

**RELEVANCE OF IMMANUEL KANT'S PHILOSOPHY OF  
TRANSCENDENTALISM ON IMPLEMENTATION OF CURRICULUM IN  
SECONDARY SCHOOLS IN MERU-SOUTH SUB COUNTY, KENYA**

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**A Thesis Submitted to Graduate School in Partial Fulfillment of the  
Requirements for the Award of the Degree of Master of Education in  
Educational Foundations of Chuka University**

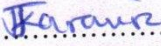
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**SEPTEMBER, 2019**

## DECLARATION AND RECOMMENDATIONS

### Declaration

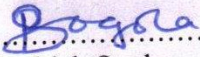
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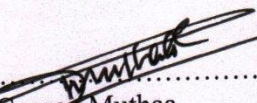
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## **DEDICATION**

This work is dedicated to my dear wife, Lucy and my daughter, Blessy.

## **ACKNOWLEDGEMENT**

First, I give all the honour to the almighty God for his divine guidance, grace and providence. I am grateful to Prof. George M. Muthaa in the faculty of education Chuka University and Prof. Fredrick Ogola of Machakos University for jointly supervising this work. I also express my heartfelt gratitude to Dr. Hillary K. Barchok, Dr. Rev. Linus Micheni and Prof. Veronica K. Nyaga, whose diligent instructions and training formed the knowledge base upon which this work was developed.

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## ABSTRACT

Kant's transcendentalism which is a philosophy based on the synthesis of philosophies of rationalism and empiricism can form a foundation upon which curriculum implementation strategies could be developed. Effective curriculum implementation is aimed at supplying a country with well-educated workforce with the ability to think and analyze issues critically. This can be achieved by basing curriculum implementation methods on a sound philosophy which promotes student-centered methods. However, researches have shown that conventional traditional strategies such as lecture method and rote learning are mainly adopted in curriculum implementation in secondary schools which have been blamed on relegating practical skills necessary for economic development. Thus, most of the learners exiting the education system at secondary level do not have adequate skills and competences to join the job market. The purpose of this study was to analyze the relevance of Kant's philosophy of transcendentalism on implementation of curriculum in secondary schools. The objectives of this study were to analyze the relevance of Kant's probing method, to analyze the relevance of Kant's experiential method and to analyze the relevance of Kant's experimental method on implementation of curriculum in secondary schools. The study was guided by synthesis theory of knowledge by Emmanuel Kant. The study adopted descriptive research design, which was complimented by the critical and conceptual philosophical techniques. The target population was 3,085 subjects comprising of 2,780 form three students and 305 teachers in Meru-South sub county secondary schools. Stratified sampling, purposive sampling, and simple random sampling techniques were used to select the schools, teachers and students respectively. A sample size of 357 respondents which comprised of 322 students and 35 teachers participated in the study. A pilot study was carried in two secondary schools in Meru-South Sub county, which were not to participate in the study. Validity of the instruments was ensured through expert judgment by supervisors. Pearson's Correlation Coefficient using the test-retest method was used to estimate reliability of instruments. A correlation coefficient of 0.78 was generated for the students' questionnaires and 0.82 for the teachers' questionnaires. The data collected from the questionnaires was cleaned, coded and entered in the computer for analysis using SPSS version 21 for windows. Quantitative data was analyzed using frequencies and percentages. Analyzed data was presented using frequency tables and pie charts. The findings of the study revealed that Kant's probing method enhances learners understanding of curriculum contents and critical thinking skills. The findings of the study further revealed that teachers and students advocate the use of Kant's experimental method on curriculum implementation and that some of the teachers do not find Kant's experiential learning method relevant in the curriculum implementation. The study recommends incorporation of concepts of Kant's transcendentalism philosophy in the in-service courses for serving and aspiring teachers. The study also recommends that QASOs and heads of institutions should monitor and ensure teachers use variety of teaching aids in teaching to promote Kant's experiential learning and Kant's experimental method in schools. The study concludes that the recommendations made after the study would prove quite invaluable in assisting teachers improve on their methods of curriculum implementation.

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## **ABBREVIATIONS AND ACRONYMS**

<b>KCSE</b>	Kenya Certificate of Secondary Education
<b>KICD</b>	Kenya Institute of Curriculum Development
<b>KNEC</b>	Kenya National Examination Council
<b>NACOSTI</b>	National Council for Science and Technology
<b>SMASE</b>	Strengthening Mathematics and Sciences in Secondary Schools
<b>SPSS</b>	Statistical Packages for Social Sciences
<b>STI</b>	Science, Technology and Innovation
<b>QASOs</b>	Quality Assurance and Standards Officers
<b>UNESCO</b>	United Nations Education Science and Cultural Organization

# **CHAPTER ONE**

## **INTRODUCTION**

### **1.1 Background of the Study**

International and national authorities in education worldwide are seeking transformative curriculum implementation methods to improve the relevance and the quality of student knowledge (KICD, 2016). The strategies sought are those that assist learners to apply the knowledge and skills acquired to the opportunities and challenges they come upon all through their lives. According to Hightower (2015), education considered as one of the main factors that contribute to the poverty reduction, sustainable development and growth of county's economy. Effective curriculum implementation is viewed as the cornerstone for realizing high quality education outcomes. Curriculum characterizes a conscious and organized choice of knowledge, abilities and values that shapes the way instructional and learning procedures are systematized, by addressing queries related to what learners should learn, why they should learn, when they ought to learn and how they would learn (UNESCO, 2016).

Philosophy offers educators, particularly curriculum experts with a background for the fundamentals for establishing schools and organizing classrooms (Allan, Edward & Stacey, 2008). It helps in providing responses to queries about the purpose of school, the worth of subjects taught in schools, how learners should learn and what strategies and resources to use in the process of curriculum implementation (Ravi, 2015). Philosophy moreover offers curriculum authorities with a framework for extensive issues and tasks such as defining the aims of education, content of subjects to be taught as well as organization of the contents, the process of instruction, learning and in overall what experiences and undertakings to emphasize in schools (Aggarwal, 2007). It also offers teachers with a foundation for making resolutions such as what workbooks, textbooks or other rational and non- rational actions to utilize how to assess learners and how to use the assessment outcomes and what subject matter to put emphasis on in the process of curriculum implementation (Goering, Shudak, & Warten, 2013).

Curriculum implementation entails putting into practice the officially prescribed courses of study, syllabuses and subjects into context (Tanner & Tanner, 2007). It takes place as the student achieves the planned experiences, knowledge, skills, concepts and attitudes aimed at supporting the learner to function efficiently in a society (Suneye & Agbonluare, 2007). Curriculum implementation is based on philosophical perspectives, which are sources of implementation decisions (Marlow, 2003). Philosophical perspectives are theories of knowledge such as rationalism, empiricism and pragmatism (Gatawa, 1990). Curriculum implementation process ought to be founded on a wide-ranging philosophy that unifies the various philosophical perspectives. For instance, according to Immanuel Kant, a philosophy informed by bringing together the various theories of knowledge known as transcendental philosophy (Hamilton, 2003).

After empiricism fell into skepticism and rationalism lapse into dogmatism, Immanuel Kant took the position of synthesizing these two opposing positions through transcendental method (Louden, 2008). Kant's transcendental philosophy maintains that both rationalism and empiricism are equally important in the knowing process (Hamilton, 2003). The main tenet of Kant's transcendental philosophy is that human knowledge arises from the interplay of philosophical tenets of empiricism and rationalism as approved by Carl(2009) and Shashidhar (2011) who arguably noted that interaction of philosophical ideologies of empiricism and rationalism plays a critical role in epistemological and methodological perspective of curriculum implementation.

Rationalism and empiricism form the foundation of transcendental philosophy and are important base upon which the philosophy of learning through experimentation is set (Dewey, 2007). According to Burbules and Biesta (2004), rational humans adapt experience of things to perform experiments upon and test the practical value of such experience. In addition, reason is necessary for processing the tested practical value of experience into coherent thought (Muljadi, 2007). Experimentation method according to Dewey provides the learners with necessary skills, makes curriculum content interesting to the learner as well as creating a positive attitude towards the curriculum content. The main role of a teacher in experimental learning is facilitation, moderation and suggestions while the students perform experimental activities.

Kant transcendentalism emphasizes on the use of probing method of teaching as a way of curriculum implementation (Gregory, 1995). Kant probing method relates to Socratic Method, which is a system of examination and dialogue between individuals, based on probing and responding interrogations to stimulate rational thinking and illuminate thoughts (Boghossian, 2003). In probing method, classroom experience is a collective exchange of ideas between instructor and learners in which both are liable for pushing the dialogue onward through an interrogative session (De-Shalit, 2006). According to Kant, probing method helps students in focusing explicitly the thinking process consequently enlarging their knowledge, imaginative understanding and experiences (Paul & Elder, 2006).

Kant transcendentalism also emphasizes on acquisition of knowledge through experiential method. Proponents of experiential learning assert that knowledge begins with experience, but this experience is necessarily filtered and structured through the mind (Michael, 2010). Experiential learning is participative learning, because educators allow their students to participate in deciding in the course of learning (Kolb & Kolb, 2005). Based on tenets of transcendental philosophical thoughts, philosopher John Dewey developed experiential education as well as philosophy of experimentation, which formed foundation of American education curriculum in the beginning of the twentieth century (Kraft & Sakofs, 1988). On successful implementation of experiential and experimental curriculum, the United States of America (USA) was able to achieve the goal of advancement in industrial and technological development as well as democracy amongst its states (Chaka, 1997).

The main idea drawn from Kant's transcendental philosophy is that approaches to curriculum implementation should be students-centered. According to Kant (2012), these approaches are associated with a number of benefits. Probing method helps students to develop critical thinking, communication and social skills as they compare and contrast numerous possibilities in order to come to their conclusions concerning with the subject matter. It helps students learn how to articulate clearly their ideas as well as to collaborate on tasks effectively by sharing their ideas amongst the group members (Boghossian, 2003). Experiential learning helps students understanding of curriculum content as they deliberate through a problem or inquiry activity (Canadian Council on Learning, 2009). Through experiential learning, students are able to draw

inferences that allow them to go beyond the simple acquisition of facts and information (Brittany, 2010). Engaging students actively in creating, understanding and connecting knowledge imparted on them to their experiences promotes intrinsic motivation to learn and helps students transfer skills acquired to the real world.

The main aim of education in Kenya is to provide a well-educated workforce with the ability to think and analyze issues using varied reasoning and problem solving skills in an integrated manner for national development (KICD, 2014). Every subject in the curriculum should enhance development of skills and values like critical thinking, desirable moral standards, problem-solving skills, positive attitudes, and mutual respect (KIE, 2002). These skills and values are imparted into the learners through curriculum implementation strategies.

Despite the benefits of student-centered methods, curriculum implementation strategies in Kenya are teacher-centered (Njuguna, 2007; Boit, Njoki, & Koskey, 2012). According to Njuguna (2007), dissemination of knowledge to the learners is mainly through teacher explanation, dictating notes and drilling. The role of the learner is to listen, understand and remember, for purpose of examination. Studies have shown that the use of ineffective methods in curriculum implementation impedes the achievement of stated goals of education (Kibett & Kathuri, 2005; Edward, 2001; Orora, Wachanga, & Keraro, 2005; Patriciah , Johnson , & Changeiywo, 2013).

A study by Kirimi (2011) found that curriculum implementation in Meru-South Sub County was mainly based on teacher-centered methods such as lecture method, rote learning and memorization. According to Kirimi (2011), ineffective methods of curriculum, implementation such as teacher-centered methods obstructs learners from achieving problem solving skills, creativity and critical thinking skills. Karimi (2013) also found that teacher-centered strategies in curriculum implementation cause poor performance, lack of understanding and lack of retention of curriculum contents and negative attitude towards learning. This study was therefore designed to critically analyze the relevance of Kant's philosophy of transcendentalism on implementation of curriculum in secondary schools of Meru South Sub County.



## **1.2 Statement of the Problem**

Teaching methods are key determinants to the success of the teaching and learning process. Conventional methods have over the years been blamed for poor teaching outcomes especially in sciences and other practical subjects. Thus, most of the learners exiting the education system at secondary school level lack adequate practical skills and competencies necessary for national economic development as well as self-development. The use of student-centered strategies in the process of curriculum implementation could enhance the acquisition of knowledge and skills among learners. More learners based of teaching have been espoused by Kant's transcendentalism which include experiential learning method, probing method and experimental learning method. However, no empirical studies have been conducted to analyze the relevance of Kant's philosophy of transcendentalism on implementation of curriculum in secondary schools of Meru South Sub County which gives impetus to the current study.

## **1.3 Purpose of the Study**

The purpose of this study was to analyze the relevance of Kant's philosophy of transcendentalism on implementation of curriculum in secondary schools in Meru South Sub County.

## **1.4 Objectives of the Study**

The study addressed the following objectives:

- i. To analyze the relevance of Kant's probing method on implementation of curriculum in secondary schools in Meru South Sub County
- ii. To analyze the relevance of Kant's experiential method on implementation of curriculum in secondary schools in Meru South Sub County
- iii. To analyze the relevance of Kant's experimental method on implementation of curriculum in secondary schools in Meru South Sub County

## **1.5 Research Questions**

The study was guided by the following research questions:

- i. What is the relevance of Kant's probing method on implementation of curriculum in secondary schools in Meru South Sub County?

- ii. What is the relevance of Kant's experiential method on implementation of curriculum in secondary schools in Meru South Sub County?
- iii. What is the relevance of Kant's experimental method on implementation of curriculum in secondary schools in Meru South Sub County?

### **1.6 Significance of the Study**

The findings of the study provide background to curriculum developers on the relevance of tenets of Kant's transcendentalism philosophy on implementation of curriculum. The study also provides information that can be used by teachers to improve, reflect and refine methods of teaching and learning for curriculum implementation. The findings of the study will also provide insight to students on the importance of engaging actively in experimentation and meaningful dialogue in the process of learning. Further, the findings of this study will aid policy makers identify activities, which promote effective curriculum implementation for funding. For example, if the study reveal that experiential learning activities and practical oriented programmes promotes curriculum implementation then there would be need for them to invest more in such activities.

### **1.7 Scope of the Study**

The study was carried out in public secondary schools in Meru South Sub County in Kenya. The subjects of the study were form three students and teachers from five academic departments namely: Languages, Mathematics, Sciences, Technical and Humanities. The researcher focused on the tenets of Kant's transcendentalism philosophy, which includes Kant's probing method, Kant's experiential learning and Kant's experimental learning methods on implementation of curriculum.

### **1.8 Limitations of the Study**

The limitation of the current study was that the researcher relied on responses from the students and teachers and they may have provided responses that favoured their views on methods of curriculum implementation. The findings therefore can only be cautiously generalized to other schools in Meru South Sub County.

### **1.9 Assumptions of the Study**

The study was based on the following assumptions:

- i. The respondents had adequate knowledge on the curriculum implementation strategies proposed by Kant's transcendentalism.
- ii. The respondents provided genuine and truthful information

### 1.10 Operational Definition of Terms

<b>Active learning</b>	:	For this study, it will refer to a learning process in which student is engaged in constructive hands-on activities
<b>Analysis</b>	:	This is the process of breaking down a complex topic or substance into smaller parts in order to gain better understanding of it. In this study, the relevance of Kant's transcendentalism will be studied.
<b>Curriculum content</b>	:	Refers to selection of materials or knowledge for learning formulated through objectives of education. For this study, it refers to knowledge and skills a learner is intended to acquire as outlined in the syllabus.
<b>Curriculum</b>	:	This is a body of knowledge formally taught in secondary schools. In this study, it refers to all activities and experiences planned in school to enable students acquire and develop the desired knowledge, skills and attitudes.
<b>Effective</b>	:	Refers to being successful in imparting to the learners the intended knowledge and skills after the end of set instructional period.
<b>Experiential method</b>	:	In this study, it refers to teaching and learning through first hand experiences where skills, knowledge and attitudes are acquired through real objects or direct experiences.
<b>Experimentation method:</b>		In this study, it refers to situation where in the learning process, the learner is actively involved to build up knowledge critically by logical sequence of activities.
<b>Implementation</b>	:	In this study, it refers to putting into action the laid down procedures contained in curriculum plan in order to enable the learners acquire the intended knowledge, skills and attitudes.

<b>Philosophy</b>	:	In this study, it refers to the opinion of somebody concerning certain issues for example Kant's ideas concerning education
<b>Probing method</b>	:	In this study, it refers to the teaching and learning technique that involves open and closed ended questions intended to get learners personal responses opinions, feelings and to promote critical thinking.
<b>Relevance</b>	:	Refers to important to the matter at hand. In this study, the importance of Kant's philosophy of transcendentalism on curriculum implementation will be discussed
<b>Secondary school</b>	:	In this study, it refers to the level of education learners are expected to go through after completing primary education. In Kenya, secondary education usually lasts for four years.
<b>Transcendentalism</b>	:	In this study, it refers to philosophy blended by the tenets of both empiricism and rationalism.

## CHAPTER TWO

### LITERATURE REVIEW

#### **2.1 Kant's Transcendentalism Philosophy and Curriculum Organization**

Philosophy provides teachers and curriculum designers with framework for planning, implementing and evaluating curriculum in schools (Gutek, 2009). It forms the standard for determining the goals, means, and outcomes of curriculum. The goals are statements of worth, founded on philosophical principles; the means characterizes the processes and approaches, which reflect logical choices; and the outcomes, can note the truths, notions, and doctrines of the knowledge or behavior acquired (Howard & Samuel, 2009). Ornstein (2011) notes four main educational philosophies, which had great influence on school curriculum in the United States. They include Rationalism, Empiricism, Pragmatism and Reconstructionism. These philosophical foundations largely shaped the school curriculum in the US and across the globe (Ornstein, 2011).

According to Allan, Edward and Stacey (2008) there is no particular philosophy that should serve as the only guide for constructing decisions concerning curriculum implementation strategies. Kant's transcendentalism philosophy is established on the major western philosophies of rationalism and empiricism. Empiricism is a philosophy that stresses the role of the five senses in obtaining knowledge (Chandra, 2006). Rationalism philosophy on the other hand emphasizes the role of reason, intuition and introspection rather than sensory experience in process of acquiring knowledge (Hamilton, 2003). Kant's transcendentalism philosophy seeks to gather the best of rationalist and empiricist insights together in a unified system of thinking (Howard & Samuel, 2009). Education theory according to Kant's transcendentalism philosophy, both the inbuilt mental capacities and sense inputs contribute to acquisition of the aims and objectives of education (Annette, 2009).

In the Critique of Pure Reason, Kant has demonstrated that empiricism and rationalism necessarily complement each other in the knowing process (Kant, 1999). Thus, on one hand, Kant concedes to the opinions of empiricist philosophers, such as Hume, who claim that knowledge begins in experience, and on the other hand, he admits to rationalists, such as Leibniz, that ideas and thoughts are essential to knowledge (Broad, 2008). In this, Kant is suggesting that transcendental knowledge is not derived, absolutely from experience but also from reasoning (Rohlf, 2010). Kant

points out that content of curriculum in general is not rationalism, since subjects like sciences focus more on material realities than on mind and its content, nor is it entirely empiricist since scientific conclusions depend on principle of causality (Annette, 2009). According to Howard and Samuel (2009), Kant argued that education requires an empirical approach in order to discover universal laws of nature.

Through diverse philosophical schools of thought the curriculum, learning strategy, educational objectives, intents, and vision and education mission have been established (Langford, 2010). According to Ogwora, Kuria, Nyamwaka and Nyakan (2013), Aristotle supports an educational curriculum that considers human nature, human customs and human thought as significant forces that should be incarcerated in learning. Kant's on his part notes that educational policy should focus on shaping learners experiences, thinking skills as well as learning by doing (Rohlf, 2010). Learners acquire more when learning is by doing and sense of feeling or touching as opposed to listening from their teachers (Ogwora, et al., 2013). Kant's transcendental philosophy advocates a curriculum that includes an extensive assortment of subjects as contrasting to the study of one or two different subjects (Kant, 2012). It supports a comprehensive curriculum, which exposes the students to diverse issues as opposed to narrow specialization.

Curriculum in Kenya secondary schools outlines the objectives and strategies of curriculum implementation to be used in course of study (KICD, 2014). The aims of secondary school education are to prepare the learner to make constructive contribution to the growth of society, to choose and cope with professional education subsequently after school (K.I.E., 2003). The learner is expected to attain attitudes of national patriotism, dignity independence, co-operation, adaptability, and sense of determination, truthfulness and self-control (KICD, 2014). These aspects captured in Kenya secondary school curriculum seem to rhyme with characteristics of Kant's transcendentalism on education. The researcher noted from scholarly articles that there is inadequate documented information on relevance of Kant philosophy of transcendentalism on implementation of curriculum in secondary schools. The study focused on the relevance of Kant's philosophy on implementation of curriculum in secondary schools in Meru South Sub County.

## **2.2 Kant's Transcendentalism and Aims of Education**

Kant's transcendentalism aims of education are based on the philosophies of rationalism and empiricism (Annette, 2009). Kant generally notes that education should foster mental development for critical thinking. Critical thinking describes the ability to reason in accordance with the procedures of rationality and possibility (Murat, 2016). According to Kant, the aim of critical thinking in education is to offer learners with an opportunity to be impartial, less emotional, and more liberal as you appreciate other people's views and (Kant, 2012). In education, teaching a student to think critically is closely related to the Kant's opinion of will and the education of will means living according to the duties of will following the unconditional moral requirements which Kant refers to as categorical imperatives (Broad, 2008).

Another aim of education according to Kant is character development (Charton, 2015). Kant believed that the search for truth demands personal discipline and steadfast character. He proposed that education ought to comprise of training in discipline, moral training, culture, and discretion (Hasan, 2015). Thus according to Kant, education would not only provide society with literate and knowledgeable person, but also the good person as well. Kant's transcendentalism philosophy also indicates that education is aimed at enabling learners to grow with the capacity to learn from experience and to make worth decisions is built on that experience since humanity is eventually accountable for bringing direction to the universe (Kant, 1999). Education should be a process that takes into account the past for direction, choosing the philosophies that work and apply for the circumstances of the moment as well as solving problems intelligently. According to Felicitas (2012), education according to Kant's transcendentalism philosophy should enable students to discover and develop individual abilities in order to enable them serve their society better.

## **2.3 The Scope of the Curriculum**

Kant advocates a curriculum that encompasses a widespread variety of subjects as opposed to the study of one or two different branches of teaching (Charton, 2015). He supports curriculum, which exposes the students to assorted wide-range of subjects. The purpose of education bestowing to Kant is not to make students flawless in one area but to open their thoughts so that they can handle diverse subjects since the exploration of alternative possibilities is a key intellectual goal of education (Broad,



2008). His emphasis of all round education is evident in his principle of seasoning both the body and mind of the child (Felicitas, 2012 ).

Since Kant's philosophy of transcendentalism is based on both rationalism and empiricism philosophies, the specific subjects advocated by Kant are Languages, Astronomy, Geography, Chronology, Anatomy, History, Arithmetic, Religious Education, Writing and Physical exercises such as dancing and other useful practical skills (Annette, 2009). This indicates that Kant proposed curriculum that stresses holistic approach to education. Ambaa (2015) carried a study on Analysis of the Kenyan 8-4-4 System of Education in Relation to Aims of Education for Self-Reliance. Her study indicated that diverse subject matter enables development of various competences and skills for socio-cultural, individual and national development. However, she noted that heavy workload in the broad curriculum directed teachers to use teacher-centered methods in the process of curriculum implementation. Instead of students-centered approaches, Kant transcendentalism philosophy does not support teacher-centered strategies in curriculum implementation though it supports wide range of subjects in curriculum. This study therefore explored relevant students centered strategies of curriculum implementation as postulated by Kant's transcendentalism philosophy.

#### **2.4 Kant Transcendentalism and the Role of Teacher**

In Kenyan secondary school curriculum, teachers are an important component of education whose services are indispensable in the realization of educational goals (MOE, 2010). Due to their central role in the enterprise of education, teachers at all levels require effective and sufficient education to carry out their roles and responsibilities adequately. For effective curriculum implementation, transcendental philosophy refers teachers as directors who recommend what learners might prefer to learn, as opposed to subject matter authorities who introduce students to time-tested information (Kant, Günte, & Rober, 2007).

Kant's transcendentalism asserts that not all children learn in the same way or at the same rate. (Charton, 2015). This implies that teachers should comprehend the environment and background that students take along to school in order to make suggestions and stimulate learners' interests in order to assist them to grow by guiding

them into new spheres of knowledge. Another role of teachers according to Kant's transcendental philosophy is to serve as a moral role model (Annette, 2009). In moral philosophy, Kant believes in character development and consequently the teacher should be a role model for students to emulate (Broad, 2008).

The major roles of teachers in Kant's transcendentalism philosophy are that of role model and guide in process of teaching and instilling discipline to learners. Nicole (2016) carried out an evaluation on the effectiveness of classroom demonstration on learning experience. He found that students where the teacher acted as guide in the demonstration had greater efficacy in performing experiments than where teachers delivered demonstration lessons themselves. The researcher further noted that passive learning only had influenced students minimally in terms of performance.

In another study, Adunola (2011) investigated the Impact of Teachers' Teaching Methods on the Academic Performance of Primary School Pupils in Ijebu-Ode Local cut Area of Ogun State in Nigeria. He found out that in pupils who were taught through guided inquiry method performed better than those where the teacher used didactic methods with little or no learner participation in the process of learning. In Kenya Ambaa (2015) in his research study revealed that most of the teachers did not engage students in the teaching-learning activities. Learner remains passive and teachers expected them to memorize the material that will assist them to pass examinations. Such a teacher would for instance identify possible questions to be set in the national examinations, concentrate on them in an effort to help the learner to "perform" well in the same. Learners who undergo this education end up being unable to make use of the knowledge and skills they have acquired (Ambaa, 2015). Although studies have indicated the imperative need of students' engagement in teaching and learning process as advocated by Kant transcendentalism, scanty documented information is found in Meru South Sub County on the relevance of the learner's involvement in curriculum implementation. The study investigated relevance of Kant transcendentalism on implementation of curriculum in Meru South Sub County.

## **2.5 Curriculum Implementation**

In Kenya, the body charged with development of curriculum in secondary school level is the Kenya Institute of Curriculum Development (KICD, 2014). According to

KICD (2003) secondary school education is aimed at helping individuals acquire essential knowledge, abilities and attitudes for self-development and the nation, form a strong basis for advanced education and training, improve the ability for inquiry, precarious thinking and coherent judgement. The aims are noteworthy educational statements, based on philosophical beliefs; the means symbolizes the procedures and strategies that reflect philosophical choices; while the ends are the actualities, ideas, and principles of the knowledge or behavior learned upon implementation of curriculum (Howard & Samuel, 2009).

Curriculum implementation refers to how the planned or officially designed course of study is translated by the teacher into syllabuses, scheme of work and lessons to be delivered to students (Allan, Edward, & Stacey, 2008). Putting the curriculum into operation requires an implementation agent. The teacher is identified as one of the main agents in the curriculum implementation. Implementation therefore occurs when the syllabus constructed by the teacher, the personality of the teacher, the teaching resources and the environment of teaching interact with the learner (Wamuyu, 2012). Curriculum implementation should be based on certain philosophies, which provide answers on materials and methods to use in the process (Bishop, 1985). Curriculum implementation therefore should not be based on a single philosophy because curriculum document is comprised of objectives and methods derived from different philosophies (Aggarwal, 2007).

According to Dewey (2008) philosophy forms the standard for determining the goals, methods, and outcome of curriculum implementation process. Philosophy provides curricular designers with basis for organizing, implementing and evaluating curriculum in school (Gutek, 2009). This an indication that philosophical considerations are fundamental constituents of curricular development and implementation strategies. Ornstein (2011) notes four major western educational philosophies, which influence school curriculum design and implementation techniques. They include Rationalism philosophy, Empiricism philosophy and Pragmatism philosophy. For effective curriculum implementation, these philosophical foundations should be taken into account in the planning and process of curriculum implementation (Ornstein, 2011). Teachers who are the main agents in curriculum

implementation should therefore be informed of the philosophy behind the strategies of curriculum implementation that forms the basis of this study.

In the critiques of the pure reason and practical reason, Kant points out that content of curriculum in general is not rationalism, since subjects like sciences focus more on material realities than on mind and its content, nor is it entirely empiricist since scientific conclusions depend on principle of causality (Annette, 2009). According to Howard and Samuel (2009), Kant argued that education requires an empirical approach in order to discover universal laws of nature, as well as human mind and its thought processes as a prime organizing agent in accomplishing this goal. In the critique of pure reason, Kant rejects Berkeley's position that things totally depends on mind because this notion would decline the possibility of scientific approach in education (Guger, 2010). The methods of curriculum according to Kant's point of view should be based on opportunities that exemplify the importance of philosophies of empiricism and rationalism.

In the process of curriculum implementation, strategies should be put in place to unify the conflicting tenets of empirical and rational philosophies (Annette, 2009). Immanuel Kant philosophy of transcendentalism combines the western philosophies of rationalism, Empiricism and pragmatism, the main philosophical foundations of curriculum implementation decisions into a unified system of thought (Langford, 2010). Allan, Edward and Stacey (2008) noted that an individual philosophy ought not to serve as an exclusive basis for making all the resolutions concerning curriculum implementation. Kant's transcendentalism philosophy seeks to gather the best of rationalist and empiricist insights together in a unified system of thinking (Howard & Samuel, 2009). Effective curriculum implementation according to Kant's transcendentalism philosophy should incorporate instructional strategies that involve the mental capacities and sense inputs to achieve the aims and objectives of education (Annette, 2009).

Instructional strategies are techniques of carrying out instruction in the process of curriculum implementation (Melanie, Jonathan, & Kieron, 2005). Instructional strategies deal with the practice of teaching and learning. This is where the teachers bring in the 'how' of teaching using instructional designs to convey content to

learners in order to achieve learning outcomes stated in the curriculum objectives. For effective curriculum implementation, the teachers must have the capacity to interpret the curriculum through instructional strategies and techniques. These determine how much is learned by the learners. According to KICD (2016) report on need assessment, often teachers rely on the traditional approaches of teacher centered learning in their effort to cover the syllabi. In the same report, it was further noted that with the introduction of the 21<sup>st</sup> Century skills and the Competence Based Curriculum (CBC); the instructional methods must change to more learner-centered approaches. CEMESTEVA (2014) explains the learners centered approaches where the teacher seeks to bring about the change in behavior of learners by imparting knowledge and skills in an interactive way. This is where the learner constructs meaning from the experiences received in their own perception.

KICD (2014) in the needs assessment report noted effective curriculum implementation among the major factor in enhancing achieving education goal of contributing to the reduction of poverty, sustainable development and economic growth of country. World Bank (2014) noted that the number of youth exiting school into the world of work lack desired skills and competencies in the job market. Hence, agents of curriculum implementation are facing serious challenges and dilemmas, in the task of preparing current and future citizens in a rapidly changing world. This calls for a review of curriculum implementation strategies to include methods which can enable prepare youth for knowledge and skills in the dynamic scientific and technological advancement. This can be achieved by making provisions for curriculum implementation methods that intricately balances opportunities to pursue skills acquisition in academics, technical and vocational skills education.

The principal reason of curriculum implementation at any stage of learning is to convey an essential change in the part of the learner (Tebabal & Kahssay, 2011). In order to enhance the procedures of knowledge transmission, instructors ought to apply suitable teaching strategies in the process of curriculum implementation that best suit specific objectives and level exit outcomes. In the traditional epoch, many teaching practitioners widely applied teacher-centered methods to impart knowledge to learner comparative to student-centered methods. Questions about the effectiveness of curriculum implementation based on teaching methods on student learning have

consistently raised considerable interest in the thematic field of educational research (Hightower, 2015). Quite remarkably, Adunola (2011) fundamentally linked regular poor academic performance by the majority students to application of ineffective teaching methods during curriculum implementation. For a given strategy used in instruction to be operative, Adunola (2011) conserves that teachers ought to be familiar with several teaching approaches that take credit of the extent of difficulty of the ideas to be covered.

Transcendentalism emphasize methods in curriculum implementation that comprises of both idealistic activity and action-oriented tasks that ought to cause changes to the way students reason and act (Louden, 2008). The philosophy rejects dogmatism and any form of ideology, enabling learners to work successfully with diverse groups of people (Kant, 2012). The philosophy encourages a lot of creativity as reflected in the methods of teaching where, learners are encouraged to learn by doing (Jon, 2012). Through unifying opposing philosophies of rationalism and empiricism, transcendentalism accept the idea that learning takes place through synthesizing experience based on logical thought (Georges, 2004). This reaffirms the fact that the learners are not “tabula rasa” and if given a good environment they can make a good contribution to their own learning. Ideas of empiricism in transcendental philosophy encourage democracy, which allows free exchange of ideas and knowledge in the process of curriculum implementation (Kant, 2012). This is reflected in the Socratic dialogical method where learners have freedom to democratically demonstrate their knowledge. In Transcendentalism philosophy, the teacher should be a democratic leader in the process of curriculum implementation.

Kant transcendental philosophy emphasizes student-centered methods in curriculum implementation. Student-centered is an approach that focuses and involves the learner fully in all activities of curriculum implementation. According to Hesson and Shad (2007), applying Student-Centered approach in curriculum implementation promotes students interest, analytical research and critical thinking. The approach also motivates goal-orientated behavior among students and hence improving student achievement (Hesson & Shad, 2007). Student-Centered approaches proposed for effective curriculum implementation include Kant’s probing Method, Kant’s experiential learning method and Kant’s experimentation method.

## **2.6 Kant's Probing Method**

Kant's probing method of instruction is a method of teaching based on Socratic teaching and learning approach that dates back to the age of philosopher Socrates (Sharma, 2000). According to Chapman (2001), probing Method is a dialogue between teacher and students instigated by continual investigative questions by the teacher. These methodical dialogues are the instructional methodology to teaching that encourages accomplices to strive for deeper understanding of interrogated thoughts (Copeland, 2005). The probing questions in the process of dialogue examines the fundamental beliefs that refines the students' thoughts and sentiments. In the probing method, the instructor does not offer learners with required information. Instead, by examining and exploring specified text students' searches for the information required by the instructor (Faith, 2011). When applied appropriately, adopting probing method in the process of curriculum implementation can increase the quality of learning, critical thinking techniques as well as providing active learning procedures (Lam, 2011).

The main distinguishing feature of probing technique is that the teacher acts as an observer, an assistant as well as guide but not the transmitter of knowledge to a passive recipient (Boghossian, 2003). The position of lectures with irrefutable facts as well as rote learning is substituted with collective dialogues amongst students and teachers where both are accountable for pushing the dialogue onward through questioning (Abdullah, 2012). Through probing questions, learners may be able to construct knowledge based on integrating what they already know with new information and the experiences they come across (Otewa, 2015). The process of construction of knowledge takes place through the reconciliation between prior knowledge and new knowledge gained through the dialogue.

Chang (2010) explained numerous strategic points in the probing method when applied in curriculum implementation. Firstly, is that probing method learning objective is an investigative process. Its major aim is not to oppose entirely the students' original opinions, but to modify them partially for clarity and refining. Secondly, probing strategy is a dialogue amongst the student and teacher. The teacher's role is to pose the question to the learners whose role in turn is to shape their past knowledge and experiences in responding to teachers queries. Thirdly, probing

technique besides encompassing a collaborative dialogue between the teacher and the students, it is also inductive in nature. The teacher constantly guides the students to reason incorrectly then makes use of counter example to shed light on the problem at hand.

Many studies have been done in the use of probing method in the process of curriculum implementation. Rachid (2018) explored probing method of instruction in higher level Moroccan English classroom. The results of his study revealed that probing method is the preeminent approach to critical thinking. The results of his study also indicated that probing method besides providing students with an arena in which to test their self-confidence as critical readers, thinkers, and speakers, it serves students as an insight for viewing the world from different perspectives. His study results further revealed that the teachers' roles in probing method ought to be that of initiator, observer, verifying the learners' accomplishments and failures as well as reflecting on the ways to refine the probing method forthwith. He recommended applying the probing method, in Moroccan and non-Moroccan educational contexts as it can create active learners by engaging them in the exploration and evaluation of noble ideas. These findings were consistent with those of other researchers such as Abdullah (2012), Copeland (2005) and Chapman (2001). In this study, the researcher was keen to establish the relevance of Kant's probing method in Kenyan secondary schools situation, owing to the case that various countries have diverse strategies put in place for curriculum implementation.

The Kant's probing method is an approach that helps to encourage students to learn effectively (Annette, 2009). The Method is a pedagogy that uses guided questions, dialogue, and negation to assist students to reflect critically on their comprehension of a specific concern in the process of learning (Chang, 2010). As students deliberate on the issues raised by the teacher, the instructor's subjects them to questions that stimulate them to reject misunderstandings and achieve an insight of what they know and what they do not know (Ibe, 2004). The usage and the application of the probing method in curriculum implementation can increase students' interest and desire for learning (Mariel, 2014). Probing method can also assist students in becoming independent learners who desire to investigate critically their opinions in the face of new knowledge. Probing techniques can as well be refined within the learners as an



intellectual routine that they will continually use throughout their lives (Copeland, 2005).

Study by Delić and Bećirović, (2016) on Socratic Method as an Approach to Teaching revealed that the adoption probing method could in teaching and learning could assist improve students' interest and desire for learning. The study further indicated that probing method could help students to be independent learners who pursue to scrutinize their principles in the face of acquisition new information. These researchers suggest that probing method ought to be nurtured in the students as a dynamic intelligible custom that they may constantly apply throughout their lives. According to these two researchers, probing method is a strategy that can help students to learn efficiently. The researchers however did not indicate whether use of probing method approach was a relevant strategy for teaching in the broad scope of curriculum. The current study therefore factored in the five major academic departments in secondary schools in Meru South Sub County in investigating relevance of Kant's probing method on implementation of curriculum.

Wanjiku and Atieno (2016) examined application of socratic probing astrategy in teaching of history and government for peace building in Kenya. The result of their study revealed that probing method initiated peace building in the process of teaching History and Government. Their study further revealed that through probing method students can be made to internalize the ideas of peace building and they may become ambassadors of peace upon graduating from schools. These researchers also found out that instructors can train learners about virtuous citizenship as well as national integration trough incorporating honest interrogation and answer procedure, devoid of hypocrisy. A study by Evan (2009) on Socratic problem-solving in the business world revealed that probing method forms a basis of asking well guided questions to allow decision-makers to critically analyze the facts associated with any given situation. In another study Robert (2005) investigated Socratic probing method in delivering medical truths. The study revealed that probing style of teaching, as applied to medicine, not only teaches critical thinking skills but also to build and expand on the pre-existing knowledge of learners. His study further revealed that probing method can also be a valuable method in diagnosing and assessing students learning needs.

Krook (2017) undertook a study on application of probing methods in law school. The findings of his study indicated that applying probing method during training would result to graduate lawyers who have a greater ability to determine whether or not a law is just, fair, or principled on the basis of an independent analysis, exceeding that which is possible in a legal class today. Society, by extension, would benefit from a new generation of critically engaged lawyers. Another study by Yengina and Karahoca (2012) indicated that probing method promotes motivation to enhance better learning as well as good match for satisfying the rules-conditions of learning. Most of the studies on probing method seem to be more in higher institutions of learning as compared to secondary schools. This study therefore investigated the relevance of Kant's probing method on implementation of curriculum in secondary schools.

Work by Goldin, Pedroncini, and Sigman, (2017) on effectiveness of probing method in study of geometry suggests that the probing method may allow the learner to understand underlying geometric principles and to use them in other contexts. These researchers however, noted that this only happened for group learners who could make appropriate acquaintances between their earlier acquired procedural knowledge and their capability to comprehend geometric concepts. Those participants did acquire something novel that they can use in noble contexts. The researchers noted that group of learners of the same class who could not make use of the techniques and knowledge previously acquired could not solve virtually matching problem in geometry, even after having completely followed the probing procedure. The researchers noted that for this group of learners the probing method is not effective and its accomplishment might require the use of different instructional approaches for teaching geometry. In this study, the researcher undertakes to establish the relevance of Kant's philosophy of transcendentalism on curriculum implementation. Kant's transcendentalism philosophy conceptualizes on adoption of more than one approach in curriculum implementation process.

## **2.7 Kant's Experiential Learning**

Experiential learning is a philosophy and methodologies in which instructors involve tenaciously with learners in direct experience and focused reflection to enhance students' acquisition of knowledge, advance the process of acquisition of skills as

well as clarifying ideas and values (Cheryl, 2004). Kolb and Kolb (2005) describe experiential learning as the learning where a student acquires and applies knowledge skills and feelings in an immediate and relevant setting. According to Gorghiu and Santi (2016), experiential learning includes learning by doing through experience, exploration and discovery. Dyne and Ang (2006) stated that learning and development in experiential learning method are achieved through personally determined experience and involvement, rather than on received teaching or training, typically in a group. According to Holzer and Andruet (2000) experiential learning model define learning as a process that is got through combination of grasping experience with transformation of experience. In addition, Smith (2003) stated that experiential learning is a technique whereby students learn by doing and by reflecting on the experience.

Learning takes place when learners have experience of an event while the teacher plays role of facilitating students' learning by engaging them in experiences that are fundamentally reflective and relevant to their lives (Kant, 2012). According to Kant transcendentalism, learning activities based on real life experience can help learners to transform knowledge or information into their personal knowledge, which they can apply in different situations (Edward, 2001). Kant (2012) noted that learners should be presented with real objects in order to understand more, the content of the subjects. This indicates that knowledge comes from the impression made upon people's minds by natural objects. As observed by Dewey, Kant has very little regard for verbal symbolization as they deny the learner to observe what is taught and so no meaningful learning is gained (Dewey, 2007).

The positive attributes of experiential learning can be noticed on the psychological level, especially by the creation of special conditions meant to facilitate learning (Cheryl, 2004). The acquisition of the knowledge through experiential learning is realized much easier, because the students seize much better the connections between the theoretical concepts and their applicability (Douladeli, 2014). The duration of storage of this knowledge is much longer in time because it relies on logical thinking. The motivation for learning is much greater than in the traditional activities because students are involved in experiences which relevance is obvious to them. Students are

more motivated to learn when they are provided with opportunities for practice (Ambrose, 2010).

Studies have revealed that experiential learning activities are essential parts of the curriculum implementation. A study by Douladeli (2014) on experiential education through project based learning indicated that through Experiential Learning and in particular, through project based, connection with problems of real world is achieved. According to Douladeli (2014) through project based experiential learning, students develop apart from cognitive skills, significant abilities that could change world to a better one, while they enhance their learning outcomes. A study by Patriciah, Johnson and Changeiywo (2013) established that experiential learning through concept mapping approach produced a significant impact on academic achievement in secondary schools Physics. A similar study by Kinya and Wachanga (2013) also found out that experiential teaching strategy results in higher students' Chemistry achievement than the regular teaching methods. Most of the research studies cited have dealt mainly on single area of experiential learning strategy in the process of curriculum implementation. Kant's experiential method focuses on several areas of experiential learning thus the motivation for conducting the this study.

Kruger, Kruger and Suzuki (2015) assessed the effectiveness of experiential learning in a student-run free clinic. The findings revealed that incorporating the experiential learning experiences provides opportunities for the application of theory and training to practical real-world by the trainees. Their study further revealed that through experiential learning, students could be able to translate what they learn in the classroom into real-world experiences, increase their cultural competency, and become better practitioners in their fields. However, their study focused on effectiveness of experiential learning on College Clinical Students. The current study concentrated on relevance of Kant's experiential learning in curriculum implementation in secondary schools.

In another study, Canadian Council on Learning (2009) assessed the impact of experiential learning programs on student success. The findings of the study revealed experiential learning programs do not appear to have a negative impact on student academic success. The same study also revealed that secondary school students in

Canadian high schools who experienced any type of experiential program demonstrate psycho-social benefits in terms of self-esteem, engagement in workplaces or schools, socialization and leadership as well as motivation. A study by Brittany (2010) assessed the effects of experiential teaching method versus lecture based teaching method on students achievement in Pretoria. The findings of his study revealed that lecture based teaching method did increase the rate of achievement equine animal science classes as compared to experiential learning. The results of these two studies indicate that curriculum implementation cannot depend on single strategy. The current study therefore besides experiential learning method it focused on other strategies of curriculum implementation such as probing method and experimentation.

### **2.8 Kant's Experimentation Method**

Experimentation is a method of discovering through search, inquiry, testing, observation and reflection-all processes requiring activity of mind and senses rather than merely powers of absorption and reproduction of information (Dewey, 2007). According to Burbules and Biesta (2004), philosophy of experimentation falls under the pragmatism school of thought which states that truth is that which works in a practical situation. The principle of experimentation according to Kant transcendentalism relates the theory of learning by doing, which asserts that students learn best when they perform actions to particular subjects (Dunn, 2008). This stimulates active learning, as students are involved in doing an activity and thinking about what they are doing, rather than passively listening. Pragmatism philosophy recommends teaching of subjects such as Physical education, Hygiene, Environmental studies and sciences such as Physics, Chemistry and Biology (Chandra, 2006).

K.N.E.C (2007) proposed curriculum implementation strategies should be based on hands-on activities, which relates to learning by doing. For learners to understand, especially science subjects taught in schools, they should be engaged in practical activities thorough experiments (SMASSE, 2007). According to K.N.E.C (2007) the approach of experiments in curriculum implementation, which Kant also advocates is the recommended method worldwide for teaching of sciences such as Chemistry, Biology and Physics among other subjects. The practical approach is believed to not only provide the students with necessary skills but also involves learners in the learning process thus making the subject interesting (Adunola, 2011).

The findings of a study by Njuguna (2007) from a Baseline Studies of SMASSE Project found that experimental learning could enable students to acquire higher level of knowledge and skills such as the capacity to adjust to new circumstances, problem solving skills and creativity in learning sciences. Kithaka (2004) noted that experiments oriented teaching methods might enhance learning in secondary schools. Kithaka attributes this to the fact that experiments stimulate the interest of the student such that he/she develops the desire to learn well, that which is taught in school. CEMESTEVA (2014) carried a study on the impact of experiments in the teaching and learning of sciences in Kenya secondary schools. The study revealed that experimentation approach in curriculum implementation could motivate students by stimulating interest to learn, enhancing the learning of scientific knowledge and developing expertise in using scientific knowledge. Ibe (2004) also revealed that use of experiments in teaching could help in developing competencies to learn independently instead of learning from teacher presentation.

Mwangi (2004) carried out a research study on the effects of Cooperative Class Experiment (CCE), teaching method on secondary school students' chemistry achievement in Kenya's Nakuru district. The study revealed that students taught through the CCE method performed better compared to those taught through the regular teaching methods irrespective of gender and school type. This researcher recommended that education policy makers in Kenya ought to inspire Chemistry instructors to adopt the CEE and that teacher training institutions should make it portion of their teachers training prospectus content. Appropriate experiments in process of curriculum implementation can also enhance learners understanding of curriculum content (CEMESTEVA, 2014). A study by Ibe (2004) revealed that learning through experiments could induce scientific attitudes, develop problem-solving skills and enhance conceptual understanding of learners.

Most of the scholarly work seems to be on application of experimental learning in the implementation of science curriculum. According to K.N.E.C (2010) the approach of experiments to learning could foster academic performance in the subjects offered in secondary school such as Home Science, Geography, Computer Studies, Building and construction, Agriculture and the Science subjects. Kant's transcendentalism philosophy proposes use of experimental learning in subjects other than sciences. This

study will therefore assess the relevance of Kant's experimentation method in all the subjects offered in secondary schools in Meru South Sub County.

The "Vision 2030" which is a long-term growth plan of changing the republic of Kenya into a middle level income economy come the year 2030; Science, Technology and Innovation have been recognized as one of the pillars for economic development (Karimi, 2013). The conception of the education field in Vision 2030 is that Kenyan schools should be able provide globally and competitive eminence education, training as well as inquiries for defensible economic development (Boit, Njoki, & Koskey, 2012). This may be achieved through curriculum implementation strategies based on practical activities such as experiments. However, summative evaluation of secondary education in 2004 indicated that curriculum implementation strategies in Kenyan secondary schools relegate practical skills (GoK, 2004). Due to this, most students are graduating at secondary level education system do not have sufficient skills and capabilities essential for the job market. Further, the report noted that the cognitive domain was over emphasized at the expense of affective and psychomotor domains rendering curriculum implementation strategies to be exam oriented.

Although vision 2030 document and curriculum evaluation stresses the importance of involving learners in practical activities, no specific practical method has been proposed for use in curriculum implementation by these documents. According to Kant, teaching ought to equip the students with the precise attitude, knowledge, understanding, skills, and empirical abilities necessary to perform independently in society (Broad, 2008). When the practical aspects in curriculum implementation are overlooked, the objective of education to come up with holistic individuals who are productive to self and society may not be realized (Kant, 2012). This study will therefore analyze the relevance of Kant's experimentation method on implementation of curriculum in Meru South Sub County.

The report by KNEC 2010 and research studies by besides noting that students are lacking skills in handling practical subjects did not provide strategies to mitigate this problem. Some researches done in the field of education in the country have dealt with the aspect of theory delivery and practical work in curriculum implementation. Wekesa (2003) and Kiboss (1997; 1998) focused on the question of innovations the

delivery of content in terms of contemporary emerging technologies and cognitive concepts such as Computer Based Instruction, while Mukachi (2005) examined the science process skills in laboratory work. The use of Kant's experimentation method may have a strong impact on curriculum implementation strategies for both the theory and practical aspects of curriculum. No systematic study has been done to focus on relevance of Kant's experimentation method within Meru South Sub County. This study aimed at filling this gap.

## **2.9 Conventional Methods of Curriculum Implementation**

Conventional methods are mainly teacher centered and are mainly concerned on memorization and rote learning (Munyaradzi, 2013). The basic teaching method is the lecturing with or without some didactic aids. According to Freire (1970), conventional methods of instruction relates to the banking model of education. In the banking concept of education Freire (1970) argues that the teacher "deposits knowledge" into the open repositories in the minds of the students'. The ability of students' to remember and recount the information deposited is the principal gauge acquisition of knowledge as well as academic attainment. The instructor functions as the exclusive authoritarian as well as decision-maker concerning course content, evaluation, and teaching strategies (Abdullah, 2012). In the event of applying the conventional strategies in teaching and learning, the teacher controls the teaching with minimal or no contributions by the students. Under the conventional methods, students largely acquire knowledge from the teacher deprived of enabling environment of their engagement with the subject taught (Munyaradzi, 2013).

Ahmad and Aziz (2009) observed that in conventional instruction technique, teachers take the central role in all the class undertakings; the instructor teaches, talks and clarifies issues throughout the teaching learning process. In course of teaching established on conservative strategies, in classroom students partake a definite and fixed insight of their own roles in the teaching and learning process different from those of their teachers. In study on students' perceptions on the teachers teaching of literature, Ahmad and Aziz (2009) noted that in teacher-centered classrooms where conventional teaching method was used, students' involvement was minimal and was permissible merely when teachers acknowledged it as suitable. The teacher controlled students' involvement. This may result to loss of both interest and understanding of



curriculum content by the students. According to Teo and Wong (2000), the conventional approach in curriculum implementation is more hypothetical, least concrete and much of memorizing facts presented by the teachers. The approach does not apply activity based learning that encourages students to learn real life problems based on applied knowledge. The role of student in the conventional methods of curriculum implementation is to listen, memorize the compulsory academic subject matter and try to understand it. Motivation for learning is through award of grades, praise, prizes-punishments (Brittany, 2010).

John Dewey, a progressivist affirms that traditional conventional strategies of instruction and classroom setting mainly decontextualizes students' from their lived experiences thus the knowledge achieved in such schools immaterial daily lives of the learners (Dewey, 2007). Further Dewey (2007) notes that conventional strategies are principally apathetic and fail to engage actively the students in their teaching thus they lose the motivation to learn. Freire (1970) recommends alternate strategy conventional traditional approaches, which he articulates as problem-posing model of education. Problem-posing model stresses the significance of student experience and opinion and epitomizes a dialogical method of instruction (Breunig, 2011).

Nontraditional pedagogies, such as those proposed by Kant, could offer alternative strategies of curriculum implementation in place of traditional pedagogies. Kant proposes curriculum implementation strategies, which entrenches learning content in undertakings in a transverse range of settings giving a wide autonomy of knowledge for self-direction and clarification of ideas by learners (Annette, 2009). These nontraditional pedagogies could comprise out-of-classroom learning experiences or a classroom as a setting where some other methods of teaching and learning might be enacted. Several empirical studies indicate that when students are engaged in these transformational learning, they exhibit increased learning, improved abstract comprehension of content taught, improved class attendance, more perseverance, and improved commitment to learn by the students.

Compared to when traditional lecturing is employed (Slavich & Zimbardo, 2012). Research study by Muhammad (2013) found that traditional methods in curriculum implementation fail to function in the domain of the natural trend of the learners to

pursue comprehension of the curriculum content. Muhammad further found that conventional methods lead to negative attitudes towards learning, the learning process and to education in general. The application of the conventional strategies such as lecture, memorizing and recitation in the process of teaching and learning does not support enhancing students' rational and innovative thinking as well as collaborative problem solving skills (Munyaradzi, 2013).

A study by Hackathorna, Erin, and Blankmeyer (2011), established that lecture method was essentially least effective in curriculum implementation on knowledge level scale on blooms taxonomy. This is despite the fact that knowledge level assessments on this scale are often based on rote memorization, such as knowing which definition describes a particular construct. According to Hackathorna, Erin, and Blankmeyer (2011), lecture, although it may comprise of clarifications feasible for understanding level learning does not essentially lead to better memorization. Michel, Varela, and Cater (2009), in their study found that use of conventional methods was one of the major cause of boredom and sleeping among students in classrooms during the lesson.

Tella, Indoshi and Othuon (2010) carried out a study on teacher-centered methods of teaching they found that the conventional teacher-centered techniques of instruction occasioned in students not appreciating lessons and that students missed the benefits of discovering on their own. At the end, students remained inactive throughout the teaching and learning process. Instead of relying on one strategy of curriculum implementation as done by most of the researchers, the current study incorporated Kant's probing method, Kant's experiential learning and Kant's experimentation method as some of the approaches of effective implementation of curriculum in secondary schools.

## **2.10 Theoretical Framework**

This study was informed by synthesis theory of knowledge. Among the proponents of this theory are Emmanuel Kant (1724-1804), Johann Gottlieb Fichte (1762-1814) and Walter Kaufmann (1921-1980) (Chandra, 2006). Synthesis theory of knowledge maintains that the mind and the sense are equally important in the knowing process (Walter, 2008). According to this theory, most of knowledge arises from interplay of

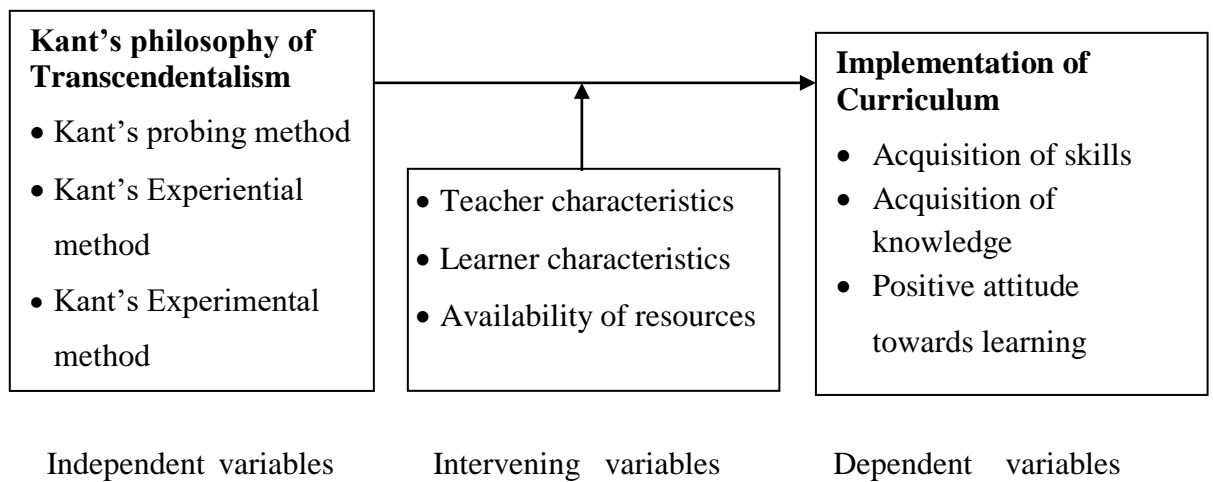
what lies inside individual and what exists in the external world (Wayne, 2005). According to Guyer (2010), proponents of synthesis theory argue that we know the external world only as filtered through our mind, and know our mind only by reflecting on how it filters our experience of external world.

Synthesis theory is against the idea of subjecting students into regimented studying of facts, later becoming specialists of some kind, and using those specialties with little humane concern for their fellow human beings (Guyer, 2010). This philosophy favours learning that is holistic to specialized learning. Holistic approach in curriculum leads to a more liberal and scholarly attitude toward learning. In achieving holistic learning synthesis, theory proposes teaching and learning through dialectic, experiential and experimental methods (Georges, 2004). Such approaches according to Synthesis theory emphasizes on the comprehension of ideas rather than on the mere memorization and classification of information. The process of infusion of dialectic and experiential method follows the process of constructivism approach (Twomey, 2005). This approach has special focus on the learner and there is no such thing as knowledge as an entity, apart from the constructed experiences of teachers and learners (Twomey, 2005). The main role of a teacher according to synthesis theory is that of a facilitator and moderator while the students perform activities that require the student full participation such as questioning, discussing, experimenting and apprenticeship (Linda, 2002).

Synthesis theory of knowledge is relevant to this study owing to the fact that it incorporates both the practical and critical aspects in curriculum implementation. The theory emphasizes on learner-centered teaching approaches such as experiential learning, probing Method and experimentation learning According to Kant's transcendentalism, student-centered teaching gives learners an opportunity to think independently in order to obtain knowledge. Abdullah (2012) noted that active participation in learning process allows learners to critically analyze and construct their own knowledge rather than passively reaching information transmitted to them from teachers and textbooks.

## 2.11 Conceptual Framework

The Conceptual Framework for the study is as presented in Figure 1.



**Figure 1.** Relevance of Kant's Philosophy of Transcendentalism on Implementation of Curriculum

In this study, the relevance of Kant's Philosophy of Transcendentalism formed the independent variable. Kant's philosophy of transcendentalism in education entails probing method, experiential method and experimental method as the strategies used for curriculum implementation. Curriculum implementation constituted the dependent variable. In this study, acquisition of skills, knowledge and promotion of positive attitudes towards learning were the indicators of dependent variable. The intervening variables of this study comprised of teacher characteristics, learner characteristics and availability of teaching and learning resources.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 Research Design**

This study adopted descriptive survey research design. The design was used because it allows researchers to study phenomena that do not allow for manipulation of variables (Kothari, 2011). In a secondary school setup, there are structures and procedures put in place, which may not allow researcher to manipulate the variables. The design was also suitable for collecting descriptive data. According to Wiersma and Jurs (2005) descriptive survey research design is most appropriate when the purpose of the study is to create a detailed description of phenomena. The descriptive survey design was appropriate for the study because the researcher collected and analyzed data as it existed in the field without manipulating the variables (Kothari, 2011). Philosophical approaches such as critical analysis and Conceptual analysis were used to provide basis for a detailed analysis and description of data.

##### **3.1.1 Critical Analysis**

The major task of critical analysis is to positively evaluate issues and make judgment in light of clear thinking (Njoroge & Bennaars, 1986). Critical analysis makes one less inconsistent in the process of making valid judgment on issues related to the well-being of an individual or entire society (Njoroge & Bennaars, 1986). In this study, the approach was used in making rational judgment on relevance of the approaches that are already in place for the purpose of curriculum implementation in secondary schools. The researcher employed probing questions to influence clear thinking and making of fundamental decisions as well as answering important questions for realizing certainty of the phenomena under study.

##### **3.1.2 Conceptual Analysis Approach**

Conceptual analysis consists of breaking down concepts into their constituent parts in order to gain knowledge of a particular philosophical issue in which the concept is involved (Beaney, 2003). The main aim of conceptual analysis approach is to clarify language used as well as analyzing the concepts in it. In order to clarify concepts such as transcendentalism, relevance and curriculum, it was necessary to use conceptual analysis. According to Ogola (2011), some philosophical problems are created by the

complexities of language because a given concept or statement may have a range of uses and meaning.

### **3.2 Location of the Study**

The study was conducted in public secondary schools in Meru-South Sub County. Meru-South Sub County is located in Tharaka-Nithi County of Kenya. The choice of the location was based on the fact that the researcher was in a position of easily creating a rapport with the respondents. Meru-South Sub County was also accessible to the researcher and that a similar study had not been conducted in the Sub County.

### **3.3 Study Population**

The population for this study was 3,085 subjects comprising of 2,780 students in Form Three and 305 teachers in 50 Secondary schools (Meru South sub county Education office, 2016).

### **3.4 Sampling Procedures and Sample Size**

Orodho (2009) defines a sample as a part of the target population, which is thought to be representative of the population. Sampling is the process of selecting a number of individuals or objects from a population such that the selected group contains elements representatives of characteristics found in the entire group (Orodho, 2009). Kathuri and Pals (2005), recommends that a sample size of 341 respondents is sufficient from an accessible population of 3,085 subjects. The researcher used a sample size of 357 respondents to take care of attrition. This comprised of 322 students and 35 heads of academic departments.

To guarantee that all parts of the Sub County were well represented, a proportional sample of secondary schools from each of the three divisions was taken, then a sampling frame consisting of the number of schools in each division was constructed and simple random sampling was used to select the one school required as sample. Simple random sampling involved assigning numerical to each of the schools in each of the division, placing numbers in a container and then picking a number at random. The school corresponding to the number picked was then included in the study sample. A total number of seven schools were selected from the three divisions.

Heads of each of the five academic departments in a seven secondary schools sampled were purposively selected making 35 respondents. Black (1999) states that with purposive sampling, the most appropriate subjects for the study are selected. Heads of departments were selected because they were assumed to be well versed with the strategies for curriculum implementation. At the same time, there would be fair representation of all the academic departments in secondary schools. Simple random sampling technique was used to select students who participated in the study. The distribution of sample is as shown Table 1.

Table 1:  
Distribution of Sample by Number of Schools per Division in Meru-South Sub County

Division	Number of schools	Schools Sampled	Students Sampled	Teachers Sampled
Chuka	19	3	138	15
Magumoni	21	3	138	15
Igambang'ombe	10	1	46	5
Total	50	7	322	35

### **3.5 Research Instruments**

Data was collected by administering questionnaires to students and teachers. This data collection tool was used because according to Kombo and Tromp (2011) questionnaires are less expensive, time saving in administration and allow respondents freedom to bring out their views and feelings independently. According to Mugenda and Mugenda (1999), questionnaires also offer the advantage of uniformity to all respondents as it gives the same questions. The researcher developed two separate questionnaires for the students and teachers. Each of the questionnaires was comprised of four sections. Section A was on biographical information of the respondents, section B was on relevance of teaching through Kant's probing Method, section C was on relevance of Kant's experiential method and section D on relevance of Kant's experimental method. The two questionnaires had same structure.

### **3.6 Piloting**

Simple random sampling was used to select two secondary schools in Meru-South Sub County which were not to participate in the main study for piloting. These schools were selected because they had similar characteristics with those of the

schools under study. The pilot sample was made up of 92 students and 10 heads of departments. The researcher used the pilot study to identify items in the questionnaire that were ambiguous and unclear to the respondents. This enabled the researcher to improve and streamline question items to ensure that they give appropriate information. The researcher used test-retest technique in the pilot study in order to assess the reliability of the research instruments.

### **3.7 Validity**

Validity is concerned with the degree to which an empirical measure or several measures of a concept accurately represent that particular concept (Orodho, 2009). Content validity measures the degree to which the test items represent the domain or universe of the trait or property being measured (James, 1997). Wilkinson (1991) asserts that experts' opinions can help establish content validity. The researcher ensured that the research objectives were adequately covered in the questionnaires to enhance content validity. The content validity was also ascertained through expert opinion in the Faculty of Education and Resources Development of Chuka University and the Supervisors who checked the effectiveness of research instruments.

### **3.8 Reliability**

Mugenda and Mugenda (1999) define reliability as a measure of degree to which research instrument yields consistent results after repeated trial. The reliability of instruments used in this study, was established by finding a correlation coefficient of the two tests administered during the pilot study. According to Fraenkel and Wallen (2000) a correlation coefficient of at least  $\alpha = 0.7$  is acceptable as reliable for social sciences. A correlation coefficient of 0.78 and 0.82 was obtained for students and teachers respectively.

### **3.9 Data Collection Procedures**

The researcher obtained an introductory letter from Chuka University, which was used to acquire permit from the National Commission for Science, Technology and Innovation (NACOSTI) to undertake the research. The research permit enabled the researcher to book appointments with the various heads of academic departments in the selected schools as per their schedule. The researcher visited the selected schools



and personally administered the instruments to all the respondents. Since most schools' daily activities were progressing during the time of visit, the chosen teachers were free to choose suitable time within a span of three days to fill the questionnaires. The student respondents were given 55 minutes to fill and return the questionnaire. This was meant to ensure that most the filled questionnaires were returned back and that the data collection exercise was conducted in such a way that there was minimum interruption of the schools programmes. The research took two weeks to collect the data.

### **3.10 Ethical Issues**

All the respondents were assured of confidentiality during data collection exercise and that their identity would not be revealed. This was done by asking respondents not to indicate their names or provide any form of identity on the questionnaire. Further, the respondents were assured that the information obtained would not be used for any other purpose other than academic. The items on the research instruments were detailed but clear and to the point to ensure that, the respondents do not spend too much time on them. The researcher also ensured that the administration of questionnaires was done outside lesson hours for both the students and the teachers.

### **3.11 Data Analysis**

After data collection, data cleaning was done in order to determine the inaccurate, incomplete items or multiple entries in data collection instruments. The cleaned data was coded by assigning a number to each answer in the question. The coded data was then entered to a computer for analysis using Statistical Package for Social Sciences (SPSS) version 20. The research yielded only quantitative data which was analyzed through descriptive statistics using counts, percentages and means. The results of the data analysis were presented using frequency distribution tables and pie charts to enhance clarity and brevity.

Philosophical methods such as critical analysis and conceptual approach were also used (Ogola, 2003). The critical perspective in the study was designed to examine even the assumed or pushed aside issues in the curriculum implementation in secondary schools in Meru-South Sub County. The researcher critically examined every opinion given by respondents to establish the underlying factors for such

opinions. Njoroge and Bennaars, (1986) argues that the critical approach liberates one from narrow mindedness, which may easily lead to dogmatism and fanaticism. In this study, the critical approach assisted in arriving at objective findings.

The critical approach was backed by conceptual analysis, which primarily consists of breaking down or analyzing concepts into their constituent parts in order to gain knowledge or better understanding of a particular philosophical issue in which the concept is involved (Beaney, 2003). Conceptual analysis was used to give an in-depth explanation and analysis of the relevance of Immanuel Kant’s philosophy of transcendentalism on implementation of curriculum by breaking down the key concepts pertaining to the philosophy and seeking how they interact with curriculum implementation. Critical analysis involved intellectually disciplined process of actively and skillfully conceptualizing synthesizing and evaluating information gathered from the research as a guide to recommendations and generalization. A summary of the data analysis plan is as captured in the Table 2.

Table 2  
Summary Table of Data Analysis

Research Questions	Independent Variable	Dependent Variable	Statistical Methods
i. What is the relevance of Kant’s probing method on implementation of curriculum in secondary schools in Meru-South Sub County?	Kant’s probing method	Implementation of curriculum	Frequency Mean Percentages
ii. What is the relevance of Kant’s experiential method on implementation of curriculum in secondary schools in Meru-South Sub County?	Kant’s experiential method	Implementation of curriculum	Frequency Mean Percentages
iii. What is the relevance of Kant’s experimentation method on implementation of curriculum in secondary schools in Meru-South Sub County?	Kant’s experimentation method	Implementation of curriculum	Frequency Mean Percentages

## CHAPTER FOUR

### RESULTS AND DISCUSSION

#### 4.1 Introduction

This chapter presents the results and discussions of the research findings on the relevance of Kant's philosophy of transcendentalism on implementation of curriculum in secondary schools in Meru South Sub County. The chapter is organized according to the following themes: research instruments return rate, demographic characteristics of the respondents, relevance of Kant's probing method in implementation of curriculum, relevance of Kant experiential learning in implementation of curriculum and relevance of Kant experiential learning in implementation of curriculum.

#### 4.2 Research Instruments Return Rate

The data for this study was collected within two weeks using the questionnaires. The questionnaires were administered to 357 students and 35 teachers from 7 secondary schools in Meru South Sub County. Out of the total students' questionnaire administered, 311 of them were satisfactorily completed and returned to the researcher by the respondents, giving a response rate of 90.14%. Out of the total questionnaire administered to the teachers, 33 of them were successfully completed and returned to the researcher by the respondents, giving a response rate of 94.28%.

#### 4.3 Demographic Characteristics of the Respondents

The nature of the respondents in the study comprised of form three students and heads of academic departments in secondary schools. The demographic data from students comprised of age and gender. The demographic data from heads of academic department in secondary schools comprised of gender, age and teaching experience. Figure 2 presents the distribution of the student respondents by gender.

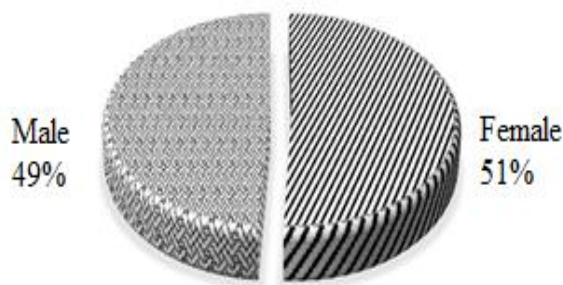


Figure 2. Distribution of Students by Gender

From information in Figure 2, it can be observed that slightly over half of the student respondents (51%) were male, while 49% were female. The researcher also sought to establish the age distribution of the students and the findings are as shown in Table 3.

Table 3  
Age Distribution of Students

Age (Years)	Frequency	Percentage
13-15	76	24.4
16-18	205	65.9
19-21	29	9.4
Above 21	1	0.3
Total	311	100

Based on the results in Table 3, majority of the students sampled were aged between 16 and 18 years and comprised of 65.9% of the sample. Students who formed the minority were aged above 21 years and constituted 0.3% of the sample.

The researcher sought information on gender of heads of departments. The results were as shown in Figure 3

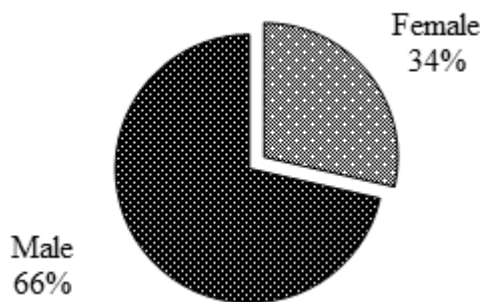


Figure 3. Distribution of Heads of Academic Departments by Gender

The total number of heads of academic departments who participated in the study was 35 of which the males were the majority (66%) and the females were minority (34%). The study required the heads of academic departments to provide their age in the questionnaire. The findings are as shown in the Table 4.

Table 4  
Age Distribution of Heads of Academic Departments

Age (Years)	Frequency	Percentage
20-30	8	22.9
30-40	13	37.1
40-50	8	22.9
50-60	6	17.1
Total	35	100

The information in Table 4 show that 37.1% of the heads of academic departments were within the age bracket of 30 to 40 years while 17.1% of the heads of academic departments were within 50-60 years.

An item was included in teachers' questionnaire that sought to establish the teaching experience of the respondents. The findings were as illustrated in Table 5.

Table 5  
Teaching Experience of Heads of Academic Departments

Duration (Years)	Frequency	Percentage
0-5	2	5.7
5-10	5	14.3
Above 10	28	80.0
Total	35	100

The information in Table 5 show that 80.0 % of heads of academic departments had teaching experience of above 10 years, 14.3 % had an experience of between 5 to 10 years. Heads of academic departments whose teaching experience ranged between 0 to 5 years were the minority constituting of 5.7% of the sampled teachers. This suggests that the respondents had sufficient experience to give opinions on the subject matter under study. In Kantian philosophy of transcendentalism, experienced teachers are the best in conducting Kant's probing, experimentation and experiential teaching techniques since they possess the fundamental teaching skills.

#### **4.4 Relevance of Kant's Probing Method on Implementation of Curriculum**

The first objective of the study sought to analyze the relevance of Kant's probing method on implementation of curriculum in secondary schools in Meru South Sub county of Kenya. The respondents indicated the extent of agreement or disagreement against statement based on Kant's probing method on 5-level Likert scale: Strongly

Agree (SA) = 5, Agree (A) = 4, Undecided (U) = 3, Disagree (D) = 2 and Strongly Disagree (SD) = 1. Negative statements were scored in a reverse order. Effective curriculum implementation ensures that the student has achieved knowledge, skills and attitude. Therefore, statements on the relevance of Kant's probing method on implementation of curriculum were constructed based on these domains of learning (knowledge, skills and attitude).

An item was included in the students' questionnaire, which sought information on the relevance of learning through Kant's probing method in knowledge acquisition. The responses from students are as shown in Table 6.

Table 6  
Students' Responses on Relevance of Kant Probing Method in Knowledge Acquisition

Statement	N	SA (%)	A (%)	U (%)	D (%)	SD (%)
Learning through Kant probing method helps me to understand what I learn easily	311	54.8	36.8	3.2	3.5	1.6
Learning through Kant probing method enables me to acquire adequate knowledge for further education and training	311	50.5	38.6	4.8	3.9	2.3
I easily remember concepts that I learn through Kant probing method	311	62.7	28.9	4.2	2.3	1.9
Overall Average	311	56.0	34.8	4.1	3.2	1.9

The information in Table 6 show that most of the secondary schools' students in Meru South Sub County indicated that learning through Kant probing method enhances students understanding of curriculum content. This is as substantiated by the fact that 54.8% of the students strongly approved that learning through probing questions enables them to understand easily the concepts learnt. A small proportion, (5.1%) of secondary school students in Meru South Sub County however disagreed that Kant probing method enhances students understanding of curriculum content.

Results in Table 6 also indicate that learning through probing questions enables students to acquire adequate knowledge for further education and training. This is as affirmed by proportion of students who approved and strongly approved that learning

through probing questions enables students to acquire adequate knowledge for further education and training standing at 89.1%. Kant probing method as advocated by Kant's transcendentalism philosophy helps clarify ideas held by the learners, which in turn helps them to acquire knowledge (Charton, 2015). According to Faith (2011) it is through probing questions that teacher makes use of the students pre-existing ideas and beliefs to enhance learning and understanding thus, improving their knowledge acquisition.

Results in Table 6 show that the combined proportion of secondary school students in Meru South Sub County who disagreed that learning through probing questions enable students to acquire adequate knowledge for further education and training was only 6.10%. However, 38.6% and 50.5% of the student agree and strongly agree respectively that learning through probing questions enables students to acquire adequate knowledge for further education and training. This is an indication that students in Meru South Sub County laud Kant probing method as a plausible method of enhancing students' acquisition of knowledge. Teachers who encourage students to elaborate on and explain their thinking through probing questions promote learning (David & Walter, 2014). This is because such questions push students to think more deeply about the topic being discussed (Boghossian, 2003). The results of the study as seen in the Table 6 show that majority of the students (62.7%) in the Meru South Sub County strongly agree that students easily recall concepts that they learn through probing method. However, it can also be noted from Table 6 that some students 2.3% and 1.9% disagree and strongly disagree respectively that students easily recall concepts that are taught through Kant probing method.

The study also sought to establish from the teachers the relevance of Kant probing Method in knowledge acquisition. Their responses were as shown in Table 7.

Table 7  
Teachers' Responses on the Relevance of Kant Probing Method in Knowledge Acquisition

Statement	N	SA (%)	A (%)	U (%)	D (%)	SD (%)
Students easily understand concepts that they learn through the use of probing questions	35	0.0	62.9	8.6	28.6	0.0
Learning through probing questions enables students to acquire adequate knowledge for further education and training	35	22.9	65.7	8.6	2.9	0.0
Students easily recall concepts that they learn through the use of probing questions	35	22.9	68.6	5.7	2.9	0.0
Overall Average	35	15.3	59.1	7.6	18.1	0.0

The findings of the study as shown in the Table 7 indicate that none of the secondary schools teachers in Meru South Sub County strongly believes that students easily understand concepts that they learn through Kant probing method. This is substantiated by the fact that none of the teachers strongly agreed that students easily understand concepts learnt through probing questions. If we were to compare the opinions of teachers and students on the same subject, there seems to be a disparity. As indicated earlier, contrary to the views of their teachers most the secondary school students (58.4%) in Meru South Sub County strongly believe that students easily understand concepts learnt through probing method.

Furthermore, a significant number of teachers 28.6% were of the view that students do not understand concepts learnt through probing method. This is an indication that teachers do not find Kant probing method as an appropriate strategy of enhancing students understanding. The views of teachers in Meru South Sub county that the use of Kant probing questions does not promote students understanding of concepts as indicated in Table 7 differs with Kant's assertion that, probing method invites students to be co-participants in the process of teaching and learning thus promoting their understanding. According to Annette (2009), the approach of teacher of engaging students in probing question helps the instructor in eliciting an initial response from the student. The teacher guides students reason, suggests answer in some occasions thus promoting learners understanding. According to Tofade, Elsner,



and Haines, (2013), probing questions stimulate the recall of prior knowledge, which in turn promote learners' comprehension. According to Charton (2015) Kant probing method increases higher-order learning by requiring learners to analyze information, connect seemingly disparate concepts, and articulate their thoughts through questions that are ubiquitous, but are the right kinds of questions that promote understanding, not recalling.

Results in Table 7 indicate that largely, the teachers concur with the students that Kant probing method enhances knowledge acquisition as the number of teachers who strongly agree and those who agree that learning through probing questions enables students to acquire adequate knowledge for further education and learning stand at 88.6%. Engaging students in collaborative and open-minded dialogue through probing method allows students and teachers to identify and correct misconceptions and misunderstandings (Broad, 2008). A minimal percentage (2.9%) disagree that the use of Kant probing method can enable students to acquire adequate knowledge for further education. However, there is a relatively higher proportion (29%) of teachers who disagrees that Kant probing method enable students to acquire knowledge. An extensive proportion of teachers 48.6% also indicated that Kant probing method enables students to acquire knowledge for further education. Kant transcendentalism posits that education should provide students with knowledge and opportunities for their livelihood, particularly because these students are the pillars of future of nation (Annette, 2009).

Further results in Table 7 also show that majority (68.6%) of the teachers indicated that students easily recall concepts that they learn through Kant probing method. This is in comparison to 62.7% of students who strongly agreed that they easily recall concepts taught through Kant probing method. However, 2.9% of the teachers disagreed that students do not easily recall concepts that they learn through Kant probing method. Basing on the results in Table 7 there is an indication that students will find it easy to recall concepts if learning was through Kant probing method. This implies that exposing learners to opportunities and experiences that involve Kant probing allows them grasp subject concept into their minds and will be able to recall these concepts latter when required. According to Sahin (2007), probing questions besides basing on students existing ideas require students to recall specific knowledge

from their text, teacher’s questions or notes. These questions provide more information that is direct to the teacher when the student encounters difficulty. Sahin (2007) argues further that this can promote student thinking which shapes the students’ ideas as well as enhancing students’ ability to retain and recall concepts learnt.

Items were included in students’ questionnaire that sought information on the relevance of Kant probing Method in acquisition of skills. The findings are as presented in Table 8

Table 8  
Students’ Responses on Relevance of Kant Probing Method in Acquisition of Skills

Statement	N	SA (%)	A (%)	U (%)	D (%)	SD (%)	Mean
Learning through probing questions has improved my reasoning skills	311	80.5	14.5	2.3	2.7	0.0	4.48
Learning through probing questions promotes my ability to socialize with others	311	19.2	18.5	25.8	14.5	10.9	4.28
Learning through probing questions has improved my problem solving skills	311	41.8	46.8	5.8	3.0	2.6	4.01
Learning through probing questions has enhanced my development of critical thinking skills	311	70.4	24.6	2.5	1.8	0.7	4.11
Overall Average	311	46.2	40.7	5.4	6.4	1.4	4.22

The results of the study as shown in the Table 8 show that majority of the students in Meru South Sub county indicated that learning through Kant probing method improves students reasoning skills as 80.5% of the students strongly affirmed that. A small portion of 2.3% was indecisive in rating that learning through Kant probing method improves students reasoning skills. The students who were less radical in affirming the same constituted 20.9%. Information in Table 8 also shows that although most secondary students in Meru South Sub County indicated that Kant probing method improves students reasoning skills, 2.7% of the students disagreed with this statement.

The results presented in Table 8 reveal that there exist diverse views within students in Meru South Sub County on whether learning through Kant probing method promotes socialization skills. A significant percentage of students (25.8%) were indecisive on whether learning through probing questions promotes students' ability to socialize with others. The students who strongly agree and those who agree that learning through probing questions promotes ability to socialize is 19.2% and 18.5% respectively. In Meru South Sub County 14.5% and 10.9% of students disagree and strongly disagree respectively that learning through probing questions promotes students' ability to socialize with others.

The results of the study as displayed in the Table 8 also reveal that learning through Kant's probing questions enhances development of students' critical thinking skills. Majority of the students (70.4%) strongly agree that learning through Kant's probing questions enhances the development of critical thinking skills. This is as opposed to a small minority of 0.7% who strongly disagree learning through Kant's probing questions enhances the development of critical thinking skills. This is an indication that the students in Meru South Sub County find learning through Kant's probing questions is relevant in the development of critical thinking skills. Engaging students in collaborative and open-minded dialogue through probing questions promote independent critical thinking skills (Boghossian, 2003). According to Charton (2015), nurturing of learners critical thinking provide the necessary opportunity for students and teachers to identify and correct misconceptions that in turn leads to acquisition of knowledge.

The study established that secondary school students in Meru South Sub County concur that learning through probing questions improves students' problem solving skills. According to Kant's transcendentalism philosophy, understanding curriculum contents can enable individuals to develop in aspects of identifying and solving social and economic problems affecting the contemporary society (Annette, 2009). As captured in the Table 8, a small proportion of students, which constitute only 5.7 % do not find learning through probing questions as a tool of improving students' problem solving skills. Over 80% of students to a varying extent find learning through probing questions relevant in improving students' problem solving skills.

The study sought from the teachers their perception on the relevance of learning through Kant probing Method in acquisition of skills. The findings are as shown in Table 9.

Table 9  
Teachers' Responses on Relevance of Kant Probing Method in Acquisition of Skills

Statement	N	SA (%)	A (%)	U (%)	D (%)	SD (%)
Learning through probing questions improves students reasoning skills	35	25.7	68.6	1.9	3.9	0.0
Learning through probing questions promotes students ability to socialize with others	35	57.1	20.0	2.9	20.0	0.0
Learning through probing questions improves students problem solving skills	35	62.9	14.3	11.4	11.4	0.0
Learning through probing questions enables students to develop critical thinking skills	35	17.1	80.0	0.0	2.9	0.0
Overall Average	35	19.3	67.1	4.3	9.3	0.0

Table 9 reveal that majority of the teachers in secondary schools in Meru South Sub county indicated that learning through Kant's probing method enables students to develop critical thinking skills as 68.6% of them support this. However, students tend to attach more emphasis to learning through Kant's probing questions in enhancing students develop to critical thinking skills as it was observed earlier in the Table 8 that 80.5% of the students strongly endorse Kant's probing method as a welcome teaching and learning method in enhancing development of students critical thinking skills. From the results of the study, 3.9 % of teachers disagreed that learning through Kant probing method enhances students' development of critical thinking skills while a mere 1.9 % of the students were undecided.

It is evident in Table 9 that a significant portion of secondary school teachers in Meru South Sub County indicated that the use of Kant probing method improves students' problem solving skills. This can be inferred by the fact that 62.9% of the teachers who participated in the study strongly agree that learning through probing questions improves students' problem solving skills. Teachers who do disagreed that learning through probing questions improves students' problem solving skills stand at 11.4%

and those undecided were also 11.4%. Students support that the use probing method in enhancing developing students critical thinking skills that the teachers. This is evident as the percentage of students as indicated in Table 8 who strongly support Kant probing method in developing critical thinking skills is 70.4% while that of teachers as indicated in Table 9 is a mere 17.1%. However, 80.0% of teachers agree that learning through probing questions enables students to develop critical thinking skills while only 2.9% disagree. This is an indication of teachers' emphasis on the relevance of Kant probing method in developing students' critical thinking skills.

Results in Table 9 also revealed that teachers support that learning Kant through probing method promotes students' ability to socialize with others. This is as indicated by 57.1% of teachers who strongly indicate that learning through probing questions promotes students' ability to socialize with others. There is a sizeable percentage of teachers (20.0%), who disagreed that learning through probing questions is relevant in promoting students ability to socialize with others. This corresponds to 14.5% of students who had similar opinions as revealed in Table 8. The proportion of teachers who were undecided on whether learning through Kant probing method promotes students' ability to socialize with others was 2.9% while none of the teachers strongly disagreed that learning Kant probing method promotes students' ability to socialize with others.

Based on the findings in Tables 9, this study suggests that Kant probing Method if applied in the process of curriculum implementation could be relevant in equipping students with diverse skills. This corresponds with the observations of Becker and Maunsaiyat (2004), that curriculum implementation based on Socratic Method could lead to understanding of curriculum content as well as promoting positive attitude towards learning. The findings in Table 9 also indicate that teaching and learning through probing questions promotes the development of student's critical thinking skills, problem-solving skills, reasoning skills as well as skills to socialize with others. Based on the findings of the study, probing questions can lead to new insights, generate discussion, and promote the comprehensive and critical exploration of the subject matter, which is a critical characteristic of Kant's transcendentalism philosophy point of view in education. According to Kant, effective education is that which challenges learners' through processes such as posing probing questions to

develop their critical thinking skills as well as social and collaborative interaction skills.

#### **4.5 Relevance of Kant Experiential Learning in Implementation of Curriculum**

The second objective sought to analyze the relevance of Kant’s experiential learning on implementation of curriculum in secondary schools in Meru-South Sub County of Kenya. The respondents were expected to indicate their responses based on five level likert scale as follows; Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D) and Strongly Disagree (SD) against statements that were based on experiential learning and effective curriculum implementation. Effective curriculum implementation was based on the three domains of learning namely, attitude, skills, and knowledge.

The study sought to determine the extent of relevance of experiential learning in knowledge acquisition. The responses of the students are as shown in Table 10.

Table 10

Students’ Responses on Relevance of Kant Experiential Learning in Knowledge Acquisition

Statement	N	SA (%)	A (%)	U (%)	D (%)	SD (%)
The use of real objects in learning enhances my understanding of the ideas that I learn	311	72.3	26.4	0.0	1.0	0.3
I find it easy to understand concepts that I learn through the use of real objects	311	55.3	33.1	3.5	6.8	1.3
The use of real objects in learning enhances my retention of the ideas that I learn	311	44.5	42.9	4.2	6.8	1.6
Overall Average	311	57.4	34.1	2.6	4.9	1.1

The information in Table 10 indicates that most of the students in secondary schools in Meru South Sub County indicated that use of real objects in learning enhances understanding of the ideas. This is substantiated by the fact that 72.3 % of the students in the Sub County strongly submit that the use of real objects in learning enhances students understanding of the ideas that they learn. More so, 26% of the students strongly agreed that use of real object enhances students understanding while none of

the students was undecided of this matter. This finding concurs with the idea that knowledge begins in experience but that ideas and thought are essential to knowledge acquisition (Michael, 2010). For this study, use of real objects in teaching and learning is an example of experiential learning activity. Kant therefore is of the idea that the use of tangible objects in teaching enhances acquisition of knowledge. The students further indicated that learning through real objects enhances students' retention of ideas as shown by a total proportion of 87.4% who approve that students find it easy to understand concepts that they learn by real objects. A small number (1.0%) of secondary school students in Meru South Sub County disagreed that students easily understand concepts learnt by real objects.

An item was also included in the teachers' questionnaire, which sought information on the extent of relevance of experiential learning in knowledge acquisition. The responses of the teachers were as shown in Table 11.

Table 11  
Teachers' Responses on Relevance of Experiential Learning in Knowledge Acquisition

Statement	N	SA (%)	A (%)	U (%)	D (%)	SD (%)
The use of real objects in learning enhances students understanding of ideas that they learn	35	71.4	28.6	0.0	0.0	0.0
Students perform better in subjects that they learn through the use of real objects	35	20.0	57.1	11.4	11.4	0.0
Students easily understand concepts taught through the use of real objects	35	40.0	51.1	8.6	0.0	0.0
The use of real objects in teaching enhances student's retention of the ideas that they learn	35	54.3	45.7	0.0	0.0	0.0
Overall Average	35	46.4	45.6	5.0	2.9	0.0

Study findings in Table 11 revealed that majority of the teachers (71.4%) indicated that use of real objects in learning enhances students understanding of ideas. In addition, 28.6% of teachers indicated that use of real objects in learning enhances students understanding of ideas. This implies that all the teachers in Meru South Sub County acknowledge that Kant's experiential method enhances students understanding. This finding concurs with that of students and this would suggest that curriculum implementation based on Kant's experiential method promotes

understanding of curriculum content. Kant contends that although some concepts are abstracted from experience, knowledge cannot be true without experience (Broad, 2008). Based on Kant’s transcendentalism point of view, through active participation in the learning process learning becomes interactive, cooperative, and collaborative. Students are provided with opportunities that enable them to make discoveries and gain first-hand knowledge through observation and hands-on activities rather than learning or reading about other peoples’ experiences.

Responses from both students and teachers reveal that students find it easy to understand concepts that learnt through real objects. However, teachers seem to have much support on the Kantian experiential method with regards to the process of knowledge acquisition than the students. Some students (1.3%) and (8.1%) disagree that the use of real objects in learning enhances students understanding of ideas and that use of real objects in learning enhances students understanding of ideas. None of the teachers neither disagreed nor were undecided that the use of real objects in learning enhances students understanding of ideas. This implies that teachers in Meru South Sub County just like in Kant transcendentalism have greater regard for observation of things directly in process of curriculum implementation because it facilitates learning. Moore, Boyd and Dooley, (2010) found that experiential activities such as use of real objects in learning enhances students’ ability to retain concepts.

Items were included in the research instrument that sought to determine the relevance of Kant’s experiential learning method on acquisition of skills. Table 12 show responses of the students.

Table 12  
Students’ Responses on Relevance of Kant’s Experiential Learning Method in Acquisition of Skills

Statement	N	SA (%)	A (%)	U (%)	D (%)	SD (%)
Learning through the use of real objects assist me to gain practical skills	311	67.5	22.7	4.2	0.6	0.0
Use of real objects in learning enables me to develop critical thinking skills	311	76.6	9.2	8.7	4.5	1.0
Overall Average	311	57.1	31.0	6.5	2.6	0.5



The findings in Table 12 indicate that 67.5 % of the students in Meru South Sub County strongly agree that use of real objects in learning assist learners to gain practical skills. This finding concurs with (SMASSE, 2007), that involving learners in experiential activities such as improvisation of teaching and learning materials could help them improve their skills on creativity and innovations as well as practical skills. Further, 22.7% indicated that use of real objects in learning assist learners to gain practical skills, with only 0.6% who disagreed with this assertion. Few of students (4.2%) were undecided whether learning through real objects promotes gaining of practical skills. Majority of students (76.6%) of the students strongly supported that learning through real objects enables students to develop critical thinking skills. However, 8.7% and 4.5% of the students were undecided and disagreed respectively that learning through real objects enables students to develop critical thinking skills.

An item was included in the teachers' questionnaire, which sought the extent of relevance of experiential learning in acquisition of skills. Table 13 shows the responses from the teachers.

Table 13  
Teachers' Responses on Relevance of Experiential Learning in Acquisition of Skills

Statement	N	SA (%)	A (%)	U (%)	D (%)	SD (%)
Teaching through the use of real objects assist students in gaining practical skills	35	37.1	54.3	2.9	5.7	0.0
Use of real objects in learning enables students to develop critical thinking skills	35	14.3	60.0	14.3	11.4	0.0
Overall Average	35	25.7	57.2	8.6	8.6	0.0

Results in Table 13 show that learning through real object assist learners to gain practical skills. This is as indicated by 37.1% and 54.3% of teachers who strongly agree and agree that the use of real objects in teaching enhances students to gain practical skills respectively. The teachers' responses concur with responses from the students that use of real objects in learning assist learners to gain practical skills. This finding concurs with that of Green and Farazmand (2012) who found experiential learning as an important pedagogical strategy to address and develop student practical skills. The use of real object in teaching and learning provides experiential learning

activities. According to Jon (2012) experiential learning activities helps in developing student's practical skills and critical thinking skills through hands-on and minds-on experiences. There was a minimal proportion of teachers, 2.9% who were undecided and 5.7% who disagreed that use of real objects in learning assist learners to gain practical skills.

Based on the findings of the study, use of real objects in learning enables learners to develop critical thinking skills. This is as indicated by 60% of the teachers who agreed that the use of real objects in learning enables learners to develop critical thinking skills. However, study findings revealed that the extent of students who supported use of real objects in learning was greater as compared to those of teachers. The proportion of students who strongly supported the use of real objects in developing critical thinking skills was 76.6% compared to 14.3% of the teachers who strongly agreed with the same. There was also considerable proportion of teachers who were undecided (14.3%) and those that disagreed (11.4%) that the use of real objects in teaching and learning enhances development of critical thinking skills. This revelation could be an indication that some of the teachers in Meru South Sub County do not find it necessary to expose learners to experiential activities in their process of teaching and learning. The reason for this revelation could be that since the researcher included all the academic departments in secondary schools, some of teachers in some departments rarely engage students in experiential learning activities.

Burbules and Biesta (2004) noted that the skills developed by learning from experience are more variable and subject to intended individual development of critical thinking skills. According to Broad (2008) Kant's advocates that during learning process students should be involved actively in the process of experiential learning activities in order to promote interplay between reason and experience which in turn may encourage students to reflect about the experience hence developing new skills, attitudes and ways of thinking. Kant, transcendental philosophy postulates that teachers in experiential learning should allow learners to identify an area of interest and assist them in developing their potential and abilities around that area of concern. Learning based on individual abilities and potentials assist learners to acquire a range of skills that allow them to become more effective, flexible, and self-organized learners. According to Kant, experiential learning discourages passing of information

to passive learners, but encourages learner-centered approaches where learners learn through observations and hands-on activities according to Michael (2010).

#### 4.6 Relevance of Kant’s Experimentation method in Implementation of Curriculum

The third objective sought to analyze the relevance of Kant’s experimental method on implementation of curriculum in secondary schools in Meru-South Sub County. To achieve this objective, the respondents were required to indicate the extent to which they agree or disagree to the given statements based on 5-point Likert scale where; stands Strongly Agree (SA) = 5, Agree (A) = 4, for Undecided (U) = 3, for Disagree (D) = 2 and Strongly Disagree (SD) =1.

Items were included in the students’ questionnaire that sought information on the relevance of experimental learning in acquisition of knowledge. Table 13 shows responses obtained from students.

Table 14  
Students’ Responses on Relevance of Experimental Learning in Knowledge Acquisition

Measurement Scale	N	SA (%)	A (%)	U (%)	D (%)	SD (%)
I often understand ideas that I learn through experiments	311	40.7	43.4	3.0	7.9	5.0
I usually recall ideas that I learn through experiments	311	48.2	45.0	2.9	2.6	1.3
Learning through experiments enables me to acquire scientific knowledge	311	57.8	37.0	1.0	1.9	2.3
Overall Average	311	48.9	41.8	2.3	4.1	2.9

The research findings as shown in the Table 14 reveal that students understand ideas learnt through experiments. This is substantiated by the fact that the students who strongly affirmed that they often understand ideas learnt through experiments constituted 40.7% while those who agreed that they often understand ideas learnt through experiments constituted 40.7%. According to Kant transcendentalism the process of acquiring knowledge consists of ordering the material of experience according to ‘causal’ and ‘effects’ laws and discovering the application of these laws in particular empirical cases. In addition, this process is to be followed by the judgment of reason. According to Kant reasoning concerning matter of fact is founded

on the relation of “cause and effect” a critical feature of empirical method (Annette, 2009). A small portion of students, 3.0% was however indecisive in rating that they often understand ideas learnt through experiments. The researcher also noted that although most secondary students in Meru-South Sub County often understand ideas learnt through experimentation, 7.9% percent and 5.0% disagree and strongly disagree that students understand ideas learnt through experimentation. This could be an indication that in some schools’ students may be facing challenge of learning through experimentation method.

The results in Table 14 also show that that learning through experiments enhances students to recall ideas. A big proportion of secondary school students in Meru South Sub County, endorsed experimentation as a laudable approach in enhancing recalling of ideas as indicated by 48.2% and 45.0% of those who strongly agree and those who agree respectively. In Meru South Sub County, those who disagreed that learning through experiments enhances recalling of ideas constitute 2.6% and those who strongly disagreed constitute 1.3%. The undecided lot constitutes 2.9% of the total students’ population.

The findings of this study as displayed in the Table 14 reveal that learning through experiments in secondary schools in Meru South Sub County enhances acquisition of scientific skills. Majority of the students, 57.8% strongly supported that learning through experiments enhances acquisition of scientific skills. This is as opposed to a small minority of 2.3 % who strongly disagree that learning through experiments enhances acquisition of scientific skills. In Meru South Sub County, those who disagreed that learning through experiments enhances acquisition of scientific skills constitute 2.6% and those who strongly disagreed constitute 1.3%. The undecided lot constitutes 2.9% of the total students’ population.

Items were included in the teachers’ questionnaire that sought information on the relevance of experimental learning in acquisition of knowledge. Table 15 shows responses obtained from teachers regarding the relevance of experiential learning in acquisition of knowledge.

Table 15  
Teachers' Views on Relevance of Experimental Learning in Knowledge Acquisition

Measurement Scale	N	SA (%)	A (%)	U (%)	D (%)	SD (%)
Students often understand ideas which they learn through experiments	35	14.3	74.3	5.7	5.7	0.0
Students usually recall ideas that they learn through experiments	35	17.1	82.9	0.0	0.0	0.0
Learning through experiments enables students to acquire scientific knowledge	35	25.7	65.7	0.0	8.6	0.0
Overall Average	35	19.0	74.3	1.9	4.8	0.0

The results of the study as reflected in the Table 15 reveal that responses of teachers and students in Meru South Sub County concur with responses from the students that learning through experiments enables learners understand ideas. This finding agrees with that of Toplis and Allen (2012) who found that learning through experiments enables learners to develop an in-depth understanding of content that they learn. Table 15 also indicates that, 25.7% of teachers strongly agreed that learning through experiments enables students to acquire scientific knowledge while 65.7% agreed that learning through experiments enables students to acquire scientific knowledge. According to Kant's transcendentalism, true knowledge is acquired through observation as opposed to relying solely on a priori and intuitive knowledge. Kant emphasizes on evidence especially as found in experiments.

Nurturing of learners' observation skills according to Kant's transcendentalism is therefore a vital role, in any system of education. In a school set up, the laboratory is always among one of the areas, which provide the necessary opportunity for students to exercise their observation skills (Burbules & Biesta, 2004). None of the teachers was undecided or strongly disagreed that learning through experiments enables students to acquire scientific knowledge. However, a minority of the teachers, 8.6% disagreed that learning through experiments enable students to acquire scientific knowledge.

The researcher noted from the results of data analysis that students tend to attach more emphasis to experimentation method in enhancing acquisition of skills than teachers in secondary schools in Meru South Sub County. The researcher observed that 40.7% of students compared to 14.3% of teachers to endorse that experimentation enhances

students in understanding ideas. It was also observed that the percentage of teachers, 17.1% who strongly support that experimentation enhances students to recall ideas is lower than those of students at 48.2%. The reason for this disparity could be attributed to the fact that not all in most cases experiments do not cater for all the subjects in a school Kenyan secondary schools setting. More often than not experimentation method caters for the sciences subjects in secondary school curriculum.

Items were included in the research instrument that sought to determine the relevance of experimental learning on acquisition of skills. Table 16 show responses of the students.

Table 16  
Students' Responses on Relevance of Experimental Learning in Acquisition of Skills

Measurement Scale	N	SA (%)	A (%)	U (%)	D (%)	SD (%)
Learning through experiments enables me to acquire practical skills	311	67.1	31.3	0.0	0.7	1.0
Learning through experiments enables me to develop thinking skills for solving problems in any situation	311	44.8	35.7	6.8	9.4	3.2
Learning through experiments enables me to gain technical skills	311	44.5	42.5	7.8	3.2	1.9
Overall Average	311	52.1	36.5	4.9	4.4	2.0

The findings in Table 16 revealed that learning through experiments enables students to acquire practical skills. Majority of students in Meru South Sub County strongly affirmed that learning through experiments enables acquisition of practical skills as indicated by 67.1%. Furthermore, 31.3% of students affirmed, none was undecided and only a minority, 1.0% disagreed that learning through experiments enables acquisition of practical skills. Information in Table 16 more so indicates that, even though a big proportion, 44.8% of secondary schools' students in Meru South Sub County, strongly endorsed that learning through experiments enable students to acquire practical skills, some of the students were either undecided, disagreed or strongly disagreed. This is as indicated by 7.8% of students who were undecided, 3.2% of students who disagreed and 1.9% of students who strongly disagreed.

The results of this study as witnessed in Table 16 also show that, learning through experiments enhances them to gain technical skills. It can be noted that 52.1% strongly support, while 36.5% agrees that learning through experiments enhances students to gain technical skills. A proportion of students 4.9%, 4.4% and 2.0% were undecided, strongly disagreed or disagreed, respectively that learning through experiments enhances gaining of technical skills. Table 17 shows responses of the teachers regarding the relevance of experimental learning on acquisition of skills.

Table 17  
Teachers' Views on Relevance of Experimental Learning in Acquisition of Skills

Measurement Scale	N	SA (%)	A (%)	U (%)	D (%)	SD (%)
Learning through experiments enables students to acquire practical skills	35	34.3	62.9	2.3	0.0	0.0
Learning through experiments enables students to develop thinking skills for solving problems in any situation	35	22.9	68.6	5.7	2.9	0.0
Learning through experiments enables students to gain technical skills	35	17.1	77.1	5.7	0.0	0.0
Overall Average	35	24.8	69.5	4.6	1.0	0.0

The study established that learning through experiments enable students to acquire practical skills. Results in Table 17 reveal that a small proportion of teachers, which constitute 2.9 %, were undecided that learning through experiments enhances acquisition of practical skills. Majority of the teachers (62.9%) supported and 34.3% strongly supported that learning through experiments enhances acquisition of practical skills. However, it was noted that students tend to attach more emphasis to experimentation as a method of enhancing acquisition of practical skills than their teachers in secondary schools in Meru South Sub County. It was noted that 67.1% of the students strongly approve that learning through experiments enable acquisition of practical skills experimentation as compared to 34.2% of teachers who approved that learning through experiments enables acquisition of practical skills.

Results in Table 17 further reveal that learning through experiments enable students to develop problem-solving skills. The data obtained in the field attest to this as 68.6% of the teachers in Meru South Sub County indicate that learning through experiments enable students to develop problem-solving skills. This observation concurs with that

of students in Meru South Sub County who 15 strongly supported that learning through experiments enables students to develop problem-solving skills. Only a small proportion of teachers, 5.7% were undecided and 2.9% disagreed that learning through experiments enable students to develop problem-solving skills. According to SMASSE (2007) learning through experiments is expected to produce individuals with scientific skills and knowledge for solving their own problems as well as those of the society.

The results of the study indicated that students and teachers concur that experimental learning is relevant in acquisition practical skills, critical thinking skills as well as problem solving skills. This finding has been supported by Ibe (2004) who noted that teaching and learning through experimentation could enable students to acquire practical skills such as science process skills of observing, measuring, recording and classification of experimental results. The researcher also noted that experimental learning enhances students' acquisition of knowledge. According to Carl (2009) Kant's transcendental philosophy postulates in conformity with the findings that logic, connected to verification through experimentation, leads to knowledge acquisition by the learners. Further Carl (2009) arguably attested that in experimental learning, learners experiments actively, reflect and draw abstractions that equip leaners with scientific knowledge and enquiry methods that foster their problem solving skills.



## CHAPTER FIVE

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Introduction

This chapter presents the summary of the findings, conclusions, recommendations and suggestions for further studies.

#### 5.2 Summary of the Findings

The first objective of the study sought to analyze the relevance of Kant's probing method on implementation of curriculum in secondary schools in Meru South Sub county. The findings of the study revealed that a high percentage of teachers and students indicated that Kant's probing method enhance learners understanding of the curriculum contents. The findings also disclosed that a high percentage of teachers and students indicated that use of Kant's probing method in process of curriculum implementation facilitates in developing students critical thinking skills. However, students tend to attach more emphasis to learning through Kant's probing method as findings of the study revealed that a larger percentage of the students compared to that teachers strongly endorse Kant's probing method as a welcome teaching and learning method in enhancing development of students' critical thinking skills.

The second objective of the study sought to analyze the relevance of Kant's experiential method on implementation of curriculum in secondary schools in Meru South Sub County. The findings of the study revealed that the overall mean of the students who strongly supported that use of Kant's experiential method in process of curriculum implementation promotes learners understanding was higher than that of teachers. Similarly, the overall mean of the students who strongly supported that use of Kant's experiential method in process of teaching and learning enhances development of learners' critical thinking skills and practical skills was higher than that of teachers. This revelation was an indication that there exist varied views on the part of both teachers and students on relevance of Kant's experiential learning in the process of teaching and learning. This variation could be attributed to the fact that the researcher relied on responses of teachers in all the academic department of which in some departments teachers rarely use experiential learning strategy in the curriculum implementation.

The third objective of this study sought to analyze the relevance of Kant's experimental learning method on implementation of curriculum in secondary schools in Meru South Sub County. The findings of the study revealed that use of Kant's experimental method enable students understanding and retention of the content, which in turn aids developing students' acquisition of scientific knowledge and skills. This was as indicated by a large proportion of students and teachers who supports that use of Kant's experimental method in the process of curriculum implementation facilitates student's acquisition of knowledge and skills. However, based on the findings of the study students strongly supported Kant's experimental more than the teachers. This disparity could also be attributed to fact that research involved teachers in all the academic departments, some of which rarely or at all do not adopt experimentation method in the process of teaching and learning.

### **5.3 Conclusions**

From the findings of the study, the conclusions were as follows:

- i) Students and teachers find teaching and learning through Kant's probing method relevant in enhancing learners understanding of curriculum contents as well as critical thinking skills. However, a larger percentage of students over the teachers strongly endorse Kant's probing method in the process of teaching and learning. This is an indication that, secondary school students would prefer that teachers use this method in the process of curriculum implementation.
- ii) Students in Meru South Sub County indicated stronger support of use of Kant's experiential learning method in the process of curriculum implementation. This was as indicated by the higher overall mean of the students over that of the teachers who strongly support that use of Kant's experiential method facilitates student's understanding, acquisition knowledge and skills.
- iii) Teachers and students in Meru South Sub County advocate the use of Kant's experimental method on curriculum implementation. This was revealed by a large percentage of students and teachers who supports that the use of Kant's experimental method enables students understanding, retention of content, which in turn assist in developing students' acquisition of scientific knowledge and skills. However, students' support of this method was higher compared to that of teachers as indicated by a higher overall mean percentage of students

who strongly advocate use of Kant's experimental method in curriculum implementation.

#### **5.4 Recommendations**

Based on the findings and conclusions thereof, the following recommendations were made:

- i. There is need to sensitize teachers on the benefits of integrating Kant's probing method and Kant's experiential method in the process of curriculum implementation through in-service training. The Ministry of Education through in-service courses for serving and aspiring teachers can facilitate this.
- ii. To promote the use of Kant's experiential method in teaching and learning, the study recommends that quality assurance and standards officers (QASOs) and heads of institutions should monitor and ensure teachers use variety of teaching aids in teaching. This will promote the use of Kant's experiential method in the process of curriculum implementation. In schools where teaching aids may be lacking, teachers should be trained on improvisation of instructional resources.
- iii. To promote the use of Kant's experimental method schools should put up adequately equipped laboratories to enhance practical work by learners. This could be done by sourcing funds from the Ministry of Education and other funding organizations.
- iv. From the findings of the study it was established that majority of teachers and students endorsed Kant's experimental method as relevant approach in curriculum implementation. Therefore, there is need for policy makers to allocate more funds to activities which aim at improving experimentation method in secondary school.

#### **5.5 Suggestions for Further Research**

The researcher makes the following recommendations for further research:

- i. A similar study should be conducted to analyze the relevance of Kant's philosophy of transcendentalism on implementation of curriculum in primary schools.

- ii. There is need to carry out study on challenge of implementation of Kant's philosophy of transcendentalism on teaching and learning in secondary schools.

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## APPENDIX I

### STUDENTS QUESTIONNAIRE (S.Q)

This questionnaire is designed for the purpose of investigating the relevance of Kant transcendentalism philosophy on implementation of curriculum in secondary schools. You are not supposed to write your name on the questionnaire. Thank you for your contribution.

#### SECTION A

##### Background Information

Please use a tick (√) where appropriate in the spaces provided. Ensure you only tick once for any of the options in the various parts you are requested to respond to.

1. Indicate your age in years

Between 13-15      (   )

Between 16-18      (   )

Between 19-21      (   )

Above 21            (   )

2. Gender

Male   (   )

Female   (   )

## SECTION B

### Relevance of Kant probing method on implementation of curriculum

Indicate extent to which you agree or disagree with the statements below using the scale provided. Strongly Agree (SA), Agree (A), Undecided (U) and Disagree (D).

Please tick (√) as appropriate.

**NB: Probing questions are series of questions, which require students to go beyond the first response. Subsequent teacher questions are formed based on the students' response.**

Measurement Scale		SA	A	U	D	SD
3.	I find learning through the use of probing questions enjoyable					
4.	I hate lessons where teacher frequently uses probing questions					
5.	Learning through probing questions has improved my reasoning skills					
6.	I find learning through probing questions very boring					
7.	Learning through probing questions helps me to understand what I learn easily					
8.	Learning through probing questions promotes my ability to socialize with others					
9.	Learning through probing questions has improved my problem solving skills					
10.	Generally I like learning through probing questions					
11.	Learning through probing questions has enhanced my development of critical thinking skills					
12.	Learning through probing questions enables me to acquire adequate knowledge for further education and training					
13.	I easily remember concepts that I learn through probing questions					

## SECTION C

### Relevance of Experiential Learning on Implementation of Curriculum

Indicate extent to which you agree or disagree with the statements below using the scale provided. Strongly Agree (SA), Agree (A), Undecided (U) and Disagree (D).

Please tick (√) as appropriate.

Measurement Scale		SA	A	U	D	SD
14.	The use of real objects in learning enhances my understanding of the ideas that I learn					
15.	I find learning through use of real objects enjoyable					
16.	I look forward to lessons where teachers use real objects in teaching					
17.	I perform better in subjects that I learn through the use of real objects					
18.	Learning through the use of real objects assists me to gain practical skills					
19.	I find it easy to understand concepts that I learn through the use of real objects					
20.	I wouldn't mind if a teacher who uses real objects exceeds the normal lesson time					
21.	I find knowledge gained from learning by use of real objects applicable in my everyday life					
22.	I am able to identify what am best in when I learn through the use of real objects					
23.	The use of real objects in learning enhances my retention of the ideas that I learn					



## SECTION D

### Relevance of Experiments on Implementation of Curriculum

Indicate extent to which you agree or disagree with the statements below using the scale provided. Strongly Agree (SA), Agree (A), Undecided (U) and Disagree (D).

Please tick (√) as appropriate.

Measurement Scale		SA	A	U	D	SD
24.	I enjoy learning through experiments					
25.	I like to spend more time in lessons where learning is through experiments					
26.	Learning through experiments enables me to acquire practical skills					
27.	Learning through experiments enables me to acquire adequate knowledge for further education and training					
28.	Learning through experiments enables me to develop thinking skills for solving problems in any situation					
29.	I often understand ideas that I learn through experiments					
30.	I am able to acquire practical skills when I learn through experiments					
31.	I usually recall ideas that I learn through experiments					
32.	I find scientific skills that I gain through experiments relevant in my day to day life					
33.	Learning through experiments enables me to gain technical skills					
34.	Learning through experiments enables me to acquire scientific knowledge					

**APPENDIX II**  
**TEACHERS QUESTIONNAIRE (T.Q)**

This questionnaire is designed for the purpose of investigating the relevance of Kant transcendentalism philosophy on implementation of curriculum in secondary schools. You are not supposed to write your name on the questionnaire. Thank you for your contribution.

**SECTION A**

**Background Information**

Please use a tick (√) where appropriate in the spaces provided. Ensure you only tick once for any of the options in the various parts you are requested to respond to.

1. Indicate your age in years  
Between 20-30 ( )  
Between 30-40 ( )  
Between 40-50 ( )  
Between 50-60 ( )
  
2. Gender: Male [ ]  
Female [ ]
  
3. Indicate your teaching experience  
Less than 5 years [ ]  
5 – 10 years [ ]  
Over 10 years [ ]
  
4. Indicate your department  
Sciences [ ]  
Mathematics [ ]  
Humanities [ ]  
Technical [ ]  
Languages [ ]

## SECTION B

### Relevance of Kant probing method on implementation of curriculum

Indicate extent to which you agree or disagree with the statements below using the scale provided. Strongly Agree (SA), Agree (A), Undecided (U) and Disagree (D).

Please tick (√) as appropriate.

**NB: Probing questions are series of questions, which require students to go beyond the first response. Subsequent teacher questions are formed based on the students' response.**

Measurement Scale		SA	A	U	D	SD
5.	The use of probing questions in teaching makes students enjoy learning					
6.	Students hate lessons where teacher frequently uses probing questions					
7.	Learning through probing questions improves students reasoning skills					
8.	Students find learning through probing questions boring					
9.	Students easily understand concepts that they learn through the use of probing questions					
10.	Learning through probing questions promotes students ability to socialize with others					
11.	Learning through probing questions improves students problem solving skills					
12.	Generally students like learning through probing questions					
13.	Learning through probing questions enables students to develop critical thinking skills					
14.	Learning through probing questions enables students to acquire adequate knowledge for further education and training					
15.	Students easily recall concepts that they learn through the use of probing questions					

## SECTION C

### Relevance of Experiential Learning on Implementation of Curriculum

Indicate extent to which you agree or disagree with the statements below using the scale provided. Strongly Agree (SA), Agree (A), Undecided (U) and Disagree (D).

Please tick (√) as appropriate.

Measurement Scale		SA	A	U	D	SD
16.	The use of real objects in learning enhances students understanding of ideas that they learn					
17.	I find students enjoying learning through the use of real objects					
18.	Students often look forward to lessons where teachers use real objects in teaching					
19.	Students perform better in subjects that they learn through the use of real objects					
20.	Teaching through the use of real objects assists students in gaining practical skills					
21.	Students easily understand concepts taught through the use of real objects					
22.	Students don't mind if a teacher who uses real objects in teaching exceeds the normal lesson time					
23.	Students find knowledge gained from learning by use of real objects applicable in their everyday life					
24.	Students are able to identify what they are best in when they learn through the use of real objects					
25.	The use of real objects in teaching enhances student's retention of the ideas that they learn					

## SECTION D

### Relevance of Experiments on Implementation of Curriculum

Indicate extent to which you agree or disagree with the statements below using the scale provided. Strongly Agree (SA), Agree (A), Undecided (U) and Disagree (D).

Please tick (√) as appropriate.

Measurement Scale		SA	A	U	D	SD
26.	I find students enjoying learning through experiments					
27.	Students like to spend more time in lessons where learning is through experiments					
28.	Learning through experiments enables students to acquire practical skills					
29.	Learning through experiments enables students to acquire adequate knowledge for further education and training					
30.	Learning through experiments enables students to develop thinking skills for solving problems in any situation					
31.	Students often understand ideas which they learn through experiments					
32.	Students are able to acquire practical skills when they learn through experiments					
33.	Students usually recall ideas that they learn through experiments					
34.	Students find scientific skills that they gain through experiment relevant in their day to day life					
35.	Learning through experiments enables students to gain technical skills					
36.	Learning through experiments enables students to acquire scientific knowledge					

### APPENDIX III

#### TABLE OF DETERMINING SAMPLE SIZE


The table for determining the size of randomly chosen sample for a given population of N cases such that the sample proportion is within  $\pm 0.05$  of the population within a 95% confidence interval


N	S	N	S	N	S
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	241	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377

Sample sizes for different population (Kathuri & Pals, 1993)

**APPENDIX IV**  
**RESEARCH PERMIT**

**THIS IS TO CERTIFY THAT:** Permit No : **NACOSTI/P/16/13184/12911**  
**MR. JOHN KARURI MBAKA** Date Of Issue : **26th January, 2017**  
**of CHUKA UNIVERSITY, 0-60400** Fee Recieved : **Ksh 1000**  
**chuka, has been permitted to conduct**  
**research in Tharaka-Nithi County**  
**on the topic: CRITICAL ANALYSIS ON**  
**THE RELEVANCE OF IMMANUEL KANT'S**  
**PHILOSOPHY OF TRANSCENDENTALISM**  
**IN EFFECTIVE IMPLEMENTATION OF**  
**CURRICULUM IN SECONDARY SCHOOLS**  
**IN MERU-SOUTH SUB-COUNTY, KENYA.**  
**for the period ending:**  
**5th December, 2017.**

  
**Applicant's Signature**

  
  
**Director General**  
**National Commission for Science, Technology & Innovation**

**APPENDIX V**  
**RESEARCH AUTHORISATION**



**NATIONAL COMMISSION FOR SCIENCE,  
TECHNOLOGY AND INNOVATION**

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NAIROBI-KENYA

Ref. No.

NACOSTI/P/16/13184/12911

Date:

20<sup>th</sup> January, 2017

John Karauri Mbaka  
Chuka University  
P.O. Box 109-60400  
**CHUKA.**

**RE: RESEARCH AUTHORIZATION**

Following your application for authority to carry out research on "*Critical analysis on the relevance of Immanuel Kant's Philosophy of Transcendentalism in effective implementation of curriculum in secondary schools in Meru-South Sub-County, Kenya,*" I am pleased to inform you that you have been authorized to undertake research in **Tharaka-Nithi County** for the period ending **5<sup>th</sup> December, 2017.**

You are advised to report to the **County Commissioner and the County Director of Education, Tharaka-Nithi County** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

  
BONIFACE WANYAMA  
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner  
Tharaka-Nithi County.

The County Director of Education  
Tharaka-Nithi County.

National Commission for Science, Technology and Innovation is ISO 9001:2008 Certified