dispositionality and the New Zealand Curriculum Key Competencies. *New Zealand Journal of Teachers' Work*, 111(2), 175-186

Cheboi, S., & Nyongesa, I. (2020). Instructional Materials' Effect on Learners' Literacy Among Public Pre-Primary II in Webuye West Sub-County, Kenya. *East African Journal of Education Studies, 2*(1), 86-91.

Chen, A. (2021). Curriculum Experience and Learning Outcomes for Creativity Competence: Empirical Survey of Undergraduates in the Engineering Domain. *Advances in Social Science and Culture,* 3(3), 21-38.

Cheng, V. (2004). Developing Physics learning activities for fostering creativity in Hongkong context. *Asia – pacific forum on science learning and teaching* 5(2) 1.

Cheptoo, R. (2019). The "Africanized" Competency-Based Curriculum: The Twenty-First Century Strides. *International Journal of Education*, 7(4), 46-51

Chin, Y. (2013). The relationship between undergraduate students' creative self-efficacy, creative ability and career self-management. *International Journal of Academic Research in Progressive Education and Development, 2*(2), 181-193.

Cipollone, M., Shiffer, C.C. & Moffat, R.A. (2015). Minecraft as a creativity tool. A case study *Concepts, methodologies, tools and applications*, 4, 956-969

Claro, M., & Ananiadou, K. (2009). *21st century skills and competences for New*

Millennium learners in OECD countries. OECD education working paper no. 41. Paris:OECD Publishing.

Coakley, L., Sousa, K. (2013). The effect of contemporary learning approaches on student perceptions in an introductory business course. *Journal of the Scholarship of Teaching and Learning*, Vol. 13, No. 3, pp. 1 – 22.

Codefop (2008). *The shift to Learning Outcomes: Conceptual, Political and Practical Developments in Europe.* Lexumbourg, publications office.

Cohen, J. (2005). *Competency Based Education and Training Delivery. Status Analysis and Recommendations.* USAID Indonesia: Academy for Education Development.

Colgan, A. D., & Maxwell, B. (2019). *The Importance of Philosophy in Teacher Education: Mapping the Decline and Its Consequences*. Routledge. 17.

Collins, J.W., & O'Brien, N.P. (Eds.) (2011). *Greenwood Dictionary of Education.* Westport, CT: Greenwood.

Corcoran, K. (2006) *Enhancing creativity; strategies implemented in the senior secondary visual Art classroom.* A Doctoral thesis. Griffith University.

Creswell, J.W., Plano Clark, V.L., Gutmann, M.L. & Hanson, W.E., (2013). *Hand book of mixed methods in social and behavioral research.* Thousand oaks. C.A sage

Cropley, D.H. (2016). Creativity in Engineering: Novel Solutions to Complex Problems in GE Carazza & S. Agoli (eds), *Multidisplinarity Contributions to the Science of Creative Thinking in the 21st Century* 155-173.

Davies, D. (2013). Creative Learning Environments in Education. A Systematic Literature Review. *Thinking Skills and Creativity,* 8, 80-91

De Los Santos, E., Dominguez, D., & Lafrance, K. (2015). Innovation in Competency-Based Program Development: Leveraging the Advisory Board Faculty Alliance.*Administrative Issues Journal,* 1(1), 47-56

Donald, A. (2010). *Introduction to research in education.* Wadsworth centage learning

Denise, J (2011). Testing a model of undergraduate competence in employability skills and its implications for stakeholders. *Journal of Education and Work.* 27. 1-23.

Doron, E. (2016). Short term intervention model for enhancing divergent thinking among school-aged children. *Creativity research journal*. 28, 372-378

Ehtiyar, R & Baser, G. (2019). University Education and Creativity: An Assessment From Students' Perspective. *Eurasian Journal of Educational Research.* 19. 1-20.

Elald, S., Batd, V. (2016). The Effects of Different Applications on Creativity Regarding Academic Achievement: A Meta-Analysis. *Journal of Education and Training Studies*, 4(1), 170-179

European Union (2009). Council Conclusions of 12th May 2009 on a Strategic Framework for European Cooperation in Education and Training. *Official Journal of EU* 119/112

Farmer, S., & Tierney, P. (2017). *Considering Creative Self-Efficacy: Its Current State and Ideas for Future Inquiry*. In Maciej Karwowski & James C. Kaufman (Eds.), Explorations in Creativity Research (pp. 23-47). Academic Press.

Farrington, C. (2013). *Academic Mindsets as a Critical Component of Deeper Learning.* University of Chicago: Consortium on Chicago School Research.

Fawzi, M., & Hussein, A. (2013). Enhancing students' motivation to write essays through brainstorming: A comparative study. *International Journal of Humanities and Social Science*, 3(9), 191-196.

García-López, L., Gutiérrez, D., Pastor, J., Romo, V. (2018). Validity and reliability of a questionnaire on primary and secondary school teachers' perception of teaching a competence-based curriculum model. *Journal of New Approaches in Educational Research,* 7(1), 46-51

Gardner, A. (2017). The viability of online competency-based education: An organizational analysis of the impending paradigm shift. *Journal of Competency Based Education*, *2*(4), 1-6.

Geen, S. K & Gredler, M. E (2002). A review and analysis of constructivism for school based practices. *Education Review* 31 (1), 53-70. 13.

Gilman, J. (2017). Investigation of Perceptions of Beginning Teachers Who Participated in a New Teacher Induction Program. University of Maryland.

Government of Kenya (2013). *Basic education act*. Government press, Nairobi.

Guilford, J.P. (1975). Creativity: a Quarter Century of Progress. In I.A. Taylor & J.W. Getzels (Eds). Perspectives in Creativity pp. 37-39.

Gul, S., Kiyani, A., Chuadhry, M. A. & Liaqut, S. (2014). Role of A.V Aids on the Cognition of Students at Secondary Level. *International Journal of Innovation and Applied Studies, 9* (3), 1140-1147.

Gupta, S. (2011). Constructivism as a paradigm for teaching and learning. *International Journal of Physical and Social Sciences, 1*(1), 23-47.

Habibu, D., (2017). The Roles of School Heads in Supporting Novice Teachers at The Public Secondary Schools in Zanzibar, Tanzania. *European Journal of Educational Studies*, 3(8), 35-56.

Hafiz, S. & Lawal, A. (2020). Effects of Instructional Materials on Students' Academic Performance in Technical Education: A Case Study of Kabba Bunu Local Government Area. *Direct Research Journal of Social Science and Educational Studies,* 7 (2), pp. 25-30.

Hahm, J., Kim, K., & Park, S. (2019). Cortical correlates of creative thinking assessed by the figural Torrance Test of Creative Thinking. Neurological report, 30(18), 1289–1293.

Haki Elimu (2014). *School children and National Examinations: A Research Report on the Relationship between Examination Practice and Curriculum Objectives.* Dar es salaam. Tanzania

Hamalainen, R. & Vahasantenen, K. (2011). Theoretical and Pedagogical Perspectives on Orchestrating and Collaborative Learning. *Educational Research Review* Vol 6. pp. 169-186.

Hanafi (2016). The Effect of Discovery Learning Method Application on Increasing Students' Listening Outcome and Social Attitude. *Dinamika Ilmu*, *16* (2), 291-306.

Hangül, S. (2017). An Evaluation of the New Teacher Induction Program in Turkey through the Eyes of Beginning Teachers. *Journal of Education and Practice,* 8(10), 191-201

Hennessey, B. A. & Amabile, T. (2010). Creativity. *Annual Review of Psychology,* Volume 61, pp. 569-598.

Hennessey, B.A., Amabile, T.M. & Mueller, J.S. (2011). Consensual Assessment in M.A. Runco Encyclopedia of Creativity Vol 1 (2nd edition) 253-260.

Henrisken, D., Mishra, P. & Fisser, P. (2016). Infusing Creativity and Technology in 21st Century Education: A Systemic view of Change. *Educational Technology and Society* Vol 19 no 3 pp. 27-37.

Hooks, B. (1994). *Teaching to Transgress.* New York: Routledge

Huang, H. (2015). Can students themselves narrow the socioeconomic-status-based achievement gap through their own persistence and learning time? *Education Policy Analysis Archives,23*(108), 1-37.

Ibikunle, A., & Dada, S. (2018). Influence of Audio-Visual Aids on Teaching of Physical and Health Education in Junior Secondary Schools in Ikere Local Government Area, Ekiti State, Nigeria. *IJRAR- International Journal of Research and Analytical Reviews, 5*(2), 14-22

İlçin, N., Tomruk, M., Yeşilyaprak, S.S. *et al.* (2018). The relationship between learning styles and academic performance in TURKISH physiotherapy students. *BMC Med Educ* 18, 291. https://doi.org/10.1186/s12909-018-1400-2.

Ingersoll, R. and Strong, M. (2011). The Impact of Induction and Mentoring Programs for Beginning Teachers: A Critical Review of the Research. *Review of EducationResearch.* Vol. 81(2), 201-233.

Isa, S. G., Mammam, M. A., Badar, Y. & Bala, T. (2020). The impact of teaching methods on academic performance of secondary school students in Nigeria. *International Journal of Development Research,* 10(6), pp. 37382-37385.

James, F., (2017). The Effects of Technology on Student Motivation and Engagement in Classroom-Based Learning. All Theses and Dissertations. 121. https://dune.une.edu/theses/121.

Jank, E., Benedek, M. & Neubaur, A.C. (2014). The Road to Creative Achievement: A Latent Variable Model of Ability and Personality Predictors. *European Journal of Personality,* 28, 95-105

Justice, C. & Rice, J. (2009). IBL in Higher Education; Administrators' Perspectives on Integrating Inquiry Pedagogy into Curriculum. *Higher Education.* 58 (6) 841-855.

Kabita, D. N., & Ji, L. (2017). *The why, what and how of competency-based curriculum reforms: The Kenyan experience.* In-Progress Reflection No. 11, Geneva, Switzerland:IBE-UNESCO.

Kafyutilo, A.C., Rugambuka, B.L. & Moses, I. (2012). The Implementation of CBC Teaching Approaches in Tanzania. *Makerere Journal of Higher Education,* 4 (2) 311-326.

Kantar, L.D. (2013). Demystifying Instructional Innovation: The Case of Teaching with Case Studies. *Journal of the scholarship of teaching and learning* (13)2, 101-115

Kanyonga, L., Mtana, N., & Wendt, H. (2019). Implementation of competence-based curriculum in technical colleges: The case of Arusha City, Tanzania. *International Journal of Vocational and Technical Education*, 11(1), 1-20.

Karagiorgi, Y. & Symeou, L. (2005). Translating Constructivism into Instructional Design: Potential Limitations. *Journal of Educational Technology and Society* 8(1), 17-27.

Kaufman, J.C., Plucker, J.A. & Russel, C.M. (2012). Identifying and Assessing Creativity as a Component of Giftedness. *Journal of Psychoeducational Assessment*, 30,60-73.

KICD (2017). *Basic education curriculum framework.* Nairobi.

KICD, (2019). *Upper primary level curriculum designs volume 2 for grade 4.* Government press

Kim, K.H. (2011). The creativity crisis: the decrease in creative thinking scores on the Torrance Test of creative thinking. *Creativity research journal*. 23, 285-295.

Kimosop, H. (2019). Teacher Preparedness in the Implementation of Early Childhood Education Development Curriculum in Kenya: A case of Baringo North Sub-County.*Journal of Humanities and Social Science,* Vol 24 pp. 44-50.

Kirschner, P., Sweller, J., & Clark, R. (2006). Why Minimal Guidance During Instruction does not work: An Analysis of the Failure of Constructivist, Discovery, Problem- Based Teaching. *Educational Psychologist*, 41:2,75-86

Kisirkoi, F., & Mse, G. (2016). Curriculum Implementation: Strategies for Improved Learning Outcomes in Primary Schools in Kenya, *Journal of Curriculum and Teaching*, 5(1), 19-27

Knight, P. & Yorke, M. (2007). *Learning, Curriculum and Employability in Higher Education* London, Routledge.

Kolb, D. (1984) *Experiential learning: Experience as source of learning and development.* Englewoods Cliff, NJ. Prentice Hall

Komba, S. & Mwandanji, M. (2015). Reflections on the Implementation of Competence Based Curriculum in Tanzanian Secondary Schools. *Journal of Education and Learning*, 4(2), 73-82.

Kothari, D. (2004). *Research Methodology. Methods and techniques.* New Delhi, India: New age international publishers.

Lee, O. & Buxton, C. (2006). *Diversity and Equity in Science Education; Theory, Research and Practice.* New York Teachers College Press.

Lee, V.S. (2012). What is Inquiry-guided Learning? New Directions in Learning, Vol 129 pp. 1-6.

Lee, Y., Hsiao, C., & Ho, C. (2014). The effects of various multimedia instructional materials on students' learning responses and outcomes: A comparative experimental materials on students' learning responses and outcomes: A comparative experimental study. *Computers in Human Behavior, 40*, 119-132.

Li, Ch., & Wu, J. (2011). The structural relationships between optimism and innovative behavior: understanding potential antecedents and mediating effects. *Creativity Research Journal, 23*(2), 119-128.

Lyimo, N., Too, J., & Kipng'etich, J. (2017). Perception of teachers on availability of instructional materials and physical facilities in secondary schools of Arusha District, Tanzania. *International Journal of Educational Policy Research and Review*, 4 (5), pp. 103-112.

Mahmoud, A. (2017). The Impact of Effective Teaching Strategies On Producing Fast And Good Learning Outcomes. *International Journal of Research.* 5. 43-58.

Makunja, G. (2015). Adopting Competence-Based Curriculum to Improve Quality of Secondary Education in Tanzania: "Is it a Dream or Reality"? *International Journal of Education and Research,* 3(11), 175-188.

Mayer, R. (2014). Cognitive theory of multimedia learning. *The Cambridge Handbook of Multimedia Learning,* 43.

Melor, Y., Hadi, S., & Dexter, S (2017). Using Visual Aids as a Motivational Tool in

Enhancing Students' Interest in Reading Literary Texts. Recent Advances in Educational Technologies, 114-117.

Miller, A.L. (2014). A Self- Report Measure of Cognitive Processes associated with Creativity.*Creativity Research Journal,* 26, 203-218.

Milkman, R. (2017). A New Political Generation: Millennials and the Post-2008 Wave of Protest. *American Sociological Review*, *82*(1), 1–31.

Mishra, R. (2014). Social constructivism and teaching of social science. *Journal of Social Studies Education Research, 5*(2), 1–13. 58.

Momanyi, J., & Rop, P. (2019). Teacher Preparedness for the Implementation of Competency Based Curriculum in Kenya: A Survey of Early Grade Primary SchoolTeachers' in Bomet East Sub-County. *The Cradle of Knowledge: African Journal of Educational and Social Science Research,* 7(1), 10-15

Muasya, E., Waweru, S. (2019). Constraints Facing Successful Implementation of the Competency-Based Curriculum in Kenya. *American Journal of Educational Research,7(12), 943-947.*

Mugenda, O. & Mugenda, A. (2013). *Research methods, Quantitative and Qualitative Analysis.* African center for Technology studies. Nairobi, Kenya.

Muiruri, J. & Kibui, A. (2019). Effect of Instructional Materials on Children's Performance in Number Writing in Public Pre-Schools in Kamukunji Sub County, Nairobi County. *International Journal of Scientific Research and Innovative Technology*, 6(2), 16-22.

Munawaroh, F. (2017). The Influence of Teaching Methods and Learning Environment to the Student's Learning Achievement of Craft and Entrepreneurship Subjects at Vocational High School. *International Journal of Environmental & Science Education,* 12(4), 665-678.

Munshi, A. (2018). Induction Programs, Teacher Efficacy, and Inquiry Practices in Novice Teachers. Dissertations. 18. DOI

Murithi, J. & Yoo, J. (2021). Teachers' use of ICT in implementing the competency-based curriculum in Kenyan public primary schools. *Innovation and Education*, 3(5), 1-11.

Mwande, E. & Mpofu, J. (2017). The Preparedness of Primary Schools to Implement the Grade Three new Curriculum in Zimbabwe: A Case Study of Bulawayo Metropolitan Primary Schools.

Napier, N.K. & Voung, Q.H. (2013). *Serendipity as a Strategic Advantage. Strategic Management in the 21st Century.* Westport.

Natale, C. (2011) Virtual K–12 Learning: New Learning Frontiers for State Education Agencies, *Peabody Journal of Education,* 87:5, 535-558,

Navarro, M. & Gallardo, E. J. (2015). Teaching Training Teachers through Cooperative Learning *Procedia Social and Behavioral Sciences*, Vol 180, 401-406.

Ng'eno J. & Chesimet C. (2016). Effects of Experiential Learning Approach on Students' Mathematical Creativity among Secondary School Students of Kericho East Sub-County, Kenya. *International Journal of Education* 7. 51-57.

Niluphar A. & Maud, B (2017). Creativity as a Stepping Stone towards Developing Other Competencies in Classrooms. *Hindawi Education Research International*, 1-9.

Njengere, D. (2017). *The why, what and how of CBC Reforms: The Kenyan experience.* UNESCO International Bureau of Education.

Nurlela, L. (2018). Developing Creative Thinking Skills in Learning at Higher-

Educational Institution of Teacher.

Nyagorme, P., Enoch, S. B., & Arkorful, V. (2017). Instructional Media Usage and Students' Academic Performance in Colleges of Education, Ghana. *Advances in Social Sciences Research Journal, (425)* 26-37.

Okongo, R., Ngao, G., Rop, N., & Nyongesa, J. (2015). Effect of Availability of Teaching and Learning Resources on the Implementation of Inclusive Education in Pre-School Centers in Nyamira North Sub-County, Nyamira County, Kenya. *Journal of Education and Practice*, 6(35), 1-12.

Olatoye, R.A. (2017). Effect of Teaching Using Charts, Real Specimens and Videos on Secondary School Students' Achievement in Mammalian Skeletal System Concepts. *ENSAYOS, Revista de la Facultad de Educación de Albacete, 32*(2).

Olayinka, A. (2016). Effects of Instructional Materials on Secondary Schools Students' Academic Achievement in Social Studies in Ekiti State, Nigeria. *World Journal of Education*, 6(1), 32-39.

Omuna, M., Onchera, P., & Kimutai C., (2016). Availability and use of instructional resources for teaching and learning of English reading skills in secondary schools in Teso North Sub County, Kenya. *Educational Research*, 7(1), 1 -9

Osborn, A. (1959*). Applied imagination: principle and procedures of creative problem solving.* Scribners. New York.

Otor, E., Ogbeba, J., Ityo, C. (2015). Influence of Improvised teaching Instructional Materials on Chemistry Students' Performance in Senior Secondary Schools in Vandeikya Local Government Area of Benue State, Nigeria. *International Research in Education, 3(*1), 111-118.

Oyelekan, S., Igbokwe, F., Olorundare, S. (2017). Science Teachers' Utilization of Innovative Strategies for Teaching Senior School Science in Ilorin, *Nigeria. Malaysian Online Journal of Educational Sciences,* 5(2), 49-65

Ozan, C., Kıncal, R. (2018). The Effects of Formative Assessment on Academic Achievement, Attitudes toward the Lesson, and Self-Regulation Skills. *Educational sciences: Theory & Practice,* 18(1), 85–118

Pamier, C. (2017). Internalization: A new Word for our Global Economy. *New-word-for-our-global-economy*-88013

Paramithea, A. & Indarti, N. (2014). Impact of the Environment Support on Creativity: Assessing the Mediating Role of Intrinsic Motivation. *Precedia-Social & Behavioral Sciences,* 115, 102-114.

Paulo, A. (2014). Pre-service Teacher Preparedness to Implement CBC in Secondary Schools in Secondary Schools in Tanzania. *International Journal of Educational Research* 4 (3) 100-107.

Pellegrino, J.W. & Hilton, M.L. (2012). Education for life and work: Developing transferable knowledge and skills in the 21st century. *National Research Council.* The National academic press. Washington D.C.

Prasertcharoensuk, T., Somprach, K, & Tang, K. (2015). Influence of Teacher Competency Factors and Students' Life Skills on Learning Achievement. *Procedia-Social and Behavioral Sciences.* 186. 566-572.

Puccio, J. (2006). *Creative leadership: Skills that drive change*. Thousand oaks, CA Sage.

Qiong, J. (2010). A Brief Summary on The Implementation of Constructivist Teaching Theory on Classroom Teaching Reform in Basic Education. *Journal of International Education Studies* 3(2), 197-199.

Republic of Kenya. (2018). Makueni County Integrated Development Plan, (2018-2022). Government printer, Nairobi.

Rezaei, A. (2012). Can self-efficacy and self-confidence explain Iranian female students' academic achievement? *Gender and Education, 24*(4), 393-409.

Robinson, K. (2011). *Out of our minds: Learning to be creative.* Capstone

Rodríguez, G., & Gemma, N. (2019). Developing creative and research skills through an open and interprofessional inquiry-based learning course. *BMC Medical Education*, 19:134. https://doi.org/10.1186/s12909-019-1563-5.

Rop, P. (2013). Challenges Facing the Implementation of the Integrated English Curriculum in Kenya: A Case of Selected Secondary Schools in Kenya. Journal of Social Sciences Resources, Vol 2 no 3 pp. 21-36.

Rosen, Y., Stoeffer, K., & Simmering, V. (2020). Imagine: Design for Creative Thinking, Learning, and Assessment in Schools. *J. Intell*., 8, 16; doi:10.3390/jintelligence8020016.

Rumbley, L. (2008). *Interview with Kai-Ming Cheng:* Humanities and Social Science Education in Hong Kong. East Asia.

Runco, M.A. (2007). Divergent Thinking is not Synonymous with Creativity. *Psychology of Aesthetics, Creativity and the Arts.* 2, 93-96

Runco, M.A., & Jaeger, G.J. (2012). The Standard Definition of Creativity. *Creativity Research Journal,* 24, 92-96.

Ruzic, F. (2011). *Empowering Social Knowledge with Information Technology:*

Technological and Cultural Issues Convergence. In Social Knowledge: Using Social Media to Know What You Know (pp. 249–291). IGI Global.

Samuelsson, J. (2018). The Impact of Teaching Approaches on Students' Mathematical Proficiency in Sweden. *International Electronic Journal of Mathematics Education*, 5(2), 61-73.

Sanz, M.L. & Baquedano, M.T. (2013). How Creative Potential is Related to Metacognition *European Journal of Education and Psychology*. Vol 6, 69-81.Proficiency in Sweden. *International Electronic Journal of Mathematics Education*, 5(2), 61-73.

Saregar1, A., Cahyanti, U., Misbah, Susilowati, N., Anugrah, A., & Muhammad, N. (2021). CORE learning model: Its effectiveness towards students' creative thinking. *International Journal of Evaluation and Research in Education (IJERE)*, 10(1), 35-41.

Saunders, M.& Lewis, N.(2007) *Research methods for business students*. Fourth Harlow Publishers.

Sawyer, R.K. (2006). Educating for Innovation, Thinking skills and Creativity. 1, 4-48. *Science direct.* 1, 4-48.

Scheopner-Torres, A. S., Brett, J., & Cox, J. D. (2015). *Competency-based learning: Definitions, policies, and implementation.* Waltham, MA: Regional Educational Laboratory Northeast & Islands at Education Development Center.

Schneider, V. & Rohmann, A. (2021). Arts in Education: A Systematic Review of Competency Outcomes in Quasi-Experimental and Experimental Studies. Front. *Psychol*. 12:623935. doi: 10.3389/fpsyg.2021.623935.

Seeling, T. (2012). Genius: A Crash Course on Creativity. You tube.

Semerci, C., & Batdi, V. (2015). A meta-analysis of constructivist learning approach on learners' academic achievements, retention and attitudes. *Journal of Education and Training Studies, 3*(2), 171–180.

Serulungu, N.G. (2018). *Examining the Practice of CBC on Provision of Quality Education in Tanzania: A case of Selected Secondary Schools in Tabora & Nzenga Districts.* Masters Thesis. The Open University of Tanzania.

Sharma, R. (2016). Effect of School and Home Environment on Creativity of Children. *MIER Journal of Educational Studies, Trends and Practices,* 1, 187-196.

Shah, R. K. (2019). Effective social constructivist approach to learning for social studies classroom. *Journal of Pedagogical Research, 3*(2), 38–51.

Shen. J., Gerald, L. & Bowyer, J. (2010). Getting from here to there: the role of Policy Makers Principals in increasing Science teacher quality. *Journal of Science Education,* 21, 283-307.

Shorofat, A. (2007). *The effect of using synectics and brainstorming on ninth grade creative writing.* Unpublished Ph.D. thesis, the University of Jordan.

Shumba, A., Ndofirepi, A., & Gwirayi, P. (2012). A Critique of Constructivist Theory in Science Teaching and Learning. Journal of Social Sciences, 31(10), 87-96.

Simon, S. (2013). The Weaving of a Tapestry: A Metaphor for Teacher Education Curriculum Development. *Australian Journal of Teacher Education.* 38. 10

Simonds, J., Behrens, E., & Holzbauer, J. (2017). Competency-Based Education in a Traditional Higher Education Setting: A Case Study of an Introduction to Psychology Course. *International Journal of Teaching and Learning in Higher Education,* 29(2), 412-428

Slavin, E.R. (2015). Cooperative Learning in Schools. *International Encyclopedia of Social and Behavioral Sciences,* Vol 4 pp. 881-886. SMASE *Training manual* (2016), CEMASTEA, Nairobi.

Sokół, A. & Figurska, I. (2021). The Importance of Creative Knowledge Workers in Creative Organization. Energies, 14, 6751. https:// doi.org/10.3390/en14206751

Spronken- Smith, R. (2010). Can IBL Strengthen the Links between Teaching and Inderdisplinary Research? *Studying High School Education.* Google scholar.

Stabback, P. (2016). *What makes a quality curriculum?* In-Progress Reflection No. 2 Paris: UNESCO.

Stafford-Bizard, K.B. (2016). *Building Blocks for Learning. A Framework for Comprehensive Student development.* New York.

Sternberg, R.J., Jarvin, L., Birney, D., Naples, A., Stemler, S.E. & Newman, T. (2014).

Testing the Theory of Successful Intelligence in Teaching Grade four Language, Art, Mathematics and Science. *Journal of Educational Psychology,* 106, 881-899.

Sternberg, R.J. (2015). Teaching for Creativity: The Sounds of Silence. *Psychology of*

Aesthetics And the Arts 9, 115-117.

Tabaro, C. (2018). The Rwandan secondary school competence-based curriculum: knowledge, skills and attitudes to incorporate in the university of Rwanda-college of education programs to align them with the current curriculum. *International Journal of Education and Practice*, 6(2), 64-75.

Tan, E. & Barton, A.C. (2010). Transforming Science Learning and Student

Participation in Sixth grade: A case study of low income urban racial Minority Classrooms. *Equity and Excellence in Education.* 43 (1) 38-55.

Tennet, M. (2005). Environmental factors influential in the development of creativity in children. *International journal of life long education*. 5, 378-385.

Thomas, D., & Brown, J. S. (2011). A *new culture of learning: Cultivating the imagination for a world of constant change* (Vol. 219). Lexington, KY: Create Space.

Tilya, F. & Mafuko, B. (2010). Global Conceptualization of Learner centered learning and CBC in Tanzania. *Papers Presented on the Forum of Community of Practice on learner centered learning in Dar es salaam Tanzania in September 2010.*

Thomas, D., & Brown, J. S. (2011). A *new culture of learning: Cultivating the imagination for a world of constant change* (Vol. 219). Lexington, KY: Create Space.

Torrance, E.P. (2008). *The Torrance Tests of Creative Thinking.* Benseville Scholastic Testing Service.

Tupavali, T. (2017). An analysis of the influence of induction programmes on beginner teachers' professional development in the Erongo Region of Namibia. Stellenbosch University https://scholar.sun.ac.za.

Turki, J., & Al-Qaisi, L. (2012). Adjustment problems and self-efficacy among gifted students in Salt Pioneer Center. *Int J EduSci, 4*(1), 1-6.

Turner, J.I. & Day, L. (2012). Engaging Biological Science Students in the Development of Employability Skills through Creative Teaching and peer reviewed action Plans. *Journal of Learning Developments in High Education* 4, 1-13.

Tyler, R., Waldrip B., & Griffiths, M. (2004). Windows into practice: Constructing effective science teaching and learning in a school change initiative. *International Journal of Science Education,* 26(2), 171-194.

Vaughn, B. K and Wang, P. (2009). The Design and Development of a User-ControlledVisual Aid for Improving Students' Understanding in Introductory Statistics. *Journal on School Educational Technology, 5* (1), 20-35.

Wanjohi, A.M. (2017). *New Education System in Kenya: An excerpt from Basic Education Framework.* Nairobi. Government press.

Wanzala, O. (2018). *Questions Raised on Teachers' Readiness for new Curriculum.* Daily Nation July 22nd 2018.

Wetende, C. (2013). Utilisation of Educational Media in Teaching and Learning of Oral Literature in Butere Sub County Secondary Schools, Kenya. *International Journal of Science and Research (IJSR), 6*(14), 757-765.

Warren, H. (2016). New Teacher Induction: A Program Evaluation. Dissertations, Theses, and Masters Projects. Paper 1463428445. http://dx.doi.org/10.21220/W4TG6W

Waweru, W.J. (2018). Influence of Teacher Preparedness on the Implementation of CBC in Public Schools in Nyandarua North Sub-County, Kenya.

Wegerif, E. (2019). The impact of a professional development training on primary school teachers' knowledge, attitude and behavioral intention towards teaching higher-order thinking skills. University of Twente, Enschede.

West, M., & Richards, T. (2009). *Innovation. In M.A.* Encyclopedia of creativity (Vol 2, pp. 45-55. San Diego: Academic Press.

Wetende, C. (2013). Utilisation of Educational Media in Teaching and Learning of Oral Literature in Butere Sub County Secondary Schools, Kenya. *International Journal of Science and Research (IJSR)*, *6*(14), 757-765.

William-Jesse, B. (2020). New Teacher Induction: Improving Teacher Self-Efficacy. Theses and Dissertations-Educational Leadership Studies. 29. https://knowledge.uk.edu/edl etds/29.

Wiysahnyuy, L. (2021). The Competency Based Approach in Cameroon Public Secondary Schools: Modes of Appropriation and Constrains. *International Journal of Humanities Social Sciences and Education (IJHSSE)*, 8(1), 92-103.

Wongnaa, C.A. and Boachie W. (2018). Perception and Adoption of Competency based Training by Academicians in Ghana. *International Journal of STEM Education*, vol. 5, no. 52, pp. 1-13.

Young, S. (2018). The Effect of a Teacher Induction Program on Teacher Levels of Effectiveness in a Rural Appalachian School District in East Tennessee. Carson-Newman University.

APPENDICES

Appendix I: Introductory Letter

Shedrack Kituu,

P.O. Box, 2,

Nunguni.

The study participant,

Makueni County,

P.O. Box,

Machakos.

Dear participant,

Re: REQUEST FOR SCHOLARY STUDY DATA

The person writing to you is a PhD scholar at Machakos University on a research mission to establish the **influence of CBC on creativity learning outcomes among grade four pupils in public primary schools in Makueni County.** The research findings will go a long way in helping improve creativity in our learners for our general prosperity as a nation. Kindly assist me conduct the research by allowing me to field some questions related to this research to you.

Thank you.

Yours sincerely,

Shedrack Kituu

Appendix II: Informed Consent

Researcher

My name is Shedrack Kituu, a PhD student at Machakos University. I am inviting you to participate in a research study. Involvement in the study is voluntary. Please feel free to ask any questions that you may have about the research. I will be happy to explain anything in greater detail.

I am interested in evaluating **the influence of selected factors in CBC implementation on creativity learning outcomes among grade four pupils in public primary schools in Makueni County.** I shall be requesting you to answer a few questions for the research. The task shall be done in about 30 minutes. The provided information will not be disclosed and will be confidential.

The data shall be used to develop policies for nurturing creative thinking among learners. There is no danger you shall face in partaking in the research.

Participant

All of my questions and concerns about this investigation have been addressed. I choose to voluntarily participate in the study.

Name …… Signature ……

Name of researcher: Shedrack Kituu Signature……..

Date……..

Appendix III: Questionnaire for Grade Four Teachers

Please answer the questions below by ticking appropriately. Be free to be explained to comprehend the questions.

PART 1: Background Data

1. Gender

   Male [ ]

   Female [ ]

2. How many years have you taught CBC to learners?

   Less than 1 year [ ]

   2-3 years [ ]

   3-5 years [ ]

PART II: Influence of CBC on Creativity Learning Outcomes

Section A: Extent to which Core Competencies in CBC influence Creativity Learning Outcomes

Please indicate by ticking appropriately using the key below, the extent to which the various core competences inculcated in CBC influence creativity learning outcomes in your pupils.

Key: 1=Very Low Extent, 2=Low Extent, 3=Moderate Extent, 4= Great Extent, 5=Very Great Extent

Core competence	**1**	**2**	**3**	**4**	**5**
Communication					
Collaboration					
Critical Thinking					
Problem solving					
Imagination					
Citizenship					
Digital literacy					
Learning to learn					
Self-efficacy					

Section B: Relationship between Teaching and Learning Approaches used in CBC and Creativity Learning Outcomes

Kindly, indicate by ticking appropriately by use of the key below, how often you use the following teaching and learning approaches in CBC to influence your pupil's creativeness. Key: 1=Never, 2=Rarely, 3=Sometimes, 4= Frequently, 5=Very Frequently

Teaching method	**1**	**2**	**3**	**4**	**5**
Role play					
Field trips					
Debates					
Experiments					
Demonstration					
Teacher exposition					
Learning method	**1**	**2**	**3**	**4**	**5**
Problem solving					
Experiential learning					
Answering questions					
Discussions					

Section C: Extent to which Teacher Induction into CBC influences Creativity

Please, indicate by ticking appropriately by use of the key below, the influence of the following teacher induction practices into CBC on creativity learning outcomes in your pupils.

Key: 1=Very Low Extent, 2=Low Extent, 3=Moderate Extent, 4= Great Extent, 5=Very Great Extent

Teacher induction practice	**1**	**2**	**3**	**4**	**5**
Teaching with ICT					
Preparation of teaching aids					
Preparation of schemes of work					
Lesson planning					
Lesson delivery					
Pupil assessment					

Section D: Relationship between CBC Instructional Materials and Creativity Learning Outcomes in Pupils

Kindly, indicate by ticking appropriately by use of the key below, how often you use the following CBC instructional materials to influence your learner's creativity.

Key: 1=Never, 2=Rarely, 3=Sometimes, 4= Frequently, 5=Very Frequently

Instructional material	**1**	**2**	**3**	**4**	**5**
Charts					
Realia					
ICT					
Models					
Books					

Thank you for your cooperation

Appendix IV: Observation Schedule for Grade Four Learners

Details of respondents

School ……
Sex……..
Age ……

Indicators	**Exceeds expectations**	**Meets expectations**	**Approaches expectations**	**Below expectations**
Fluency in communication				
Ability to produce many ideas on an issue				
Ability to switch between concepts				
Ability to communicate with clarity				
Flexibility in employing alternatives				
Ability to generate variety of ideas				
Ability to come up with different interpretations				
Ability to go beyond cultural boundaries				
Originality in idea development				
Ability to give unique/rare responses				
Ability to take risks				
Ability to come up with unexpected ideas				
Elaboration of issues				
Ability to offer many details on an asked issue				
Ability to go beyond what others have done				
Ability to analyse an issue into parts				
Resistance to premature closure				
Ability to consider other pupils ideas				
Ability to do corrections				

Appendix V: Creativity Test for Grade Four Learners

Details of respondents

School ……..

Sex ……

Age ……..

1. Use the following shapes to make a drawing and write the name of the drawing below the picture you have drawn.(You are free to draw more than one drawing)

Shapes	Draw and name diagram here
	
	
	

2. You have been given a tin. List what you can use a tin for.
3. If the sun did not rise, what would happen?
4. If you were given one hundred shillings, what would you do with it?
5. Suppose your school got a school bus, what would be done by people in the school?
6. If schools were closed for many months, what would you do to continue learning?
7. You have been given this toy. (They will be given a toy car). Suggest ways of improving the toy to make it more fun or interesting.
8. Write a very interesting story of your choice.
9. You have been given this picture. (They will be given a picture). Guess what it is? Ask questions about the picture.
10. If you saw a small boy drowning in a river, what would you do?
11. Suppose you were a doctor. Two patients come to you very sick. You have only one life saving drug. What would you do and why?
12. Write as many words as you can from the word COLLEGE.

Appendix VI: Interview Guide for Head Teachers

SECTION ONE

SECTION A: Demographic information

a. Gender

Male [ ]

Female [ ]

b. How long have you been a Head teacher?

c. How long have you been involved CBC?

SECTION B: CBC AND CREATIVITY LEARNING OUTCOMES

1. Influence of Core competences nurtured in CBC on creativity learning outcomes

a) How do the core competencies inculcated in CBC influence creativity learning outcomes in learners in your school?

b) What differences do you observe in pupils under CBC and those in the old KBC?

2. Influence of Teaching & Learning approaches used in CBC on creativity learning outcomes

a) What teaching methods does your school use in the CBC classes?

b) How do the various teaching approaches in CBC influence creativity learning outcomes among pupils in your school?

c) Are the teaching approaches sufficient in nurturing creativity? Explain.

d) To what extent do the various learning approaches by the pupils in CBC influence their creativity learning outcomes in your school?

3. Influence of Teacher induction into CBC on creativity learning outcomes in pupils

a) Are the teachers well trained on the implementation of CBC? Explain.

b) How does teacher induction into CBC contribute to creativity learning outcomes among pupils in your school?

c) What difference do you note in a teacher more exposed to CBC compared to the less exposed in teaching the CBC learners?

4. Influence of CBC instructional materials on creativity learning outcomes

a) What CBC teaching and learning materials do you use in your school?

b) How often are various teaching aids used to influence creativity in pupils in your school?

c) How do competency-based instructional materials influence creativity development among pupils in your school?

Appendix VII: Interview Guide for CSOs and QASOs

SECTION ONE

SECTION A: Demographic information

a. Gender

Male [ ]

Female [ ]

b. How long have you been a QASO/CSO?

c. How long have you been involved with CBC?

SECTION B: CBC AND CREATIVITY LEARNING OUTCOMES

1. Influence of Core competences nurtured in CBC on creativity learning outcomes

a) How do the core competencies inculcated in CBC influence creativity learning outcomes among learners in Makueni County?

b) What is the difference in performance for pupils under CBC and those in the old KBC?

2. Influence of Teaching & Learning approaches used in CBC on creativity learning outcomes

a) How do various teaching approaches in CBC influence creativity learning outcomes among pupils in Makueni County?

b) Are the teaching approaches sufficient in nurturing creativity? Explain

c) To what extent do the various learning approaches in CBC influence creativity learning outcomes in pupils of Makueni County?

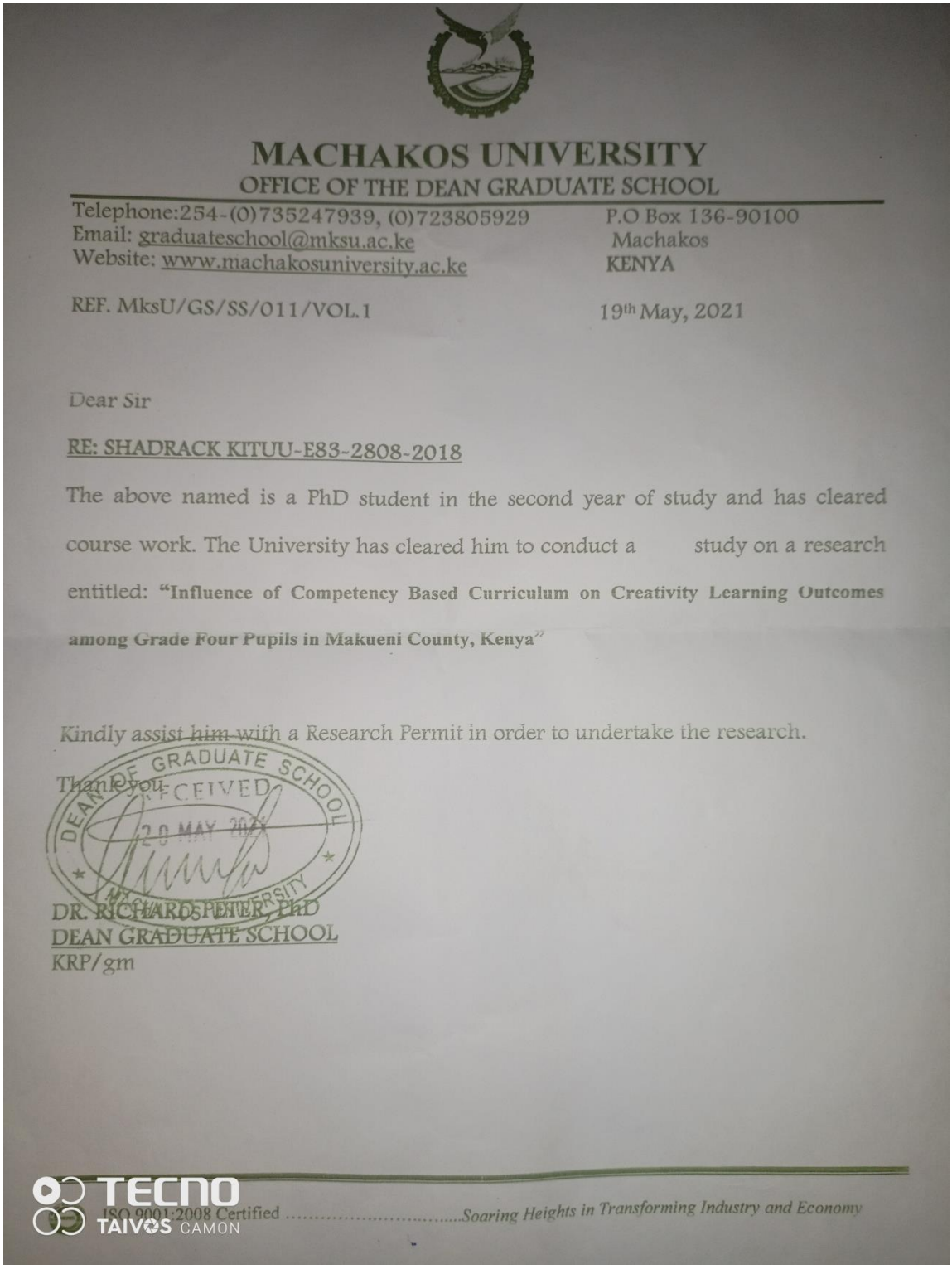
3. Influence of Teacher induction into CBC on creativity learning outcomes in pupils

   a) What is the major focus (content) during the teacher induction sessions?
   b) What is the frequency of teacher inductions?
   c) How often is the teacher's induction into CBC reviewed?
   d) How does teacher induction into CBC contribute to creativity learning outcomes among pupils in Makueni County?
   e) How is the attendance of teachers in these inductions?

4. Influence of CBC instructional materials on creativity learning outcomes

   a) How often are various teaching aids used to influence creativity among pupils in Makueni County?
   b) How do competency-based instructional materials influence creativity development among pupils in Makueni County?

Appendix VIII: Research Note from Machakos University



MACHAKOS UNIVERSITY
OFFICE OF THE DEAN GRADUATE SCHOOL

Telephone:254-(0)735247939, (0)723805929
Email: graduateschool@mksu.ac.ke
Website: www.machakosuniversity.ac.ke

P.O Box 136-90100
Machakos
KENYA

REF. MksU/GS/SS/011/VOL.1

19th May, 2021

Dear Sir

RE: SHADRACK KITUU-E83-2808-2018

The above named is a PhD student in the second year of study and has cleared course work. The University has cleared him to conduct a study on a research entitled: **"Influence of Competency Based Curriculum on Creativity Learning Outcomes among Grade Four Pupils in Makueni County, Kenya"**

Kindly assist him with a Research Permit in order to undertake the research.

Thank you

DEAN OF GRADUATE SCHOOL RECEIVED 20 MAY 2021 MACHAKOS UNIVERSITY

DR. RICHARD PETER, PhD
DEAN GRADUATE SCHOOL
KRP/gm

ISO 9001:2008 Certified .....Soaring Heights in Transforming Industry and Economy

Appendix IX: Study Licence from NACOSTI

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR
SCIENCE,TECHNOLOGY & INNOVATION

Ref No: 706668

Date of Issue: 11/June/2021

RESEARCH LICENSE

This is to Certify that Mr.. Shedrack Kituu Sammy of Machakos University, has been licensed to conduct research in Makueni on the topic: INFLUENCE OF COMPETENCY BASED CURRICULUM ON CREATIVITY LEARNING OUTCOMES AMONG GRADE FOUR PUPILS IN MAKUENI COUNTY, KENYA for the period ending : 11/June/2022.

License No: NACOSTI/P/21/11119

706668

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR
SCIENCE,TECHNOLOGY &
INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

Appendix X: Research Authorization Letter from MoE

REPUBLIC OF KENYA

MINISTRY OF EDUCATION

STATE DEPARTMENT OF EARLY LEARNING AND BASIC EDUCATION

Email:cdemakueni@gmail.com
When replying please quote

County Education Office
P.O. Box 41
MAKUENI

MKN/C/ED/5/33/ VOLII/78

23rd June, 2021

Shadrack Kituu
Machakos University
P.O BOX 136-00100
MACHAKOS

RE: RESEARCH AUTHORISATION FOR SHADRACK KITUU

Reference is hereby made to the letter from National Commission for Science Technology and Innovation (**NACOSTI**) dated 11/6/2021, authorizing you to carry out research on **"Influence of Competency Based Curriculum on Creativity Learning Outcomes among Grade Four pupils in Makueni County"** for the period ending 11/6/2022.

Following this authorization, you are allowed to proceed with your research as requested.

COUNTY DIRECTOR OF EDUCATION
DATE: 23/6/2021
P.O. BOX 41-90300
MAKUENI
MAKUENI COUNTY - MOEST

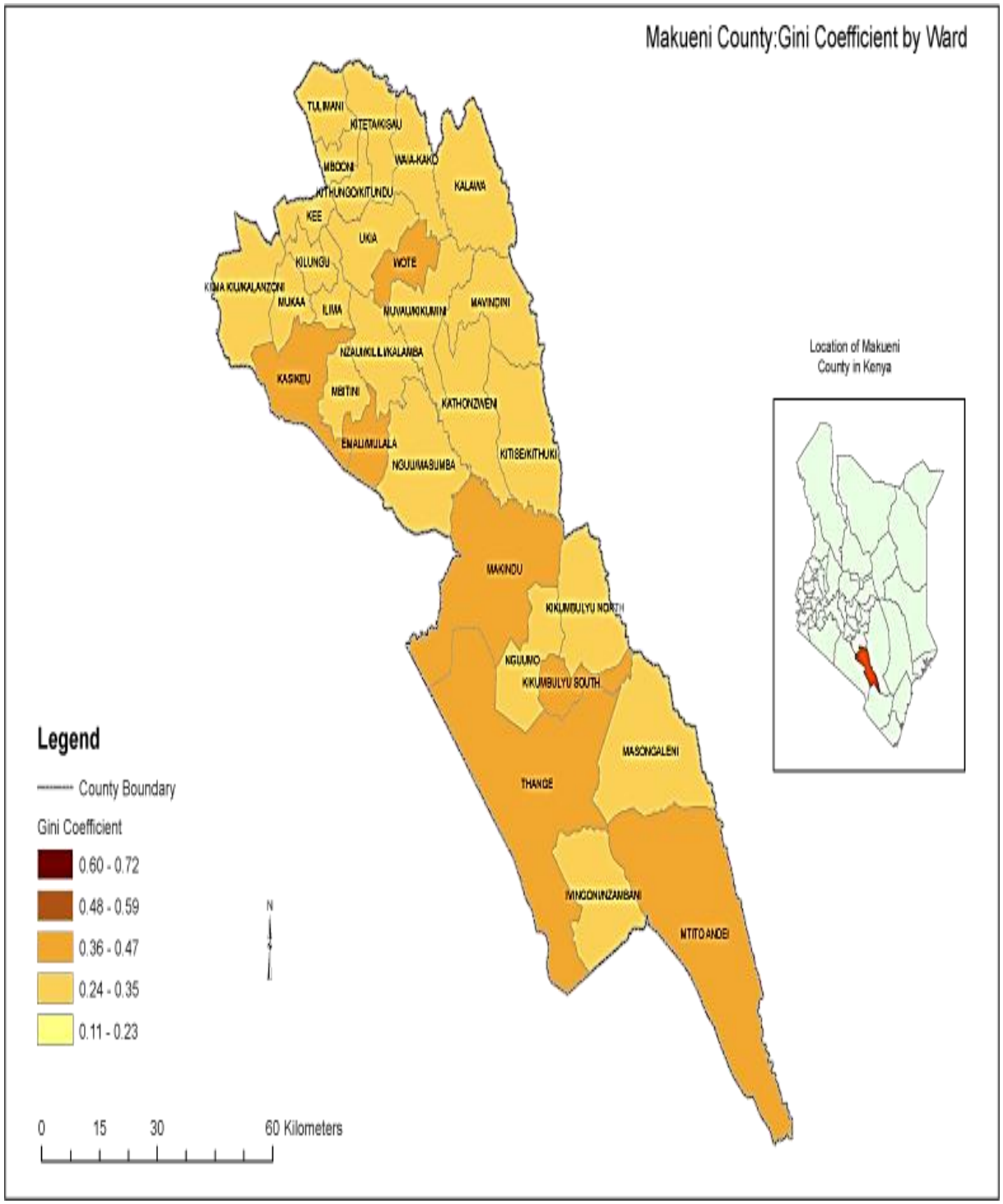
Dr. Arodi Samson
For County Director of Education
Makueni

ISO 9001 BUREAU VERITAS Certification

TECNO TAIVOS CAMON

Appendix XI: Map of Kenya highlighting Makueni County

Appendix XII: Map of Makueni County



Appendix XIII: Turn-it-in Report

COMPETENCY BASED CURRICULUM AND CREATIVITY LEARNING OUTCOMES AMONG GRADE FOUR PUPILS IN MAKUENI COUNTY, KENYA

by Shedrack Kituu

Submission date: 15-Feb-2023 03:22PM (UTC+0300)
Submission ID: 2014754341
File name: PhD_THESIS_2023_feb.docx (2.6M)
Word count: 52452
Character count: 306954

COMPETENCY BASED CURRICULUM AND CREATIVITY LEARNING OUTCOMES AMONG GRADE FOUR PUPILS IN MAKUENI COUNTY, KENYA

ORIGINALITY REPORT

3%	2%	0%	3%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

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1	Submitted to Mount Kenya University Student Paper	3%

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