

**CREATIVE THINKING SKILLS POTENTIAL IN ZAMBIA'S SECONDARY
SCHOOLS OF LUSAKA DISTRICT: A STUDY OF GRADE 12 PRIVATE AND PUBLIC
SCHOOL LEARNERS.**

By

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**A Dissertation Submitted to the University of Zambia in Partial Fulfilment of the
Requirements for the Award of the Degree of Masters of Education in Educational
Psychology**

The University of Zambia

Lusaka

2021

DECLARATION

I **Venon Kabengo** do here by declare that this dissertation represents my own work, and that the works of others have been appropriately acknowledged in accordance with the rules stipulated, and that it has never been previously submitted for the award of any academic paper at the University of Zambia or any other university.

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CERTIFICATE OF APPROVAL

This dissertation of is hereby approved as fulfilling the requirements for the degree of Master of Education in Educational Psychology by the University of Zambia.

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DEDICATION

To my mother, whose efforts in sending me to school from the early years of my life, has taught me the value of education and intellectual activities, and above all to the love and the exultation of knowledge.

ABSTRACT

The national education curriculum of Zambia's secondary schools, which follows an Outcome-Based approach to education, has prioritised, among other desired competencies, the development of creative thinking skills in every learner, as the goal of the learning process. This study aimed at reaching an understanding of the extent to which the education process in secondary schools of Lusaka district is supporting the development of creative thinking skills in learners.

In order to assess creative thinking skills of secondary school learners, this study utilised a comparative study design under the quantitative approach. Data was collected from a sample of 180 students from six private and public secondary schools within Lusaka district, using the Torrance Test of Creative Thinking (TTCT) figural form-A.

The findings of this study have revealed that, grade 12 secondary school learners, in both public and private schools, had lower levels of creative thinking skills. Further, school type was found to matter in the creative thinking potential of the learner; as private school learners displayed higher levels of creative thinking skills than did public school learners. This showed that even though secondary school students learn under the same national curriculum, their display of creative thinking skills depends on the kind of immediate environment they are exposed to during their teaching-learning process. However, the study found that gender was not a significant factor in creative thinking potential of learners in that boys and girls revealed about the same levels of creativity.

Based on the findings, this study recommends that the Ministry of General Education (MoGE) through the Curriculum Development Centre (CDC) explore methods that will enhance the learning process so that it can support the nurturing and development of creative thinking skills of the learning individual. In addition, the study recommends that further studies be conducted in order to find out what is making private school learners display better levels of creative thinking skills than those of public schools.

ACKNOWLEDGMENTS

I acknowledge and extend my gratitude to all those who contributed immensely towards the completion of my study program.

Firstly, I gratefully acknowledge my sponsors the Order Friars Minor Capuchin; Custody of St. Francis, Zambia, for the financial assistance throughout my study program. It is from their generosity that allowed me to successfully undertake and complete my studies.

I also remain indebted to my supervisor Dr. E. Munsaka for his invaluable assistance, insights and constructive criticism without which this study would have not been a reality.

Last but not the least, I would also like to acknowledge all the schools that allowed their students to respond who my research needs. My gratitude goes as well to my academic colleagues for their love, good advice, and encouragement throughout my academic endeavours.

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LIST OF ACRONYMS

ZECF	Zambia Education Curriculum Framework
OBE	Outcome Based Education
MoESVTEE	Ministry of Education Science Vocational Training and Early-childhood Education
SABER	Systems Approach for Better Education Results
ZPD	Zone of Proximal Development
TTCT	Torrance Test of Creative Thinking
SOI	Structure of Intellect
DT	Divergent Thinking

CHAPTER ONE: INTRODUCTION

1.0 Overview

This chapter provides the study with a background of the problem of creativity in the education system of Zambia. It gives an overview of the problem that the study has focused on, as well as the aim and the main objectives with the hypotheses the study is testing, and the significance of the study is laid down. This chapter has also provided the theoretical framework that guided this study. The chapter has also presented the limitations that the study faced. In addition, the delimitation of the study as well as definition of terminologies used in the study have also been presented.

1.1 Background of the Study

According to Ozturk (2001) school is described as a social institution that is charged with the role of transmitting knowledge and skills needed for the development of a community. While this transmission of knowledge and skills happen through learning process, the national curriculum framework of Zambia has described learning as a tool that is supposed to be used for the holistic development of the society (ZECF, 2013). Additionally, as learning in modern society takes place in formalized educational environment which are schools. Education has been identified as an economic enterprise which has to be subjected to rational economic values, and consequently treated as capital, which is responsible for the development of knowledgeable and skilled members of the community who in turn are to drive the developmental agenda of the community (ZECF, 2013).

Moreover, as with the 2013 national curriculum of Zambia, every individual learner who attends secondary school education under this curriculum, is expected to be able to apply the acquired knowledge and skills in their everyday life experiences (ZECF, 2013). With this curriculum, it is safe then to argue that the aim of the education process in Zambia is to produce self-motivated, confident, and productive individuals who are endowed with not only knowledge but also with skills that will enable them succeed in both school and in everyday life experiences. Every individual who goes under this education system is further, expected to gain not only knowledge of the subjects learned, but also acquire skills (competencies) that will enable them function

effectively and successfully in any given society that they may be found. Additionally, among many other skills that are to be expected and looked for in the eventual graduates, include creative thinking (ZECF, 2013).

Creative thinking skills are highly valued in today's fast changing society where individuals are expected to constantly adapt, and cope with the rapid and ever changing society. They are necessary skills and are an important component for innovative ideas to thrive in a society (Mumford, Mobley, Uhlman, Reiter-Palmon, & Doares, 1991), and their development is very much the aim of every education system that a society puts in place. Equally, according to the revised taxonomy of Bloom, creativity is identified as the highest form of thinking (Anderson & Krathwohl, 2001), making creative thinking skill an even more important cognitive skill to nature in individuals of a society that has set the goal of education as to development knowledgeable and skilled members who are to drive its developmental agenda. It is thus expected that, every school in the country, because of their role of transmitting knowledge in modern formal education, is providing the necessary requirements that are needed for the development of these highly desired skills in learners.

While Dewey (1988) and Robinson (2001, 2005) have argued that schools, depending on the practices they adopt in the process of implementing the curriculum, may either promote or hinder the development of creative thinking skills of learners. The promotion or hindering of the development of creative thinking skills of learners in schools will depend on how the learning process is conducted and what teachers are teaching for. This is because learning is a function that maps experience (skills) onto behavior (Houwer, Holmes, & Moors, 2013). Hence, making the learning process in schools very important for the development of desired skills set by a curriculum. Further, as Zambia's Outcome-Based national education curriculum has the aim of producing skilled and self-motivated individuals (ZECF, 2013), the importance of the learning process which is a process that maps skills onto behavior cannot be over emphasized. Therefore, a well-structured learning process is very important if the goals of the curriculum are to be realized in the nation. This is because learning is also an aspect that supports the development of individuals' cognitive capabilities, cultures and in turn societies (Vygotsky, 1978). In addition, as Zambia's schools follow an Outcome-Based Education (OBE) curriculum, the learning process in these schools is thus believed to be one that is seeking to link education with the real world

experiences, while at the same time giving learners skills that will enable them practically apply the acquired knowledge into their everyday activities.

Several theorists have emphasized and argued that, since creativity was a universal construct that is present in every individual person, everyone can fulfil their creative potential if given opportunity to do so (Clopley, 2001; Kampylis, 2010; Moran, 2010; Smith, Ward, & Finke, 1995). Moreover, Nold (2017) and Barbour (2016) have argued that just like any other cognitive ability, creativity can be nurtured through an education process. Therefore, because creativity is a universal construct and can be nurtured, the education system and/or the curriculum of a society should see to it that it promotes and encourages the development of creative thinking skills of learners through the learning process that takes place in schools.

Furthermore, while we learn so as to acquire competencies (the ability to do something successfully and effectively). These competencies are aimed at equipping every individual learner with socially and culturally desired skills and expertise. Equally, these skills and expertise that we acquire enable us to perform tasks effectively so that there is advancement and the development of knowledge, and at the same time production of other important services that ease the living conditions in a community. Additionally, as learning is a process of mapping experience (experience in this case is understood as skill) on behavior, as earlier noted. Every learning environment, is therefore expected to create favorable conditions that will allow for the development and the nurturing of necessary skills, which are highly desired in the 21st century, for the development of both the individual and the society.

Besides, as Paulus and Nijstad (2003) have argued that the development of any society depends on creative individuals who have the capabilities of producing innovative ideas and products, which makes the delivery of everyday services more efficiently and easier. Equally, as creative thinking skills have also largely been attributed to the contribution of knowledge that has led to such developments, as the advances in technological breakthrough that have been made in areas such as communication, transport, medical discoveries and others. Creative thinking skills are among many other highly desired skills that Zambia's Outcome-Based national education curriculum has prioritized (ZECF, 2013). This is because the need for creative graduates in today's society is one aspect that cannot be over emphasized, as traditional specialized knowledge and work is becoming more and more automated and is easily out sourced (Cummings & Blatherwick,

2017). In addition, because creative individuals can also produce original and novel ideas that in turn may contribute immensely to the production of new products and services. Further, as Hamidi, Wennberg, and Berglund (2008) have also argued that creative thinking skills have been recognized as leading to entrepreneur ideas that not only change the way we do things but also help bring the desired development to the community. Additionally, as Harris (2014) has re-emphasised that creativity has the ability to morph and provide change that meets the demands of a culture, as it brings about innovation, which is a core skill and disposition of the 21st century learners and workers. This cognitive skill is one skill that is increasingly becoming inseparable from capital, as it can drive change and innovation desired by communities. Every education system need to see to it then, that creative thinking skills are developed and nurtured in every learner in the society.

While the importance and value of creativity is well documented, as seen above, one could then argue that, it is out of this urgency and understanding of the benefits that creative thinking skills have on societies, that the national curriculum development framework of Zambia did put creativity and innovation on the top of its vision of skills that the learner should be imparted with in every education and learning process (ZECF, 2013). Besides, this vision of having individuals that are creative, innovative and productive opens the list of the vision of the curriculum (ZECF, 2013). Critical, analytical, strategic and creative thinking, and innovation are among other competences that have to be looked for from the eventual graduate who has gone through this education system. Additionally, according to the then Ministry of Education, Science, Vocational Training and Early Education, (MoESVTEE, 2014), the development of creative and innovative capabilities has been put forward as an important aspect of the education process of every learner. This has been done so as to produce individuals that will be able to effectively apply the acquired knowledge, in their daily life experiences. The curriculum further reminds every educator that they use methods and strategies that will make the learner realize their creative and innovative potential (ZECF, 2013), so that they are able to apply, in their real life situations, the knowledge they will acquire throughout the learning process.

While the realization of what the curriculum envisions, that is, of having innovative and creative learners, depends on the kind of learning environment learners are exposed to. Equally, as the immediate environment has been found to be important in the development of individual's

cognitive skills (Ekvall & Ryhammar, 1999). Education providers and every teacher who interacts with learners at both school and classroom level, thus plays a key role in the realization of the goals of the curriculum. This is because the classroom as well as the school are the immediate environment the learning individuals are exposed to for a considerable amount of time in their learning processes. In addition, as the learning process of individuals happens in a classroom environment, where learners' attitudes, understanding, and belief systems are developed and nurtured by the education systems and settings of a society they belong to (Shankland, Franca, Genolini, Guelfi & Lonescu, 2009, 2010; Lillard & Else-Quest, 2006; Ogletree, 2000; Mellou, 1996). This immediate learning environment has to be tailored in such a manner that the development of desired skills is encouraged, if the individual is to become a member of the community who has the ability to think and act outside the usual or traditional ways, and have the capabilities to express originality with their ideas and thoughts (Tatiana, Sarah, & Birthe, 2017). Therefore, the classroom at every school has to create an enabling environment for learners to realize and develop their creative abilities, if the goal of linking education with real life experiences is to be realized.

When adopting the OBE approach to education, the developers of Zambia's national curriculum did note, with concern that teaching and learning process was not responding to the needs of the society. Furthermore, since this approach to education seeks to link education with real life experiences as it gives learners skills that will allow them to practically apply their knowledge to everyday activities (ZECF, 2013). Equally, as Muleya (2015) did note that this approach seeks to link education with the individual's real life experiences as it aims at imparting skills that will allow them to apply their acquired knowledge. In this study, the researcher has asked the question of whether secondary school learners through an Outcome-Based national education curriculum are acquiring the much needed creative thinking skills, as well as whether the differences in the immediate learning environments would matter in realizing the goals set by the curriculum.

1.2 Statement of the Problem

Creativity, which is one of the higher order cognitive abilities, is one skill that societies must nurture in every learning individual, if they are to attain meaningful development through innovation in fields such as science and technology. Equally, creativity plays an important role in driving entrepreneurial development (Hamidi et. al., 2008). For this reason, the Zambia national

education curriculum has designated creativity as one of the key competencies to be achieved in the teaching-learning processes at various levels in the education system (MoESVTEE, 2014). However, much as the curriculum has identified creative thinking as a desired competency to be looked for in the eventual graduates, since the implementation of the said national curriculum, there is little to no information that shows whether this curriculum is achieving its goal of producing creative individuals. In order for education providers to make informed decisions regarding the development creative thinking skills of learners in secondary schools, a study of this nature was required. Therefore, the current study aimed to assess creative thinking skills of learners in selected public and private secondary schools, in order to provide much needed information on status of creative thinking skills development in secondary schools.

1.3 Aim of the Study

The study aimed at reaching an understanding of the extent to which secondary school learners in Lusaka district are able to think creatively. In addition, the study sought to establish whether gender differences, as well as whether attending private or public school in Lusaka district is a factor in student's creative thinking potential.

1.4 Objectives

The following were the objectives of the study:

1. To determine the extent to which learners in secondary schools within Lusaka district are able to think creatively
2. To find out if there exists any differences in the levels of creativity between learners in private and public secondary schools of Lusaka district.
3. To find out if there exists any differences between the creativity potential of secondary school learners in relation with their gender, in a Zambian context.

1.5 Research Hypotheses

H₀ Zambia's curriculum education system supports the development of creativity, thus learners will display higher levels of creativity.

H₀ Learners who go through the same curriculum system and are of the same social cultural environment will display similar characteristics of creative thinking skills, and will have no differences in their creative potential.

H₀ Gender is a factor in the creative potential of an individual, thus individuals will display differences in their creative thinking skills depending on their gender.

1.6 Theoretical Framework

This study is informed by a combination of two similar theories, both of which have placed emphasis on the role that cultural environments play in the development process of an individual. These are Vygotsky's socio-cultural theory and Bronfenbrenner's ecological theory. While Vygotsky (1962) has argued that, an individual's behavior is merged and rooted in the social relations they have with their environment. Bronfenbrenner (1979) argued that, human development is affected by the ever changing properties of the immediate environmental settings in which they live. Making the individual's environment an important aspect in both cognitive development and the process of acquiring knowledge as well as other developmental skills. In addition, while knowledge acquisition arises as a result of social conditioning (Bandura, 1986), it is through the interactions that every learning individual has with their environment (Munsaka, 2011) and with the semiotics (e.g. ideologies, educational and knowledge systems, beliefs and values) of a given cultural environment that cognitive development takes place. Thus the social cultural environment plays an important role in the development of individual's cognitive skills.

1.6.1 Vygotsky's Socio-cultural Theory and His Argument on Creativity

The role of the social-cultural environment is at the center of Vygotsky's theory, unlike Piaget (Holzman, 2016; Yasnitsy & Van-der-Veer, 2016), Vygotsky does not specify the end point of his cognitive development theory, due to the fact that each cultural context does value different aspects of cognition (Santrock, 2018). The Vygotskian theory lays down three central tenets that are central to the learning and development processes of individual persons. These include; the social sources of individual development, semiotics, and genetic (developmental) analysis (John-Steiner & Mahn, 1996).

In reference to the social sources of development, the emphasis is on the dependence the developing individual has on their caregivers of whom they rely on, due to the vast experiences they have of the tenets of their cultural systems. The more experienced significant other is a very important individual in the developmental process of the novice, because they act as a means of scaffolding. Vygotsky (1962) also talks of the zone of proximal development (ZPD), which is where development of the novice takes shape. The ZPD is an important aspect in the developmental process of the individual, because through the help, which is scaffolding by a more skilled individual, the learner is gradually guided through the acquisition of new knowledge and skills (Santrock, 2018). Through scaffolding children gradually become acquainted with not only the knowledge systems but also with the values of the society they belong to. Thus, as Lave and Wenger (1991) have argued, over time children will increasingly become responsible for their own learning and participation in the advancement of knowledge, all they need is proper scaffolding from the more skilled significant other.

While key to the aspect of knowledge construction, is the tenet of semiotic mediation (which includes psychological tools). Wertsch (1991) did observe that human actions on both social and individual planes are mediated by socially constructed tool kits. These provide the developing individual person with semiotic means which include: language, counting systems, works of art, value systems, writings, signs and symbols etc. (Vygotsky, 1981). Equally, as these semiotics are what aids the individual in the development of a psychological tool kit which cannot develop in isolation, but depend on the sociocultural evolution. Furthermore, as this development does not happen in isolation, but through the evolution that takes place over time, through the passing on of knowledge by the significant other to novices, and the development of cultures. Semiotic mediation of the individual's immediate environment is therefore very important in the process of development of an individual's cognitive abilities.

According to John-Steiner and Mahn (1996), the development of an individual takes place in a socially and culturally shaped context where historical conditions are constantly changing and fussing. This constantly changing and fussing of cultural conditions leads to the formation and development of new and modified contexts and opportunities for learning. However, this phenomenon leads to the absence of universal schemas that can adequately represent the dynamic relations between the external and internal aspects of individual development (Cole, John-Steiner,

Scribner, & Souberman, 1978). Within this tenet of, developmental (genetic analysis), Vygotsky's framework is thus provided with an understanding of the kind of complex interrelationship that is there between external devices, psychological tools, the learning individual, and the social world which is constantly changing. Therefore, as the individual matures over time, while at the same time interacting with external devices of their environment, through the aid of significant others their psychological tool kit is further developed. Further leading to the development of desired cognitive abilities that are highly valued in a respective social community one finds themselves.

According to Vygotsky (1999), creativity is understood as a social and an individual process that takes place in a profoundly social manner throughout the entire developmental process of the individual person. Just like every other cognitive aspect of an individual person is influenced by social processes and cultural settings of an individual's given environment. Equally, while an individual's holistic development is a social process that is mediated by signs and tools that form and integrates with the psychological functional systems, through social interactions that change overtime. Creativity is also a process that takes place through the appropriation of these cultural tools through interactions with a given environment. It develops from childhood through to adulthood, and it starts with pretend play, as children learn to create by manipulating symbols and signs through object substitution (Vygotsky, 1999). Further, as Vygotsky (1999) argued that during pretend play, children are able to tease out relationships, try out and practice different roles while at the same time exercise their growing capabilities. Smolucha and Smolucha (1992) did observe that pretend play starts during social interactions with others, as the significant others/adults first show a child how objects can be substituted, for example how a banana can be used as a phone. Children will then be able to do the same, in a creative way as they play alone or with their peers. Russ (1993), further argued that this stage is important in the development of a person's creative thinking potential because of the many cognitive and effective processes involved, which include language development as well as communication skills.

Vygotsky (1998) has also differentiated two types of fantasy; one being subjective which is emotional, oriented towards self-fulfillment of the private inner life, and the other is objective, which is used to understand reality outside of oneself. This objective fantasy is what will later develop into artistic and scientific creativity, in adulthood. While children begin to develop speech and good memory, and as they begin to see new relationships between visual and verbal, concrete

and abstract thought, their fantasy develops. This is because, speech frees the child from the immediate impressions of objects and gives him/her the power of representing and thinking about objects that are not seen (Vygotsky, 1987). It is at this stage where imagination, which will lead to more productive interactions between a person and their world, becomes possible. Further, as imagination, through the separation of fantasy from concrete into concept abstraction, meets the ability to think logically as well as in concepts (Vygotsky, 1998). Creative thinking of abstract ideas begins to take shape, since at this stage speech that could be used for idea association, is now well developed. Creative imagination, which results from the ability to use both imagination and logical thinking at the same time, emerges, thus enabling the individual to create (put to life their imaginations). Additionally, when creative imagination in adulthood conjoins with the ability to think in concepts, the possibility of both artistic and scientific creativity becomes even more real.

Equally, Vygotsky (1997) has also argued that adolescence is the stage when individuals grow into culture, as social life requires them to conform their behavior to acceptable cultural norms. At the same time, it is during this stage when individuals tend to lose interest in creating. Adolescence stage becomes a very important time for the development of the underlying complex psychological systems on which creativity depends upon. This is because, it is the stage when individuals develop their inner self, subjective identity and interests on which intrinsic motivation and possible work in based. Therefore, immediate environmental influence becomes very important in the development of creative thinking skills of the individual person. This is because the more positively people experience creative activities, the more creativity becomes part of them, as creativity results in the proliferation of culture and it is intimately linked to cultural environment in which the individual is embedded (Lubart, 1990; Varsakelis, 2001; Chui & Kwan, 2010; Wang, 2011).

1.6.2 Bronfenbrenner's Ecological Theory

According to Bronfenbrenner (1979), human development is affected by the ever changing properties of the immediate settings in which they live. This includes the relations that exist between these settings, and by the wider cultural contexts in which the immediate settings are embedded. While Hayes, O'Toole and Halpenny (2017) have argued that, for Bronfenbrenner human development should be located within environmental systems as it happens from the interactions that take place between the individual and their environment. The development of an

individual person is shaped by environmental systems that they are directly linked to at the closest interpersonal interactions level, and indirectly at a more broad-based cultural influence, beyond the immediate reach of the individual person, but do exert their influence (Santrock, 2018). Bronfenbrenner categorizes these environmental systems into five distinct systems, which include: Macro-system, Exo-system, Meso-system, Micro-system, and Chrono-system.

While the Micro-system refers to the closest and most familiar environments where the individual spends a lot of their time in, which include family, school, and peers. Equally, as this system describe the most direct influence an individual gets from society in their development process, and as this is where the individual can as well make their contribution to the development of the wider culture directly. The Mesosystem system, on the other hand hinges between the micro-systems, in that each individual person, who is in a specific micro-system has family and school experiences of their own (Santrock, 2018), thus bringing these experiences together. These first two systems describe the cultural systems that are within the immediate reach of each individual, and is directly influenced by them.

The other systems on the other hand, are those that are at a distance, but do exert significant effect on the individual person's developmental process. They include; the Exo-system which describes the experiences which happen in other settings that for example, children do not have any immediate linkage and influence to. These are systems which include the central education board, and the curriculum development authority (Shiraev & Levy, 2010), do exert significant effect on individuals' developmental process. However, since the central education board formulates education policies, the implementation process of these policies will be what links learners with the education board. In addition, the Macro-system represents the broadest cultural system in which both the developing individual/student, as well as the teacher, and curriculum developers live (Shiraev & Levy, 2010). This system captures the central pattern and characteristics of a given broader culture or subculture, 'with particular reference to the belief systems, bodies of knowledge, material resources, customs, lifestyles, opportunity structures, hazards, and life course options that are embedded in each of these broader systems' (Bronfenbrenner, 1994, p. 40).

The Chrono-system however, is the historical contexts where events that have influenced and shaped the present day cultural system belong. This system is well understood when the individual

person is defined through Heidegger's (1996) argument of understanding the human being as a *Dasein* who is placed within an effective-history, a cultural context where the past and present horizons are constantly fusing and creating meaning of what reality is (Gadamer, 1975). The different knowledge systems, scientific discoveries and technological advancements of different generations, provide different possibilities to individuals of different generations to what can and cannot be attained at the time. Therefore, an individual's positioning in historical context has its own effects on how they will develop both on the cognitive and social levels.

1.6.3 A Synthesis of the Two Theories

While an individual's social and cognitive development happen through an interactive process with their social environment where they find themselves, culture takes centre stage in both the sociocultural theory and the ecological theory. Equally, as Vygotsky's sociocultural theory underlines the importance that cultural systems play in the developmental process of an individual person, through scaffolding, in a ZPD, by the help of a significant other. Bronfenbrenner's ecological theory however, shows the connections that exist between smaller cultural systems where the individual person spends most of their time, and where scaffolding takes place with wider cultural systems where policies such as the curriculum development process take place. Through a blend of these two theories, which stress on the importance that cultural and environmental influence has on the development of both social and cognitive abilities of an individual, it is thus hypothesized that the individual's immediate environments will shape and influence their creative thinking skills. This study has therefore conceptualized that an individual's creative thinking skills potential arise and is dependent on the kind of immediate environmental systems they belong to, as illustrated in Figure 1.1 above.

According to Glaveanu (2013), creativity is in a community's cultural system and is embedded in the wider culture, which is at the macro systems level where the semiotic (ideologies, educational and knowledge systems, beliefs and values, etc.) systems of the said culture are. While the individual person's social and cognitive development takes shape through scaffolding that happens in a ZPD, by the help of a significant other. Equally, as this individual interacts with not only a significant other but also with their peers. They are slowly introduced to both ideologies, values, and knowledge systems of a domain (subject) or cultural system they belong to. These interactions are to some extent guided and informed by ideologies and value systems set at a macro-systems

level by the community the person belongs to. The ideologies and values that guides and shapes this ZPD draw from the cultures' semiotics that are in this case the education curriculum that guides and provides material for the learning process to occur in a manner that is desired by that society.

Equally, as the process of developing the curriculum takes place at the exo-system level, where the learner has no direct reach. The learning environment then, is responsible in connecting learning individuals to the visions and goals of the curriculum developers. The goals that include the desired kind of learners they aim to produce for their society. Further, through interactions with the learning materials developed by the education system of the wider community, the learning individual is exposed to the aims and goals of the society. In addition, as the individual learner belongs to their own microsystem level, which is the immediate environment where formal learning takes place, in a specific school type they attend. Their learning environments differ, since their peers and teachers (significant others) have also other connections to the wider cultural systems in the meso-systems, which include; home environments and family setup. Thus making the school type which is the immediate learning environment an important aspect in the development of learner's cognitive skills, since the school environment and the learning process do differ depending on whether these schools are public or privately run (SABER, 2016).

1.7 Significance of the Study

Significance of the study is the section in a research that elaborates the relevance, implications, as well as the importance of the study being undertaken (Kasonde, 2013). In this regard, it is hoped that the findings of this study, have produced information that will bring to light the levels of creative thinking skills of learners in Zambia's secondary schools. Additionally, the findings would also show whether attending private or public school makes a difference in the development of the much needed and valued skill of creativity that the national curriculum puts forward as a desired competence that learners are expected to acquire. The findings of this study could also trigger further research in trying to understand creative thinking skills among learners in Zambia's education process with a view of improving academic competencies, performance, and for designing the learning process that will allow for the development of creativity and consequently lead to innovative skills in eventual graduates.

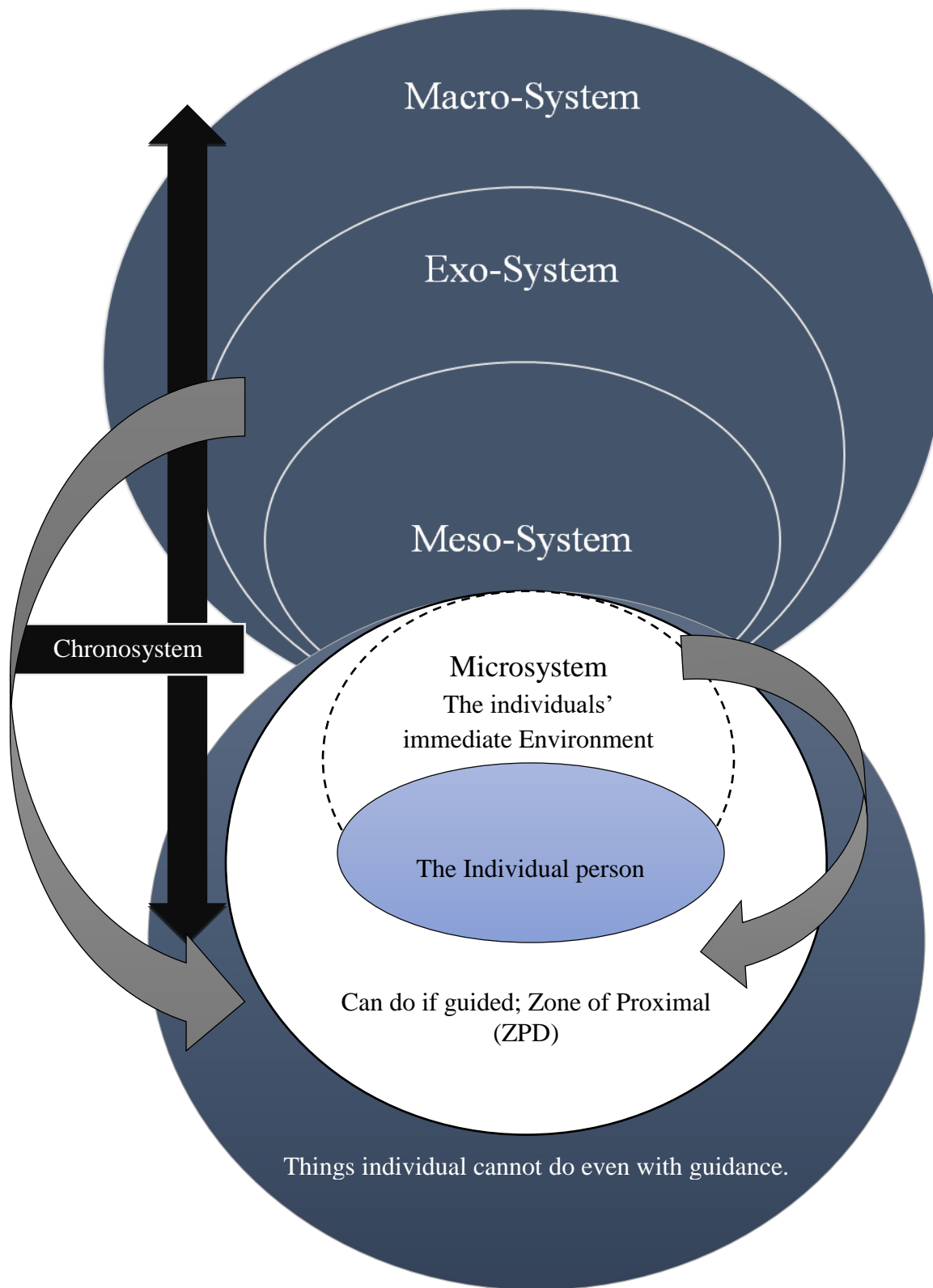


Figure 1.1: *A Synthesis of the Theoretical Framework.*

1.8 Delimitation

While the researcher was only able to conduct this study within the confines of Lusaka district, and in only 6 schools that offer secondary education. The results of this study may not be generalized because of other cultural and social economic aspects that may exist in other districts that were not covered in this study. Therefore, generalization of the findings from this study may be done only with caution.

1.9 Limitations

The study faced a number of challenges and restrictions. Firstly, the global pandemic COVID-19 that disrupted the normal flow of business throughout the country and the entire world. This resulted in the restriction that some schools had placed on close contact with students by visitors, leading to restriction on the period the researcher was allowed to interact with the participants. The COVID-19 restrictions contributed to the decision the researcher had to make of using only one version of the Torrance Test of Creative Thinking (TTCT), so as to minimize the contact time with the participants. The study was also conducted only 6 secondary schools within Lusaka district, therefore generalization of the findings from the study should be done with caution.

1.10 Definition of terms

Creativity - creativity involves the originality of work and the transformation of ideas and/or things into something novel, and the recreation as well as re-invention of an already existing product into something more useful.

Creative thinking - Creative thinking is an active cognitive process that has the potential of producing, through knowledge application new, useful, and valuable products that are either material or immaterial for the purposes of finding solutions to complex everyday encounters.

Competency - the ability to do something successfully and effectively.

1.11 Summary

This chapter has given a background on the importance of creativity and how Zambia's national education curriculum has put this skill among other competencies needed to be developed through

the education process of every learner. It has further highlighted on the problem that has led to this study, as well as elaborates the aim of the study, which is to investigate the extent to which secondary school education is supporting the development of creativity in learners, as well as to compare creative thinking skills of private and public secondary school learners. Additionally, the chapter has also discussed theories that have guided this study, which are Vygotsky's socio-cultural theory and Bronfenbrenner's ecological theory. The chapter further shows how significant this study is, as it aims at providing information that could bring to light the levels of creative thinking skills of learners in secondary schools of Lusaka district. Equally, the chapter has highlighted on the limitations and delimitation of this study, and also provides operational definitions of important concepts used in this study.

CHAPTER TWO: LITERATURE REVIEW

2.0 Overview

This chapter provides a review of literature on creativity, it gives highlights on major themes, and models of defining the concept of creativity. It also gives an overview of approaches that have been taken when doing research on creativity, and how these approaches have defined the construct. The chapter also highlights on themes that are common in the education sector in relation to creativity. It further highlights on education providers in Zambia.

2.1 Defining Creativity

The definition of creativity in literature is characterised by descriptions of outcomes of an action or process as being ‘novel’ (new, innovative, original, unusual, and unique) and of ‘value’ (useful, effectiveness). However, in order to determine the novelty and usefulness of the outcome, a context is required. This then brings to light another characteristic that plays a part in defining creativity that is ‘domain’ (field, environment, context, and culture), which as described by Csikszentmihalyi (1996), consists of symbolic rules and procedures embedded in a culture and/or knowledge systems of the field where the creative individual is working. Equally, as Sternberg and Lubart (1999) as well as Plucker, Beghetto, and Dow (2004) define creativity as a cognitive process, which leads to generation of something new and useful. They stay in line with Kaufman and Beghetto (2009) and Csikszentmihalyi (1996) who see the creator and environment as interactively influencing the creative processes and consequently its outcomes. This is because in their definitions of creativity, they argue that creativity is a process which involves an interaction with objects in the environment that are both tangible and intangible in seeking solutions to complex problems of our everyday life. Therefore, since both value and novelty need an environmental context, respective domains will decide what is creative in respect to the field where an individual belongs and has gained a knowledge base.

Creativity is also characterized with free-thinking as argued by Guilford (1950), who said that divergent thinking leads to creativity. Although this is not to say that creativity is synonymous with divergent thinking, rather it is because divergent thinking has often been found to lead to originality, and originality is a central feature of creative thinking. However, while, Corazza (2016)

has argued for a definition of creativity, that not only incorporates usefulness, but that it should also account for time and context dependent. Keller-Mathers and Murdock, (1999), in arguing for the importance of context, posit that for one to be creative they must first acquire knowledge that is advanced by a domain they belong to. Therefore, a good definition of creativity should encompass the overall phenomenon of creativity itself, and at the same time take into consideration potential originality and effectiveness of outcomes generated. Creative thinking is thus, an active cognitive process that has the potential of producing, through knowledge application, new, useful, and valuable products that are either material or immaterial for the purposes of finding solutions to complex everyday encounters.

2.2 Approaches to the Study of Creativity

The study of creativity over the years has taken many different approaches. While Glaveanu (2010) has argued that, these approaches have been guided by the way creativity was defined and understood. Earliest studies of creativity had their focus on studying individuals identified as geniuses. Moreover, as Plucker et al. (2004) did argue that these earlier studies understood the ability to be creative as belonging to only a few gifted and talented individuals who could create *ex-nihilo* (out of nothing). To be creative, one had to be enlightened by some supernatural being or possess special genetic mark-up as was understood as responsible for creative achievements in the later stages of this approach. Additionally, this earlier approach identified creativity only at the level of Pro-C and Big-C or groundbreaking innovations (Kaufman & Beghetto, 2009). Therefore, to qualify as creative, an outcome had to be that which brings technological and cultural shifts in the communities where the creative individual belongs and consequently to the world.

The period after the end of the Second World War, saw another shift to the understanding of creativity, which was necessitated by a technology race that emerged consequentially from the war. During this period, the understanding was that every individual has the potential of thinking creatively and could produce innovative ideas, and focus was to identify and nature those with seemingly higher levels of creative potential. Researchers (e.g. Guilford, 1950; Torrance 1966), had their focus on developing tests that could measure and identify individuals with higher levels of creative thinking. This period led also to the development of divergent thinking tests used to measure individual persons' creative thinking abilities, since the understanding was that divergent

thinking caused creativity (Runco, Acar, & Miller, 2010). Further, as the period was focused on understanding psychometric properties of creativity, which Guilford and Torrance spearheaded, in their quest to understand creativity in the context of a classroom (Guilford 1967; Torrance 1966). Defining what it meant by creativity had to be in reference to the abilities of creative people that were measurable (Sternberg, & Lubart, 1999). However, even though every person was seen as having the potential of being creative, studies were conducted mostly on a few individuals who were identified as gifted. Therefore, the aim during this period was to identify individuals with higher potentials of creative thinking skills and nurture them so that they can advance their creative thinking skills for the purposes of maximising the potential of developing innovative and technologically advanced products.

Yukiko, Tan, and Mayuni (2019) have observed that contemporary approaches to the study of creativity, suggests that researchers go beyond boundaries of disciplines, cultures, pedagogies, and study methods. This is because creativity is not a preserve of a few, and that it is an important component for entrepreneur and technological development of every society. Equally, Plucker et al. (2004) argues that creativity is a cognitive process that all people can engage in, and that everyone is capable of generating new and useful ideas during their everyday operations. With this understanding, there is now a shift from only designing how to measure and identify creativity of the several few, to exploring how to nurture and develop every individuals' creative thinking potential and ability. The main emphasis is now placed on the diversity that exists among individuals, communities, and different disciplines. Likewise, as Glaveanu (2013) has argued that creativity is embedded in the cultural environment and the systems where the creative individual is operating from, or the domain, according to Csikszentimihalyi (1996), where the creator is working and exercising their cognitive capabilities from. Researchers such as Csikszentimihalyi (1996) and Kaufman and Beghetto (2009) proposes the systems model and 4-C model respectively, these models propose that there be an incorporation of all variables that influence individuals' cognitive development and ability when studying creativity. This is because creativity was now seen as resulting from an individual's cognitive processes, and that every person was capable of being creative.

While Amabile (1996) and Glaveanu (2010) have also observed that, the focus of studying creativity has largely been around and within individual persons, of which their attributes and

cognition received much attention and emphasis. Csikszentimihalyi (1996) however, argues that when studying creativity, the individual should not be isolated from his/her works and from their specific social and historical milieu where their actions are carried out. This is because the specific social setting of an individual does also affect his/her cognitive abilities. With this understanding of creativity, research now largely takes into consideration the dynamics of not only the individual person's potential and attributes but also their environmental contexts as well. Therefore, a social cultural perspective where creating involves collaboration between the creator and ideas that emerge from a cultural context which is alive to the said creator, is what now drives contemporary research in creativity. This is because; this collaboration happens through the use and interactions with semiotics (signs and symbols) of a social cultural environment that has shaped the individual's psychological tool-kits.

Moreover, as contemporary research on creativity moves further towards a social cultural dynamic approach (Amabile et al., 1996; John-Steiner, 1997; Csikszentimihalyi, 1999), as well as a participatory view that builds on the combination of sociocultural analysis, developmental psychology, and distributed cognition theory (Glaveanu, 2010, 2014; Hanson, 2015; Clapp, 2017). Research on individuals' creative thinking should take into consideration the influence that specific social environments have on the individual's cognitive development. This is because immediate environment heavily affects and shape the lived experiences of an individual. Equally, as Beghetto and Corazza (2019) argue that the social cultural approach should not only focus on the individual person, but also on what the environment offers to the individual person through semiotics that influence psychological tool-kits. When conducting research on creativity researchers should also look at how to elaborate and integrate both cognitive and social variables that may play a part in the creative thinking of an individual. This is because works that are identified as creative are never the result of individual actions alone, but are a product of shaping forces that include a set of social institutions or field, that selects from the variations of outcomes produced by individuals (Csikszentimihalyi, 1999). A more sociocultural approach is what now works well when studying creativity because it puts into consideration not only nature, but also the nurture aspects of individuals' cognitive development.

2.2.1 General vs Domain Specific Creativity

One of the dominant question that has been asked by researchers of creativity is whether creativity is specific to certain fields or whether creative individuals can be creative in multiple domains (Baer & Kaufman, 2005; Plucker, 2005). While advancing the argument that creativity just like expertise does not exist as a general skill and that it cannot be taught in a general manner, Weisberg (1999) suggests that because creativity requires adaptive expertise in a field, it is domain specific and should be studied as such. Equally, as Baer (2019) confirms the importance of studying creativity as a domain specific construct, in a study conducted with the objective of testing the generality of creativity. Creativity is domain specific, as Csikszentimihalyi (1996) in his systems model of creativity argues that the possibility of making creative contributions for the individual is better placed only within a specific domain. This is because, as the individual works through the knowledge system of their field, they acquire sufficient knowledge of the said field, giving them adaptive expertise that can then make them contribute effectively and creatively to their respective fields/domains.

However, even though individuals are creative in reference to a specific domain, as noted in the systems model, creativity is and can be multidisciplinary in that it can overlap across subjects and domains. Creativity is domain general, as Plucker and Beghetto (2004), in arguing for domain general observed that cognitive processes that lead to creative problem-solving are general in nature and creative individuals would merely apply them to specific knowledge bases of their choice. Moreover, Harris (2014) also argues that creativity is not only for the arts, but that individuals can be creative in all other domains where they will apply their knowledge and expertise. Additionally, Sawyer (2006) posits that creative thinking skill is a multidimensional skill of which any person in any field could possess. It can therefore, be said that the capabilities of individuals to be creative is a general aspect just like the capability to acquire knowledge is, and since we can only show competence in specific domains where we have mastery in, the same can be said to be true with creativity. Even though individuals can only demonstrate creativity in domains they are familiar with and have gained some level of adaptive expertise, it does not mean creativity is specific to selected fields. Nevertheless, it can rather happen in all other fields, where some level of cognitive efforts and application of knowledge is required.

2.2.2 Creative Cognition

This approach to creativity is rooted in cognitive psychology and cognitive science. Creative-Cognition proponents such as (Ward, Smith, & Finkel, 1999) have argued that every person has the potential to be creative; however, its realization need only appropriate means of scaffolding and favourable opportunities, from an environment that values creative thinking. Equally, while Hatano and Inagaki (1986) argued that creativity requires that one has adaptive expertise, which is the understanding of not only the how, but also the why something works the way it does. Ward (2006) and Ward and Kolomyts (2010) observed that creative ideas emerged from the application of ordinary fundamental cognitive processes to the existing knowledge structure that an individual has developed overtime. This shows therefore the importance of creating enabling environment and favourable opportunities that will provide the necessary conditions for nurturing the learning individual, for creative thinking development.

While different approaches to creativity focus on examining products in their quest to understand creativity (Hennessey, 1994), creative cognition approach aims at identifying specific cognitive processes and structuring that contribute to creative actions and products. Equally, this approach considers creativity as a product of several cognitive processes, each of which help in setting the stage for insight and discovery (Finkel et. al., 1992). Further, as creative-cognition is opposed to the approach that places too much emphasis on environmental influence to creative thinking, because they place too much attention on the outcome. This approach argues that, for one to understand creativity they equally need to pay attention on the cognitive processes that lead to these creative outcomes, which are the products. Likewise, with creative-cognition approach, there is movement away from divergent thinking approaches that rely on the constructs of fluency and flexibility in studying creativity. This is because approaches to creativity from a divergent thinking framework understand creativity based on outcomes, which are the products rather than the process. Creative cognition approach is therefore proposing that researchers look at the process rather than the product since the use of divergent thinking tests is too broad to provide precise description of what makes individuals creative. Thus, research on creativity should focus and put into consideration the processes that underlie creative accomplishments, rather than the outcomes of the process. This is because of value differences that exist in different domains, leading to

outcomes/products being evaluated differently and their usefulness may only be recognised by the domain where the individual belongs, making it only creative within that domain.

2.2.3 Dynamic Creativity

Recent research on creativity has seen the shift towards understanding of creativity as dynamic. With proponents such as Beghetto (2016), arguing for the identification and studying of creativity in the midst of social cultural systems. Conversely, Mullen (2019) in referring to the 4-C model of creativity that Kaufman and Beghetto (2009) advanced, and the systems model proposed by Csikszentimihalyi (1999), has argued for a ‘dynamic creativity that is educational and cultural in nature’ (p. 4). Moreover, while creativity is understood as a process that involves originality of work and the transformation of ideas and/or things into something novel, as well as the recreation and re-invention of an already existing product into something more useful (Mullen, 2019). Further, while the creative process has to answer to the needs of not only the creative individuals, but also find solutions to both everyday problems as well as complex problems of their community. Dynamic creativity proponents argue that creativity should be understood and approached dynamically; this is because of the aspect of potentiality that exists in the process of transforming, recreating, and re-inventing of products, as the results of this process may or may not be considered creative in answering to the need at hand.

Furthermore, while Corazza (2016) has argued that a dynamic approach to creativity puts into consideration the potential aspect of creativity, this is because creativity has to be understood as outliving static creative achievement. Glaveanu and Tanggaard (2014) in supporting for a dynamic creativity framework argued that since creative identity is always changing, thus making identity changeable and generative, consideration should be put into the potential aspect of creativity, since the process of creating, may or may not yield creative results. Therefore, the dynamic approach proposes that creativity should be understood from the process point of view, where there is an incorporation of the potentiality aspect that the process possesses and not only from evaluation of static products alone.

In addition, the dynamic approach to creativity is a reaction to the product approach that is perceived as relying too much on static products in their understanding of creativity. Like creative-cognition proponents, the dynamic approach also contends that focus should be on the creative

process since products do not tell us about the process that was used, and at the same time judgments of the products often vary (Runco, 1987; Runco & Smith, 1992; Runco et al., 2010). Equally, just like creative-cognition approaches, creativity can also happen without social context, but rather results from the cognitive capacity of the individual person. However, with the dynamic approach, there is differentiation of personal creativity that happens every day at a minor level with socially recognised creativity that are at a grand level (Kaufman & Beghetto, 2009), nonetheless all these forms depend on the same cognitive process. This emphasis on the potential aspect of creativity in the dynamic approach is more appealing to the education process that aims at nurturing the creative individual. This is because, if we realise that individuals have potential to be creative and knowing the benefits of creativity then it will be possible to offer appropriate guidance for its development.

2.2.4 Everyday Creativity

In our everyday encounters with different forms of challenges, we are faced with the need to find workable solutions. The ability and manner in which we attend to and solve these challenges depends on the quality and the kind of knowledge we have acquired. Equally, the knowledge we acquire from school and from our social cultural environment equip us with a form of tool kit we can use when need arise. While creativity arises from thought processes that we engage in through constant efforts of finding workable solutions to complex encounters of everyday life, by the application of this acquired knowledge. Tanggard (2013) argues that creativity takes place when we develop our daily practices, through asking questions, in the spaces that we discover between what is and what is to come or what can happen. It is in these daily life situations that we develop creative thinking skills when in the discovered spaces and imaginations of what can be, we find solutions by the application of the acquired knowledge that creativity lies. Further, with these everyday life questions that we raise and by looking for alternatives to our socialised ways of perceiving, understanding, as well as believing (Schwab, 2004; Stanton & Welsh, 2012), we develop our creative potential. Consequently, as these cross-examinations and questions that arise between what is and what is to come or what can be, require a thought process that is not only knowledgeable, but also creative enough to tackle these everyday problems. The applications of knowledge and cognitive capabilities that we make in the creation of solutions on a day-to-day basis is what therefore, everyday creativity is.

Furthermore, while Kaufman and Beghetto (2009) differentiate everyday creativity or little-c creativity, from grand solutions that are at a much larger and complex levels, which are referred to as Big-C creativity. Everyday creativity has, though happens on a small everyday solutions level, the potential of becoming Big-C creativity when it is nurtured and developed in a social context that values creativity. In addition, as education has an appreciation for everyday creativity, because of the potential it has of leading into more recognised innovations (Boden, 2004; Craft, 2002; Kaufman & Beghetto, 2009). The aim of every educational processes should then be to look out for this potentiality, which exists in every individual person and encourage it so that it may develop into Big-C creativity.

2.3 Assessing Creative Thinking

While Alenizi (2008) identify four main different ways of testing for creativity, assessing for creativity can be done in many other different ways. Nonetheless, among the common ways of testing for creativity is the use of divergent thinking tests, which are derived from Guilford's Structure of the Intellect model (SOI), such as the Torrance Test of Creative Thinking (TTCT), and Remotes Associations Test (RAT). However, Consensual Assessment Technique (CAT) based on artistic assessments centred on expert judgment such as the Barron-Welsh Art Scale, have also been used to test for creativity. In addition, creative thinking potential can as well be assessed by the use of self-assessments inventories such as the Kirton Adaption-Innovation Inventory, and Abedi-Schumacher Creativity Test (CT) (Kaufman, Plucker, & Russell, 2012).

Divergent thinking tests are however, the most widely used assessments for creative thinking in literature, and the TTCT has been identified as one of the widely used test for creative thinking among divergent thinking tests available (Plucker & Renzulli, 1999; Millar, 2002). Torrance developed the TTCT building on Guilford's theory of divergent thinking as well as his SOI model (Sternberg, 2006). Concurrently, Krumm, Lemos, and Fillipetti (2014) as well as Kim (2006) have also observed that the TTCT was originally based on the SOI model put forward by Guilford (1967) and among the dimensions measured in its present form include; Fluency, Originality, Elaboration, and Flexibility were adopted from Guilford's divergent thinking factors. However, although Torrance (2008) maintains that the TTCT does differ from Guilford's tests, for they attempt to elicit a factorial pure mental functioning and from Wallach and Kogan's test, that elicits

associations of mental functions. The TTCT does measure creativity by analysing mental characteristics that lead to creative thinking.

While the TTCT has two versions of Verbal and Figural tests, Torrance (1977) and Cramond (1993), recommends the figural version for use in much more diverse settings, due to the equity benefits that it possesses in terms of cultural backgrounds, race, and gender differences as well social economic status. In addition, this testing tool has received extensive studies that aim to ascertain its psychometric properties as well as to understand the structure of creativity (Claphan, 1998; Kim, 2006a & b; Kim, Cramond, & Bandalos, 2006). Furthermore, as Millar (2002) has observed that this test is one of the most widely used in testing for creativity and that it has been translated into more than 35 languages across the globe. The testing tool has also been used in an African setting, including Humble, Dixon, and Mpofu (2017), whose study was among Tanzanian school children, where the aim was to ascertain whether the creativity construct of Divergent Thinking (DT) as measured by the TTCT was dimensionally equivalent in an African setting as is reported in western settings. Their findings showed that creativity as measured by the TTCT figural form-A was indeed two-dimensional, as reported in other studies from a western cultural setting. Further still, creativity construct of DT was also found to be dimensionally equivalent in an African setting, as did in other studies (Kim, 2006; Kim et al. 2006; Krumm, Aranguren, Filippetti, & Lemos, 2014; Krumm et al. 2016) that were conducted in western settings. Consequently, giving empirical evidence that makes this testing tool also applicable to a population from an African setting.

Moreover, as the figural version of the TTCT has its strength in the fact that it measures creativity through the assessment of five mental characteristics such as fluency, originality, elaboration, abstraction, and resistance to premature closure. The verbal version only assesses three mental characteristics of fluency, flexibility, and originality, and the respondent will have to respond using words, which makes it more challenging to assess individuals with limited education background and writing skills. However, the popularity and equity benefit of the figural version of the TTCT is attributed to the fact that the test requires the respondent to use figural sketches when responding to the test questions, requiring little or no writing skills from individual respondents.

2.4 Creativity in Education

While Harris and Bruin (2019) have argued that ‘creativity research in education spans policy, teaching, learning and assessment, as well as environments within and beyond the school that promote creative encounters’ (p. 99). Equally, as the concern on creativity has largely been on finding ways of how to effectively teach and nurture creative thinking potential of the learner as well as to find effective ways of assessing it. Frameworks that guide the creative narrative in education have also been proposed and developed, which include among others, sociocultural, and participatory approaches to the understanding of creativity.

According to Cropley (2001), Fasko (2001), and Smith and Smith (2010) modern research on creativity, including in education has largely been influenced by Guilford’s (1950) presidential address to the American Psychological Association, as well as by Torrance (1962) whose focus was on creativity teaching and how to assess creative thinking of learning individuals. While these scholars had emphasized much on divergent thinking as leading to creative thinking, as well as on developing effective means of assessing creativity. Jeffrey and Craft (2001), Burnard (2006), and Craft (2011) observed that there has been a movement towards a sociocultural approach in studying creativity. Furthermore, as Feldman et al. (1994) argues that creativity emerges through the interaction process of the individual (the creator), with the symbol system they are engaged in (the domain), and their surrounding social systems (the field). This is because, as earlier noted, the individual’s behavior is merged and rooted in the social relations they have with their environment (Vygotsky, 1962; Glaveanu, 2013) and it is through these interactions that learners develop their creative thinking abilities, just as they develop other cognitive abilities. Equally, as secondary school creativity is increasingly ecological (Harris, 2014; Plucker, Beghetto & Dow, 2004). Creativity in schools should be understood as resulting from well-presented knowledge systems, the collaboration of interested students, and the presence of a stimulating teacher (Csikszentimihalyi, 2014). This is because the environment does exert much influence on cognitive development of an individual, who is a potential innovator.

Moreover, while a number of different frameworks that guide research on creativity in education, have been developed. There has been a growing interest among scholars in the social and cultural dynamics that affect creativity, spearheaded by theorists such as Amabile et al. (1996),

Csikszentmihalyi (1999) and John-Steiner (2015), who have laid a foundation for participatory views of creativity. Further, as the social and cultural dynamics approach argues that researchers in trying to understand creativity need to take into consideration all aspects that affect an individual's cognitive development. Clapp (2017), Glaveanu (2014), and Hanson (2015), have argued that the participatory view of creativity combines sociocultural analysis, developmental psychology, and distributed cognition theory, in understanding the nature of creativity. This means therefore that in order to understand creativity, an ecological approach should be taken, this is because the development of the learning individual's cognitive abilities does not happen in isolation but takes place within an environmental context.

2.4.1 Research on Creativity in Education

Empirical research on creativity in education has taken many forms and approaches that include the use of psychological theories to promote creativity and creative thinking in the learner. While the focus in these studies has been wide, the literature reviewed in relation to this study, is on research that had focused on the learning environment, the learner, and school type.

Besancon and Lubart (2008) in a study, where different types of French primary schools were compared, found that children attending Montessori schools showed greater originality in thinking than those in other types of primary school. They also found that the overall ethos and learning environment of schools could account for differences in learner's creative performance scores, as measured by divergent thinking tasks from the TTCT. Different learning environments can have different effects in learning individuals' cognitive development and consequently creative thinking skills. Equally, in a study conducted by Davies, Jindal-Snape, Collier, Digby, Hay, & Howe, (2013) in which over 210 studies were reviewed, it was found that a number of researchers had found immediate physical environment when well organized to promote learner's creativity (e.g. Addison, Burgess, Steers, & Trowell, 2010; Bancroft, Fawcett, & Hay, 2008). The overall learning climate/environment that encompasses both the teacher, learning materials, school and classroom set up, thus play an integral part in supporting creativity (Richardson & Mishra, 2017).

Furthermore, as Craft (2001), and Peterson and Harrison (2005) did argue that schools should create an atmosphere in which students will be able to communicate freely, accept and discuss new ideas, and take risks, because this was an ideal learning climate for supporting creativity. These

learning climates/environments should be filled with cues, while at the same time learners need to have an understanding of how to respond to these cues, for the learning climate to effectively support creativity (Warner & Myers, 2009). This is because; when the learning climate/environments are well and deliberately organized with cues that support the learning process, have also been found to highly support creativity (McCoy & Evans, 2002). Equally, when educators deliberately design the classroom environment to support creativity, learners have been found to develop higher levels of creative thinking skills (Davies et al., 2013). Therefore, for creativity to thrive, school has to create, through the learning process an enabling environment that will support the individual's development of cognitive thinking abilities that lead to creative thinking.

However, while other studies have placed their focus on the importance that learning environments have on creativity, Ekvall and Ryhammar (1999), in focusing on the learner, conducted a study among graphical design students, in which they found that when students are pushed to think creatively and critically, they produce better results during their learning process. Equally, Kienitz, Quintin, Saggar, Bott, Royalty, Hong, Liu, Chien, Hawthorne, and Reiss (2014) in their study found results that suggest that, creativity can be enhanced, by deliberate trainings such as creative capacity building programs (CCBP). Thus, motivation and deliberate programmes that aim at directly nurturing creative thinking skills are also an important approach to the nurturing and development of creativity in learners. These studies do show that, it was not enough to just have well-organized learning environments and expect that learners will develop their creativity automatically; deliberate efforts by educators need to be taken in order to nurture creativity of learners. Therefore, for creativity to thrive, both the learning process and learning environments have to be tailored in a way that creative thinking will deliberately be encouraged in the learner.

2.4.2 Comparative research on Creative Thinking in Education

While sociocultural approach that focuses on the impact of cultural backgrounds, environmental differences, social economic status, as well as knowledge differences in creative thinking skills of the learning individual at both primary, secondary and at higher education level have been widely investigated. Equally, as different research designs have been utilised, and one design has been that of comparative research designs. Additionally, while this research design has been utilised at both the cross-cultural level, where two or more countries are studied to ascertain their differences

as well as within cultures, where social economic status and school type as well as gender become the differentiating factors. Studies have applied different methodologies and have used different approaches in their research on creativity in both educational and non-educational settings.

For example, Kyunghwa and Hyejin (2016) on a cross-cultural level with the purpose of understanding whether there exists cultural differences and similarities in creative thinking characteristics of Korea and Australian children. In their study, they used the Integrative Creativity Test (K-ICT) to assess the study sample, and obtained diverse results, which include no significant difference observed between sixth graders of both countries. However, fourth and fifth graders' creative thinking ability for Koreans was found to be better than that of Australians. Equally, results on gender comparison showed that girls' creativity on sensitive thinking and elaboration for Korean students was better than that of Australians. As can be seen, these findings did also show other variations in performance, as on task commitment and problem solving leadership, Australian students were better than their Korean counterparts.

Similarly, in another study done on a cross-cultural level, Saeki, Fan, and Van-Dusen (2001) with the purpose of determining whether similarities and differences in creative thinking existed between American and Japanese college students, used the TTCT figural form-A to test for creative thinking of the study sample. The findings were that American college students do have higher levels of creativity than their Japanese counterparts. However, gender was not a significant factor in either culture. Further, Saeki et al. (2001) argues that the low score on Abstractness of titles obtained by Japanese students could be due to culture differences that exists between the two countries. Since 'Japanese education gives few opportunities to students to explain their own unique ideas and labels' (p. 43). Thus giving an indication of different effects that cultural contexts may have on creative thinking of individuals.

Both Kyunghwa and Hyejin (2016) as well as Saeki et al. (2001) findings do support the approach to creativity study that takes into consideration the aspects of culture, because of the varied emphasis that different cultures and countries may have on value and what should be emphasized in the education process. Value here which is an important aspect in defining and determining what creativity is. Therefore, as it is in both of these studies, there is indication that learners from different cultural backgrounds could perform differently in different areas of the creativity

construct. Nevertheless, the present study aims at investigating whether learners from the same cultural environment could display different levels of creative thinking skills.

2.4.3 Gender and creative thinking skills

While a number of studies on creativity have been conducted around the world that have utilised comparative research designs within a culture, these studies have mainly compared creative thinking in relation to gender differences as well as school type. Equally, as studies that have sought to compare creative thinking in relation to gender, have reported varying and contradictory results, Matud and Grande (2007) have argued that creativity in relation to gender is heavily dependent on cultural influences as well as levels of education and socioeconomic status. This means that gender on its own has not been found to conclusively matter in creative thinking skills of individuals, as there have been contradicting findings in previous studies.

For example, in a study conducted on student teachers, while using the Passi Tests of Creativity (PTC) Ponnusamy (2019) found that, although females display better creative thinking skills than males, there was no statistical significance difference in their creative thinking skills. Equally, Nazima and Hummara (2012) did also found that gender was not to a factor in creativity, in a study conducted on 7th and 10th grade private and public school learners. However, Pany (2014) found contradicting results that showed an existence of significant differences between male and female students' creative thinking skills. Further supporting the view that creativity differences in relation to gender depends heavily on cultural differences around the world. Furthermore, in a study conducted in Mainland China, Jia, Yang, Qian, Wu, (2020) reports varying results, as they found no significant differences of creativity in relation to gender at fourth grade. However, at eighth grade, they did found significant difference results, which were in favour of boys, suggesting further the existence of other variables that may be affecting this inconsistency, when gender is a differentiating factor.

Furthermore, researchers (e.g. Baer & Kaufman, 2008; Pagnani, 2011; Runco et al., 2010) have argued for differences in behavioural performances, and this include creative thinking skills, in relation with one's gender. Concerning creative thinking skills, several researchers have as well reported different findings in creative thinking potential between males and females (e.g. Baer, 2005; Nazima, & Hummara, 2012; Ponnusamy, 2019; Kumar, 2020; Anwar, Rasool, & Haq, 2012;

Awamleh, Farah, & El-Zraigat, 2012; Hong et al., 2013; Kousoulas & Mega, 2009; Pany, 2014), leading to inconclusive references to the impact of gender on creative thinking potential (Baer and Kaufman 2008; Runco et al. 2010). Additionally, these reported differences in creative thinking skills have also largely been attributed to a number of differentiating factors including biological (Cahill 2006; Gong et al. 2011; McCarthy et al. 2012; Abraham et al. 2012), cultural differences (Kaufman 2016), socio-economic status, socio-cultural, environmental factors, and individual differences in education levels (Helson, 1990). Nonetheless, these empirical evidences have suggested that on average there exist superior creative abilities in females as compared to their male counterparts (Abraham, 2015). With socio-cultural as well as socio-economic status being one factor that has been identified as one factor that leads to differences in creative thinking potential in relation with gender. It is therefore, also important to explore whether this could be the case in a Zambian context.

2.5 Individual's Micro level Environment and Creative Thinking Development

According to Sternberg and Lubart (1995), the ability to think creatively requires a confluence of distinct but interrelated factors that include: cognitive factors such as intelligence and level of knowledge, conative factors such personality and motivation, and an environmental setting that explicitly supports creative thinking. Equally, as the creative process takes place over the entire developmental process of the learning individual and at the same time happens in a social context that is influenced by social systems (Vygotsky, 1999). This learning individual has school as their immediate environment, where there is proper interaction between the factors of cognitive, conative, and environmental, that could play a part in their creative thinking potential. In addition, while Mellou (1996) has argued that creative thinking can be nurtured through specific educational settings that include the creative environment, creative programs, and creative ways of teaching. Russ et al., (1999) suggest that for the learning environment to nurture creativity there is need for explicit creativity development programs, such as deliberate learning plans that aim at soliciting and developing creative thinking of every learner. This is because the individual person's immediate environment may or may not support creative thinking development (Besancon & Lubart, 2008), depending on how it places value on creative thinking and how the learning environment is designed. Therefore, the immediate learning environment needs to be organised in such a way that it encourages the development of creative thinking skills to happen.

Equally, while adding on to Glaveanu's (2013) expanded look at the impact that environmental influence has on creativity, Mullen (2019) argues that social institutions such as schools should provide social affordances to the learning individual, which will in turn provide them with constraints and opportunities for creative thinking. This can be achieved through practices that schools adopt when they aim at effectively delivering the curricula and its goals. However, depending on the kind of affordance provided, the individual may or may not develop their creative thinking skills. This is because a significant difference between private and public school students in their creative thinking potential has been observed (Pany, 2014; Nazima & Hummara, 2012). Supporting further the importance of environmental factors in the development of creative thinking of learners as they found that private school student had higher creativity levels than government school students in their study, even when these students belonged to the same cultural background. However, even though Fidan and Oztürk (2015) in a study conducted in Turkey on school teachers, found no significant relationship between school climate and creativity, they, did note that private school teachers had higher intrinsic motivation which subsequently led to higher creativity levels than public school teachers. Therefore, highlighting further the effect that immediate environment has on cognitive development process of the individual, making immediate environment where the individual find him/herself become even more important in supporting or hindering their creative thinking potentials.

2.6 Education providers in Zambia

Formal education in Zambia is provided by schools that can be categorized into two main types, which include; government run (which are referred to as public), and non-government run (which are referred to as private). However, non-government run schools are also categorized into three groups which include: private schools, which are owned and managed by religious institutions, and private individuals or groups, community schools which are run by parents teachers associations (PTA), and grant-aided schools which receive government subsidies, but are either managed and owned by religious institutions, private individuals, or PTA.

Nevertheless, whether a school is categorized as public or private, the central education authorities dictate the curriculum, syllabi and learning materials that all schools in the country are to follow and use. However, private schools are responsible for setting out their own operational plan and

how the curriculum is delivered, with review by the central authorities (SABER, 2016). Thus, there exist local autonomy between private and public schools. In addition, privately owned schools that are managed without government subsidies, have higher levels of local autonomy.

2.7 Creativity in Zambia's Education System

Research on creativity in the Zambian context can be said to be in its infancy. Although there is vast and well-documented literature about the importance and benefit of creativity, it was not until 2013 that the education curriculum in Zambia, through the adoption of an outcome-based education curriculum that creativity was identified as one of the highly desired competency to be looked for and developed in learners. However, even though this national curriculum encourages the development of creativity, Ngungu and Kinghorn (2017) found that there is lack of components that are supposed to assess creative thinking abilities in assessments models used when assessing learners. Equally, Makumba (as cited from the Zambia National Commission for UNESCO, 2018) also reports a lack of creative components in assessment used at both national and school level as well as a lack of change in teachers teaching methods, as they lack pedagogical skills that will enable them teach for creativity. As can be seen, there is need for further research on creativity in the Zambian context for sake of understanding the nurture of creativity in the learning individual.

2.8 Identified Research Gap from Literature

Several studies that aimed at understanding creative thinking of learners in the education sector have been done around the globe, (e.g. Bart, Hokanson, & Can, 2017; Kyunghwa and Hyejin, 2016; Fidan & Oztürk, 2015; Panny, 2014; Nazima & Hammara, 2012; Shankland & Franca, Genolini, Guelfi & Lonescu, 2009; Saeki, et. al., 2001). While these studies have used different research approaches, including comparative designs at both cross-cultural level and comparing school type within the same culture. Equally, as different creative thinking testing tools have been also been utilised for data collection including the TTCT which has been used predominantly in previous studies such as (Annie et al., 2019; Bart, Hokanson, & Can, 2017; Humble, et al. 2017; Saeki, et. al. 2001). The reviewed studies however, where mainly done outside the Zambian context. Therefore, there is need, for a study of this nature in the Zambian context that seeks to find out whether the learning process under an Outcome-Based Education national curriculum is

facilitating the development of creative thinking skills in the learners, and to establish whether school type and gender are a factor on student's creative thinking potential.

2.9 Summary

This chapter has highlighted on how creativity is defined in literature and how these definitions and understanding of creativity have guided and directed approaches taken by different scholars in the study of creativity over the years. It has also revealed relevant literature on the kinds of practices/approaches taken by researchers to study the phenomenon of creativity in education around the world. The chapter has also highlighted on methods that are used in assessing creativity, and further the chapter has elaborated on the TTCT, which is one of the most popular DT test being used to assess for creative thinking in the study of creativity.

Literature reviewed in this chapter has shown that, both the understanding of what creativity and the nature of creative thinking is has over the years evolved. It has further shown that, there has been a movement from lone genius approach, to a more democratic approach that looks at every individual person as having the potential to think creatively, thus allowing for approaches to shift to the search of how this creativity can be nurtured and developed in every individual. Literature in this chapter has also shown that just like intelligence, the ability to be creative and produce creative innovations is available to every person, this is because creativity is a cognitive process just like thinking is.

Further, studies revealed in this chapter have shown that environmental contexts do have influence on the development of individuals' cognitive structures, which include creative thinking, in this case. These findings from reviewed studies have further provided arguments for a more social cultural inclined approach to the study of creativity, because it gives a more rounded approach for the understanding of creative thinking. It has also been discovered from the revealed literature that research on creativity in Zambia is still in its infancy, thus this study will further contribute to the understanding of creativity in secondary schools in Zambia.

CHAPTER THREE: RESEARCH METHODOLOGY

3.0 Overview

This chapter provides the study with the research methods, philosophical foundation and the research design that was used in conducting this study. It also explains the kind of instruments that were used in collecting data from respondents. Further, it elaborates on how data was collected, from whom it was collected, and also it looks at how the ethical concerns were taken into consideration.

3.1 Philosophical Foundation

This study is guided by post-positivism, which is sometimes known as critical realism. According to Leavy (2017), researchers that adopt this school of thought are guided by the idea that reality is objective, patterned, and knowable. Equally, they view knowledge as that which is developed through the use and application of scientific methods. Additionally, while the making and testing of claims which include the identification and testing of causal relationships that make up the objective reality is what constitute research (Creswell, 2014; Philips & Burbules, 2000). Further, as critical theory argues for the use of scientific methods in the explanation of phenomenon of concern, and at the same time developing relevant statements that are true and can be described with empirical evidence (Creswell, 2014). The explanation of relationships that exists between variables of interest should be the aim of every research. Therefore, the aim of every researcher who is guided by the arguments put forward by this school of thought, should be to support or dispute suppositions through the use of scientific methods (Babbie, 2013). This study has therefore, settled for post-positivism in the quest of investigating the creative thinking phenomenon, because of its support for the use of scientific methods in describing phenomenon.

3.2 Research Design and Method

A research design is a plan which outlines a carefully selected structure and procedures for particular study objectives that are proposed (Kombo & Tromp, 2006; Kasonde, 2013). This plan arranges the procedures to be taken on how questions/hypotheses that the study problem raises are going to be answered in a more valid, objective, accurate, and economical manner. Below is the research design that the researcher used for the purpose of conducting this study effectively.

3.2.1 Casual-Comparative Quantitative Research Design

While, Sukamolson (2007) describes several types of quantitative research, which include survey research, correlational research, experimental research and causal-comparative research, this study utilized a casual-comparative quantitative research design. A casual-comparative quantitative research design is a technique that seeks to find relationships between independent and dependent variables after an action or event has already occurred (Gay, Mills, & Airasian, 2006). Equally, this technique attempts to determine the relationship among variables without any actual manipulation of the dependent and independent variables. The investigator here is allowed to compare two or more groups in relation to an independent variable that has already happened (Creswell, 2014). Furthermore, because of benefits that comes with the use of this quantitative design that includes non-manipulation of the independent variable in cases where this could result in serious ethical violations. Among other particular independent variables that are not capable of being manipulated, include gender, ethnicity, socioeconomic level, and education level. Thus, this technique comes in handy when the possibilities of manipulating the independent variables cannot be realized and raises serious ethical implications, in this case school-type, which is an independent variable in this study, the learner who is the subject of the study is already enrolled in a particular school-type.

3.3 Pilot Study

According to Prescott and Soeken (1989), the importance of a pilot study is to serve as a guide in developing a research plan. In addition, while Chu (2013) says that it serves to evaluate the clarity of items and instruments that are to be used in the main study so that the reliability and validity of the instruments are ensured. Equally, as Doody and Doody (2015) argues that its importance is in the fact that the researcher is previewed with the workings and details of the instruments to be used in the process of data collection as well as the actual, potential problems, ethical, and practical issues that could hamper the practicality of the main study. It is from this background that a pilot study was conducted so that the researcher familiarizes himself with instruments that were used for the study. Therefore, a pilot study was conducted among 51 secondary school students who were in their 11th and 12th grades in two schools within Lusaka district, for the purposes of familiarizing with the creativity assessment tools that were used to test for creative thinking.

Both the figural and verbal version of the TTCT forms were used to test for creativity of a sample drawn from 2 secondary schools of Lusaka district that was randomly selected for the purposes of piloting the two testing forms. Collected data from the two forms was separately analyzed, and findings revealed that the sample had a very poor performance on the TTCT verbal form A as compared to the TTCT figural form A. Further analysis on the responses obtained on the verbal version of the testing tool revealed that the sampled population's poor performance on the verbal version could be attributed to their writing skills as the verbal version requires that the respondent respond to the questions by use of writing. On the other hand, the good performance on the TTCT figural version that was discovered during the piloting could have been attributed to the fact that the figural version does not require one to have writing skills as the respondent is required to use sketches with minimal writing required. Therefore, the researcher used only the figural version of the TTCT in the main study, as the use of this version would not have to take into consideration the writing skills of the respondent.

3.4 Target Population

According to Frankel and Wallen (2006) a target population is a collection of people or things that the researcher has targeted for the purposes of collection of information to answer their laid down study questions. The target population for this study was all the 12th grade secondary school learners in both public and private schools within Lusaka District.

3.5 Study Sample

A study sample is a convenient subset of the targeted population that is carefully selected as a representation of the entire population under study (Orodho & Kombo, 2002; Creswell, 2014). The study sample selected for the purpose of this study included 180 students from six schools within Lusaka District, out of this, three were public schools, and three were private schools.

3.6 Sampling Techniques

According to Cohen, Manion, and Morrison (2018), a random stratified sampling technique is a simple sampling process that involves a two stage process where the researcher first identifies the characteristics of the wider group, divide it into homogeneous groups, and then perform random sampling in each of the identified groups. Equally, this technique involves the division of the

population into sub groups and then taking a sample in each of them by the use of a simple random technique (Kasonde, 2013). The technique has an advantage in that it gives equal representations to all, including minority members of the targeted population. This research therefore, utilized random stratified sampling techniques in selecting both the schools and the student sample.

While in selecting schools for the purpose of data collection, all the schools that offer secondary education within Lusaka District were first identified, then classified into either public or private school, then three from each of these two classes were randomly selected. Equally, when selecting student respondents, two strata were first created of either male or female, and from all the female students at each selected school 15 were randomly selected, this process was repeated for male students, so as to arrive 30 respondents from each school. However, schools that were not co-educational, as well as those that were identified for STEM program were excluded from this study.

3.7 Demographic Distribution of the Sampled Population

From all the 6 selected schools, there were 180 participants who responded to the TTCT Figural form-A test that the researcher used. However, out of these 180 respondents, 177 of them successfully completed the test. The gender distribution of the 177 respondents who successfully took and completed the test was as follows: 94 male, representing 53.1% and 83 female representing 46.9% of the respondents. Further, public schools contributed 87 respondents, representing 49.2%, while 90 respondents were from private schools representing 50.8% of the sample, and their overall age mean was at ($M = 17.36$) with the standard deviation of ($SD = 1.35$).

3.8 Research Instrument used

This study used the Torrance Test for Creative Thinking (TTCT) in testing for creative thinking skills of the study sample. The TTCT is composed of two versions of which one is verbal and the other is figural. The verbal version has two parallel forms A and B, and is said to measure creative thinking skills using the verbal/written word, while the figural version has as well two parallel forms, A and B, and it measures creativity through drawing/sketching (Torrance, 2000). Although the TTCT has been developed from a much different cultural setting than that of Zambia, its use for testing creative thinking is far reaching including sub-Saharan Africa (Humble, et. al., 2017),

Table 3.1 *Composition of the TTCT Figural Form.*

Creative indicator	Description of the indicator
Fluency	Refers to the number of ideas a person is able to express, it is an ability to produce a larger number of solutions and alternatives to an existing problem or task.
Originality	Creative individuals will give responses to a task or problem that are unusual or novel and out of the ordinary, (Scholastic testing services, 2017a) and they tend to produce unique ideas that are not seen as the obvious.
Elaboration	Less creative individuals tend to produce images (results) with the minimum amount of details needed to identify their kind of response; where as creative individuals will be more imaginative in elaborating details they will add to a response or image.
Abstractness of titles	This indicator relates to the subject's process of thinking, were they are able to organize and synthesize their thought process and produce a description of their images in a more deeply and richly manner that enables readers to see beyond a simply produced image.
Resistance to premature closure	The ability to keep open and delay conclusions so that the individual can make a mental leap, while less creative individuals tend to easily give up and reach to conclusions that often are premature.
Checklist of Creative Strength	Composed of thirteen creative strength indicators that give insight on how the individual perceive the world and their reality (Scholastic testing services, 2017a). They highlight the areas of strength for the individual test taker and their weak areas to be developed further (Kim, 2017).

as well as its reliability and validity is well documented and investigated (Kim, 2006). Additionally, the TTCT has also been widely used across different cultures and populations of different backgrounds across the globe (Miller, 2002; Kim et al., 2006; Kim, 2011; Yoon, 2017) in testing for creative thinking. This popularity and reliability of the TTCT is attributed to the fact that the instrument has a longitudinal study for its reliability which span for over a period of 40 years. Nevertheless, the reliability of the TTCT is observed for the cumulative score of Creativity Index to be centered at .90 for various grades, and .89 for various ages (Bart, Hokanson, & Can, 2017; Kim, 2006). In addition, the coefficients for the Average standard score, have only been reported to be slightly lower (Torrance, 2008). Additionally, as Humble, et al., (2017) reports that the TTCT was dimensionally equivalent in an African setting as is reported in western settings, the instrument is therefore, trustworthy for the purposes of this study.

Although the two versions of the TTCT are significantly related, the figural version is more comprehensive, reliable, and is a valid measure of creativity (Kim, 2017). Additionally, it has also been found to have more fairness in terms of gender, race, and the differences that exists in various languages, socio-economic status, and cultural backgrounds (Cramond, 1993; Torrance, 1977). In measuring creativity, the TTCT uses a number of creativity indicators which in Table. 3.1 below their description is given. These creative indicators give a cumulative Average standard score and Creativity Index scores that are used to determine the creative potential and performance of the subjects.

3.9 Data Collection Procedure

Data collection from respondents was done by the use of the TTCT figural form-A, which was administered for the purposes of assessing creative thinking skills. While the TTCT figural form-A comprises of three activities, which include Picture construction, Picture completion, and the making of pictures or objects using Lines, each of these activities lasted for 10 minutes. This assessment procedure was followed so that the data correction process is conducted according to the required administration procedures of the TTCT (Treffinger, Torrance, & Ball, 1987; Scholastic Testing Service, 2017).

After obtaining required permission from DEBS, school heads, and career guidance departments and following all informed consent procedures. All 30 randomly selected students were gathered

in one classroom, and they were arranged in a manner that they were not able to look at each other's response. Each selected learner was provided with a pencil that they were to use for sketching their responses. After all required introductory remarks, instructions were given as prescribed by the TTCT administering manual, and students were as well made aware to take the test in a game like manner as is recommended Torrance (1966).

3.10 Data Analysis

The process of analysing data can be described as the examining, extracting, and manipulation of gathered information for the purposes of making inferences, deductions and/or conclusions that reflect the laid down research objectives and questions (Smith, 2003; Kombo & Tromp, 2006; Kasonde, 2013). Since this research utilised quantitative methods, data collected, which was numerical, was analysed using SPSS (v. 20) in testing the hypotheses.

In order to determine the performance of the respondents, two composite scores of age-based average standard score and age-based creativity index and the six sub scores of fluency, originality, elaboration, abstractness of titles, resistance to premature closure, and creative strength were adopted in this study. Further, in order to answer the first objective, mean percentiles found for Creativity index and Average standard score, were compared with the norm percentiles score (mean percentile, M=50) of the TTCT grade 12 of which the normative sample consisted of 29 American students and also with norm sample age at 17 (Scholastic Testing Service, 2017b). This technique has also been utilised by (Annie, Chung-Yee, 2019). However, for the purposes of answering to objectives 2 and 3, the researcher run an Independent Samples t-test, of age-based average standard score and age-based creativity index obtained, with the confidence interval of the difference at 95%.

3.11 Ethical Considerations

According to Mugenda and Mugenda (2003) ethics in research deals with principles that guides the conduct of the researcher. These principles are set as guidelines for good conduct when one is dealing with human beings directly or indirectly so that there is no any form of abuse in the process of data collection. The fact that human beings with their freedom and privacy were encountered in the process of collecting data, every dos and don'ts, moral principles and code of conducts that guides every research (Wellington, 2000; Cohen et al, 2018), and all the required ethical

procedures were followed and put into consideration. Therefore, clearance was obtained from the University of Zambia ethical committee to proceed with data collection (see Appendix B), and further permission was obtained from the District Education Board Secretary (DEBS) and School authorities. Additionally, consent was sought from participants through the career guidance office, who were also informed that the data collected would be used purely for academic purposes only. However, as for respondents below the age of eighteen, consent was sought from their parents, through the careers guidance offices (see Appendices C and D).

3.12 Summary

This chapter has presented the philosophical theory that guided this study, it has as well elaborated the plan on how data is collected, from whom it is collected and how it is analyzed for the purposes of answering the objectives set for this study. It has further, highlighted on the testing tool that this study utilized for assessing creative thinking of the sample population, as well as how it is administered. Additionally, the chapter has explained how ethical concerns that this study encountered were taken into consideration.

CHAPTER FOUR: PRESENTATION OF RESEARCH FINDINGS

4.0 Overview

While the previous chapter presented the design that was used for the study, the instruments used in the process of data collections and the justification for their use. This chapter presents the findings from the data collected, and these will be presented according to the objectives and hypotheses that guided this study.

4.1 Test for Normality Distribution

Table 4.1 *Tests of Normality*

Kolmogorov-Smirnov ^a			
	Statistic	df	Sig.
Creativity Index	.06	177	.20*
a. Lilliefors Significance Correction.			
*. This is a lower bound of the true significance.			

Normality tests were run so as to test the distribution of the data for the composite score of Creativity index, which determines the creativity rank of the respondents. This was done by the use of Kolmogorov-Smirnov and the test showed a normal distribution of the data from the sampled population as shown in Table 4.1 above.

4.2 To what extent are learners in secondary schools able to think creatively?

The first null hypothesis for this study, which states that Zambia's curriculum education system supports the development of creativity, thus learners will display higher levels of creativity, led to question the extent at which learners in secondary schools were able to think creatively. In order to test this hypothesis, scores obtained by the sample on Creativity index, Average standard score, and all the sub scores of the TTCT, which include Abstractness of Titles, Resistance to Premature

Closure, Fluency, Originality, Elaboration, and the Checklist of Creative Strength scores were all compared with the norm percentiles (mean percentile, $M=50$) scores, so as to inform on how the study sample ranked. While the results show that the respondents had a mean score of ($M = 46.09$, $SD = 33.84$) for the Average standard score, and ($M = 43.02$, $SD = 34.34$) for Creativity index composite score. When these scores were compared with the norm mean percentiles, the performance of the population sample was found to fall below average. Indicating a below average performance in creative thinking skills on both composite scores of Average standard score as well as Creativity index. This shows that the study sample of secondary school students, had low levels of creativity potential.

In addition, while the sampled population showed better performance in the sub scores of abstractness of titles and resistance to premature closure of which the mean percentile was found to be above average, at ($M = 59.82$, $SD = 36.96$) and ($M = 58.73$, $SD = 34.11$) respectively. Indicating that their exist evidence of good levels of abstraction and a sense of perseverance among the student sample. However, the scores for fluency ($M = 45.79$ $SD = 28.63$), elaboration ($M = 34.37$, $SD = 29.41$), and the checklist of creative strength ($M = 32.15$, $SD = 30.46$), where all below average. Furthermore, the performance on originality ($M = 29.88$, $SD = 26.05$) was the lowest score obtained, indicating further the low levels of original thinking among the participants.

Table 4.2 *Descriptive Statistics*

Creative Dimension	M	SD
Fluency	96.75	20.21
Originality	85.21	19.02
Elaboration	88.05	22.39
Abstractness of Titles	108.66	35.42
Resistance to Premature Closure	106.58	27.35
Checklist of Creative Strength	84.98	24.86
Average score	97.05	19.92
Creativity Index	106.74	23.34

Table 4.2 above shows the mean and standard deviations obtained by the participants on the Creative index, Average standard scores, and all the sub scores.

4.3 Is a school being private or public a factor in learners' ability to think creatively?

The second null hypothesis for this study states that, learners who go through the same curriculum system and are of the same social cultural environment will display similar characteristics of creative thinking skills, and will have no differences in their creative thinking potential. This led to question whether school being private or public is a factor in learners' ability to think creatively. In answering to this question, the null hypothesis was tested and this was done by performing independent samples t-test, which compared the mean scores obtained on the composite scores of Creativity index and Average standard scores for private school students with that of public school students. The t-test results showed that students from private schools performed better with their Creativity index mean of ($M = 114.27$, $SD = 22.11$, $N = 90$), while for public schools the mean was ($M = 98.96$, $SD = 22.11$, $N = 87$), with the p-value of $t(175) = 4.60$, $p < .001$, two tailed. The difference of 15.31 scale unit indicated their difference in creative potential with a medium effect size reported at ($d = .69$), and the 95% confidence interval around the difference between the group means was between (CI) [8.75, 21.87] supporting the existing difference between the two groups.

Equally, for the Average standard score, the test did also indicate that there are differences in their creative potential with their results showing the mean of ($M = 103.29$, $SD = 18.83$, $N = 90$) for private school respondents and the mean of ($M = 90.59$, $SD = 19.04$, $N = 87$) for public schools, with the p-value of $t(175) = 4.46$, $p < .001$, two tailed. The difference of 12.70 scale unit indicated their difference in creative potential in reference to the Average standard score with a medium effect size reported at ($d = .64$) and the 95% confidence interval around the difference between the group means was between (CI) [7.08, 18.31]. Consequently, with the obtained results showing that there are differences in creative thinking skills between private and public school learners, as both composite scores of Creativity index and the Average standard score showed statistical significant differences, the null hypothesis could not be accepted. Therefore, even though the sampled population does belong to a similar social cultural environment and follow the same school curriculum, school type has been found to be a factor when it comes to creative thinking skills potential of the learning individual as the results from this study indicates.

4.4 Is gender a factor in creative thinking potential of secondary school learners?

The third null hypothesis for this study states that, gender has an effect in the creative thinking potential of an individual, thus individuals will display differences in their creative thinking skills depending on their gender. This led to question whether gender is a factor in creative thinking potential of secondary school learners. In answering to this question, the null hypothesis was tested by running independent samples t-test, which compared the mean scores obtained on the composites scores of Creativity index and Average standard score in relation with gender.

Although the results of the mean score showed that there were differences in performance on the both creativity index and the average standard score obtained, as female students for the composite score of Creativity index had obtained a mean of ($M = 110.24$, $SD = 22.21$, $N = 83$), while the mean of ($M = 103.66$, $SD = 24$, $N = 94$) was obtained for male students. There was however, no statistical significance differences between them, as the p-value was $t(175) = 1.89$, $p = .061$, two tailed. Equally, the difference of 6.58 scale unit indicated their difference in creative potential in reference to the Creativity index score, had a smaller effect size reported at ($d = .28$) and the 95% confidence interval around the difference between the group means was between (CI) $[-.31, 13.47]$, supporting further the absence of significance difference in relation to gender.

At the same time, although the result on the Average standard score did also show female students as having a higher mean of ($M = 99.99$, $SD = 19.32$, $N = 83$) than the mean of male students which was at ($M = 94.46$, $SD = 20.20$, $N = 94$). The results obtained from the sample still did show no statistical significance differences between them, as the p-value was $t(175) = 1.86$, $p = .065$, two tailed. In addition, the difference of 5.53 scale unit indicated their difference in creative potential in reference to the Average standard score, and with a smaller effect size reported at ($d = .28$) and the 95% confidence interval around the difference between the group means which was between (CI) $[-.35, 11.41]$, supporting further the absence of significance difference in relation to gender.

Although the mean scores showed differences which seem to show that female participants did better than their male counterparts, these differences were not statically significant, as the results from independent samples t-test indicates. With these findings the researcher found no statistical evidence that could lead to the support of the null hypothesis which stated that; gender is a factor in the creative potential of an individual, thus individuals will display differences in their creative

thinking skills depending on their gender. Therefore, drawing from these findings it can be said that both male and female students fairly display similar levels of creative thinking potential, although female students have been found to have a higher mean than that of male students on both composite scores.

4.5 Summary

This chapter has presented the findings of the research in line with the research objectives. The findings of this study have revealed that, although the curriculum being used in secondary schools within Lusaka district is that of outcome-based education, which aims at imparting creativity skills in learners, the sampled population indicates that grade 12 secondary school learners have lower levels of creative thinking skills. Equally, the findings from the study did not support the hypothesis which the researcher had put forward, which states that learning through the same curriculum system while belonging to the same social cultural environment, learners will display similar characteristics of creative thinking skills, and will have no differences their creative thinking potential. This is because school type was found to matter in the creative potential of learners, as the results did show that private school learners have higher levels of creative thinking skills than those of public school learners. Showing that attending private or public school was a factor on the creative thinking potential of a secondary school learner in Lusaka district. Further, this study found that gender was not a factor in creative thinking potential of the learning individual, this is because the findings did show that there were no statistical significant differences between male and female students' creative thinking potential.

CHAPTER FIVE: DISCUSSION OF FINDINGS

5.0 Overview

This study has the aim of finding out the extent to which secondary schools in Zambia are supporting the development of creative thinking skills of the learning individual. It has also the aim of establishing whether learners that attend private secondary schools and those that attend public secondary schools will display similar levels of creative thinking skills. Equally, it as well aims at finding out whether the level of creative thinking skills in secondary school learners will depend on gender. Therefore, while in the previous chapter a presentation of the findings from the collected data was made, this chapter aims at discussing these obtained findings according to the laid down objectives and questions that guided the research. Additionally, this chapter also makes comparisons and references with what has been found in relation to creative thinking, in other studies that exist in literature.

5.1 To what extent are learners in Zambia's secondary schools able to think creatively?

With the first objective of the study, drawing from the outcome-based curriculum that the education system in Zambia adopted since 2013, the researcher had hypothesised that because Zambia's national education curriculum system supports the development of creativity, learners will display higher levels of creative thinking skills. In order to test this hypothesis, creative thinking of the sampled population was assessed using the TTCT figural form-A. While the results showed that the sampled population had obtained on the Average standard score, the mean of ($M = 46.09$, $SD = 33.84$), and on the composite score of Creativity index the mean was at ($M = 43.02$, $SD = 34.34$). Both of these scores did fall below average of the percentile mark when compared with the norm mean percentile which is at (mean percentile, $M=50$). From these obtained results, it can be said that the study sample's creative thinking is below average. Therefore, leading to the failure to accept the null hypothesis, which stated that, since Zambia's national education curriculum system supports the development of creativity, learners would display higher levels of creative thinking. Equally, the findings did also show that even though the secondary school curriculum does support the development of creative thinking skills in every learner, this is not enough to guarantee creative thinking skills of the learning individual. This is because the findings from this study have shown that learners in secondary schools have low levels of creative thinking skills. In addition, this display of lower levels of creative thinking skills of learners from the study

sample does also give an indication of the status of creative thinking skills in Zambia's education process.

While in measuring for creative thinking, the TTCT uses sub scores of fluency, originality, elaboration, abstractness of titles, resistance of premature closure, and creative strength. Scores for each sub score, were also compared with the norm average (mean percentile, $M=50$). The results did show that the sampled population had better performed in abstractness of titles and resistance to premature closure, as the percentile mean was at ($M = 59.82$, $SD = 36.96$) and ($M = 58.73$, $SD = 34.11$) respectively. Showing evidence of good levels of abstraction and a sense of perseverance among the sampled population, as the mean for both of these scores was above the norm average of (mean percentile, $M=50$).

Datta and Roy (2015) argue that abstraction is an important aspect in cognitive development, as it gives an individual the ability to be able to analyse and process information by detecting patterns and relations, as well as solve complex problems. Equally, while abstractness of titles is an indicator that relates to the subjects' process of thinking, as it shows that the subject can organize and synthesize his/her thought process and produce a description of his/her images in a more deeply and richly manner (Scholastic Testing Service, 2017). Further, as abstraction allows an individual to identify relationships that exist between verbal and nonverbal ideals, and identify connections between physical and non-physical objects, this better performance in abstractness of titles, serves as an indication of good abstraction skills among the sampled population. Therefore, since with good abstract thinking skills, an individual can put into practice theories that they learn in class to everyday encounters, because they are able to see connections that are there between theories and the material substances of their everyday experiences. The sampled population can be said to possess good levels of abstraction skills.

The level of resistance to premature closure, which is an ability to resist the natural urge to jump into conclusions, as Torrance (1987) argued, was also above average as noted above. Resistance to premature closure allows individuals to have an open mind, which is an essential component for incubation processes to function (Torrance, 1987), thus allowing the individual to explore lots of options and ways of facing and solving problems at hand without easily settling on simple options that may not be effective enough. Equally, as incubation is important in the creative process

because it allows for the possibility of dynamic creativity developed, as it gives an individual adequate time that makes it possible for analysing of more possible outcomes and at the same time tease out more workable connections of ideas generated. The good levels of resistance to premature closure obtained by the study sample is a good indicator that the sampled population have some potential for creative thinking, as they can keep open for idea generation long enough.

According to Treffinger, Young, Selby, and Shepardson (2002), fluency builds on the assumption that quantity of ideas can stimulate production of ideas that are of quality. This is because from the many ideas produced, there lies potential for quality among one of the many generated ideas. However, the current study found scores for fluency lower than the average norm score of (mean percentile, $M=50$), as the result indicates that they had a mean of ($M = 45.79$ $SD = 28.63$), indicating a moderate potential in the production of numerous ideas, that may turn out to be of quality when elaborated further. Therefore, because the sampled population has displayed moderate potential in generation of numerous ideas in creative thinking process, as they displayed moderate levels of fluency. These findings show that there is an existence of idea generation among the sampled population, because a moderate score for fluency is not that bad, as it shows some potential that is there for further development of creative thinking skills.

Elaboration on the other hand, which is the making of ideas produced richer, more complete and expanded, and the checklist of creative strength sub scores were all found below the average norm mean of (mean percentile, $M=50$), at ($M = 34.37$, $SD = 29.41$) and ($M = 32.15$, $SD = 30.46$) respectively. The low score obtained in elaboration, serves as an indication of a lack of creative thinking skill required for explaining and communicating effectively one's ideas to the audience, this is because good communication skills are beneficial to the creative thinking process (Brodbeck, 2001; Frese, Teng, & Wijnen, 1999; Keller, 2001). Furthermore, because less creative individuals tend to create pictures/ideas with a minimum amount of details to identify their intentions (Scholastic Testing Service, 2017). Equally, because ideas are more likely to be perceived as creative when they are represented in high quality sketches that are easily understood, than when represented in low quality sketches that are not clear enough to relay a message (Kudrowitz, Te, & Wallace, 2012). Additionally, as Amabile (1996) argues that ideas generated, need to be made explicit and elaborate enough for easy understanding, when she included idea communication into the validation stage, in her model of the creative process. This show how

important it is for making generated ideas more explicit and elaborate for easy understanding. In order to achieve production of good and quality representation of ideas one needs, therefore, to displays good elaboration skills. This is because good elaboration skills lead to easy communication of these ideas to the audience/public in an effectively and definitive manner so that they are easily understood and consequently easily applied. It is not enough only to produce ideas; there is need to communicate them to the audience/community effectively. Therefore, the low scores obtained by the sample, in this creative sub score further supports the low levels of creative thinking skills reported in this study. This is because good elaboration as observed above, does lead to good and clear communication of generated ideas to an audience, which is an important component of the creative process.

While originality is central to creativity (Amabile, 1996; Plucker, Beghetto, & Dow, 2004; Runco & Jaeger, 2012; Glaveanu, 2013; Corazza, 2016), originality sub score was however, the lowest reported score in this study, with the percentile mean at ($M = 29.88$, $SD = 26.05$) indicating the low levels of original thinking among the study sample. This poor score in originality does further explain the low creative thinking levels in the sampled secondary school learners. Additionally, as Corazza (2016) argues that creativity depends heavily on potential originality, likewise while Runco and Jaeger (2012) says that original thinking leads to creativity. This reported low score in original thinking is not a good sign for the education system that seeks to produce creative individuals. Therefore, as originality is an important component to the individual's creative thinking skills, the poor originality score reported in this study further indicates the low levels of creative thinking found.

5.2 Is the school being private or public a factor in the learner's ability to think creatively?

For the second objective for this study, it was hypothesized that learners who go through the same curriculum system and are of the same social cultural environment, will display similar characteristics of creative thinking skills, and will have no differences in their creative thinking potential. This hypothesis was arrived at because secondary schools in Zambia have adopted and are exposing learners to an education curriculum that seeks to produce innovative and creative individuals (ZECF, 2013). Since this is the case, the development of learners in creative thinking will not have significant variations due to the fact that the goals of the education system they are all exposed to, are the same.

When descriptive statistics were performed, the mean scores indicated that students from private schools had a higher mean on the composite score of Creativity index ($M = 114.27$, $SD = 22.11$, $N = 90$), than that of public schools students which was at ($M = 98.96$, $SD = 22.11$, $N = 87$). Equally, on the Average standard score, private schools students had a mean of ($M = 103.29$, $SD = 18.83$, $N = 90$) which was also higher than the mean of ($M = 90.59$, $SD = 19.04$, $N = 87$) for students from public schools.

After independent samples t-test were run, so as to compare the mean scores of students in relation to their school type on the obtained score of Creativity index and Average standard scores, significant difference was found between them. This difference found is supported by the p-value of $t(175) = 4.60$, $p < .001$, on a two tailed, for the composite score of Creativity index. With the difference of 15.31 scale unit indicating their difference in creative thinking potential in reference to the Creativity index score with a medium effect size reported at ($d = .69$) and the 95% confidence interval around the difference between group means was (CI) [8.75, 21.87] supporting further the existing difference between the two groups. Equally, the composite score of Average standard score, also did indicate the existence of significant difference in relation to school type, as the p-value found was $t(175) = 4.46$, $p < .001$, on a two tailed. With the difference of 12.70 scale unit indicating their difference in creative thinking potential in reference to the Average standard score with a medium effect size reported at ($d = .64$) and the 95% confidence interval around the difference between the group means was (CI) [7.08, 18.31]. These differences found indicated a creative thinking potential difference with a medium effect size on both composite scores of Creativity index and Average standard score, showing that private school students have better creative thinking skills than students from public schools do. Thus, with these obtained results, the researcher could not accept the null hypothesis. This is because the results indicated that secondary school students from private schools have better creative thinking skills than those of public secondary schools.

While the findings in this study did show support to researchers that have argued for the influence that immediate environmental factors have on the development of individual's cognitive ability (e.g. Glaveanu, 2013; Adams, 2006; Nwazuo, Olatoye, & Oyundoyin, 2002; Russ et al., 1999), in this case the cognitive ability of creative thinking. In addition, while the findings of this study were in line with (Castillo-Vergara et al., 2018; Pany, 2014; Nazima & Hummara, 2012).

Furthermore, as the obtained results did also give support to Bronfenbrenner's ecological theory as well as Vygotsky's sociocultural and developmental theories, this is because the findings did show that immediate learning environment does matter in an individual's creative thinking potential. Private schools can be said to have social affordances, constraints and opportunities through their practices of what the curricula requires in order to impart creative thinking skills in the learner, than public schools. However, while the results in this study show an existence significant difference in creative thinking skills between private and public school learners. These results do not support the findings of Fidan and Oztürk (2015) in a study conducted in Turkey on school teachers, where they found no significant relationship between school climate and creativity.

Despite these findings, further research however, is required to identify what these affordances are, that may exist in private schools that are making students to display better creative thinking skills than public school students. What are these characteristics of private school learning environment that allow private school learners to have better levels of creative thinking skills that may be lacking in public schools, as the findings indicates that private school learners have better creative thinking skills? In addition, what are private schools doing better that is leading to their students display better performance in creative thinking than public schools students? These could be some among other questions that can be asked in further explorations on the subject of creative thinking skills in Zambia.

5.3 Is gender difference a factor in creative potential of the learner?

The third objective for this study hinged on the hypothesis that gender is a factor on the creative potential of an individual, thus individuals of different gender will display differences in their creative thinking skills. When descriptive statistics were performed, the mean scores showed that female students had a higher Creativity index mean of ($M = 110.24$, $SD = 22.21$, $N = 83$), than that obtained by male students which was at ($M = 103.66$, $SD = 24$, $N = 94$). Further, on Average standard score the mean for female students was ($M = 99.99$, $SD = 19.32$, $NP = 83$), while for male students it was ($M = 94.46$, $SD = 20.20$, $N = 94$) indicating a higher score for female students as well. However, after independent samples t-test were run to compare the mean scores of students in relation to their gender on the obtained score of creativity index and average standard scores there was no statistical significance difference of creative thinking skills in relation to gender. This

lack of significant difference is further supported by the p-value of $t(175) = 1.89, p = .061$, on a two tailed, that was obtained. Equally, the difference of 6.58 scale unit indicated their difference in creative thinking potential in reference to the creativity index score with a smaller effect size reported at ($d = .28$) and the 95% confidence interval around the difference between the group means was between (CI) $[-.31, 13.47]$, supporting the absence of significant difference. Further, in reference to the average standard score, the results still showed no statistical significance differences, as the p-value was $t(175) = 1.86, p = .065$, on a two tailed. In addition, the difference of 5.53 scale unit indicated their difference in creative potential, with a smaller effect size which was reported at ($d = .28$) and the 95% confidence interval around the difference between the group means was between (CI) $[-.35, 11.41]$. The findings in this study have shown no significant difference in creative thinking potential of the sample, in relation to their gender, as a smaller effect size found on both composite scores of Creativity index and Average standard score has further revealed. With these findings, the researcher therefore found no statistical evidence that will lead to the support of the null hypothesis.

Although, the findings from this study are in line with researchers (e.g. Barrantes-Vidal, Caparros, & Obios, 1999; Lee, 2002; Jiliang & Baoguo, 2007; Baer, 2005; Nazima, & Hummara, 2012; Ponnusamy, 2019; Kumar, 2020), whose results indicate lack of significant difference between individuals in relation to their gender. They are however, not in line with other findings by researchers (e.g. Anwar, Rasool, & Haq, 2012; Awamleh, Farah, & El-Zraigat, 2012; Hong et al., 2013; Kousoulas & Mega, 2009; Stephens et al., 2001; Pany, 2014; & Castillo-Vergara et al., 2018) who all reported statistical significance differences between male and female students in their studies. Equally, while these studies show that female students perform better than male students, other studies (e.g. Stoltzfus, Nibbelink, Vredenburg, & Thyrum, 2011; He, Wong, Li, & Xu, 2013) have however, reported results that show males doing better than females in their creative thinking skills, further showing an existence of varying results in the field in relation to gender differences.

According to Kaufman (2016), these differences in the findings that are reported in literature, in relation to gender, depends on the wider cultural differences that exist throughout the world, as it varies among different ethnic groups. This is because social cultural factors do affect males and females differently depending on the social environments to which they belong. Equally, as Helson

(1990) postulate that performance in creative thinking of females will vary based on social context, individual differences in motivation, as well as social changes that happen overtime. The differences in cultures, socio-economic status, and environmental settings will categorically have an influence on how creative individuals will be in relation to their gender, due to the way cultures place value on individuals in relation to their gender.

While, students from a Zambian context, gender has been found not to be a significant factor as supported by the findings of the current study. Further studies need to be carried out on different levels of education and age. This is because level of education and age has also been found in other studies to be a factor in determining the kind of differences that may or may not exist, in terms of creative thinking. For example, the findings of Jia, et al., (2020) report varying results according to grade level in relation to gender. Where at 4th grade, there were no significant differences, but at 8th grade, there was significant different in favour of boys, showing an existence of other variables that may not be social or cultural in nature, to influence the outcomes in other possible different ways when gender is taken as an independent variable. Similarly, further studies on different variables that may provide further explanations on the status of creative thinking skills in Zambia's learners need to be explored. Further studies in the field, could as well explore ways of improving creative thinking skills of not only male learner's, but of every individual student, for the betterment of the education process in Zambia's education system.

5.4 Summary

The results from this study indicates that grade 12 secondary school learners have lower levels of creative thinking skills, even though the curriculum they are exposed to does support the development of creativity. However, even though this study has revealed lack of creative thinking skills in the sampled secondary school learners, a closer look at each individual creative sub score did show that the sampled population had better abstraction skills. This is because the findings indicated that the study sample had better performed in abstractness of titles, which was above average. Equally, the study has revealed evidence that show that secondary school learners can keep an open mind and resist the natural urge of jumping into conclusions without analysing the problem at hand. This is seen in the good performance displayed on the sub score of resistance to premature closure, which was also above average.

The study also found moderate levels fluency in the sampled population, which could be an indication however, on a moderate level that there is potential for further development of creative thinking skills. This is because this sub score allows for the production of numerous ideas that may turn out to be of quality when elaborated further. The communication of generated ideas, on the other hand, was very poor, as supported by the poor performance in the sub score of elaboration. Equally, as originality is the most important dimension of creativity and creative thinking, the findings in this study did indicate that this sub score was the lowest obtained score, thus giving further evidence of the low levels of creative thinking skills that have been found among the sampled secondary school students.

Furthermore, the findings from this study gave support to the importance of immediate environmental influence on the individual's creative thinking skills development. This is seen by the better performance of private schools students who out performed their public schools counterparts, showing that immediate environment does matter in the development of creative thinking of the learning individual. Further raising questions such as: What is it that is making private school students show better creative thinking potential than public school students? What are private schools doing that is leading their learners to be more creative than those of public schools even when they are all using the same curriculum education?

However, while the study had results that showed female students having higher mean score in Creativity index and Average standard scores than male students. The results from independent samples t-test showed no statistical significance difference to warrant the acceptance of the null hypothesis, which stated that gender has an effect in the creative potential of an individual. Thus, indicating that gender in secondary school students of Lusaka district is not a factor to creative thinking abilities of an individual. It is therefore important that learners be given equal treated and attention regardless of their gender when educating for creativity. Equally, these findings on gender did also perpetuate the inconclusive findings that literature shows in the field, where gender is not a factor to creative thinking as found in some studies, while at the same time other studies have reported it to be a factor.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.0 Overview

This chapter, presents the summary, conclusions, and recommendations emanating from the study.

6.1 Conclusion

This study was conducted within Lusaka district, and a comparative design under a quantitative approach was applied. While, it had a sample of 180 students from six private and public secondary schools in Lusaka district, out of which 177 students successfully responded to the test that was given them. Data collection was done by administering the Torrance Test of Creative Thinking (TTCT) figural form-A.

The study had aimed at analyzing whether Zambia's national education curriculum was supporting the development of creative thinking skills of secondary school learners. Equally, it had aimed at finding out whether private and public school learners will display similar levels of creative thinking skills, since they all learn under the same curriculum. Thirdly, the study also aimed at finding out if there existed any differences in creative thinking potential of students from the sampled population in relation to gender.

The findings have revealed that, grade 12 secondary school learners have low levels of creative thinking skills. Further, school type has been found to matter in the creative thinking potential of the learners, this is because private school learners showed higher levels of creative thinking than did public school learners. However, the findings from this study did show that gender was not a factor in creative thinking potential, this is because there was no significant difference found in creative thinking potential of the sampled population in relation to their gender. The study has established further that, although secondary school students learn under the same national curriculum, their display of creative thinking skills differs, and it depends on whether they attend private or public school.

In conclusion, the findings from the current study revealed that school type is a factor in the creative thinking skills potential of learners. This is because learners from private schools did display higher levels of creative thinking skills than those from public schools, even when they all attend school under the same curriculum. Further, the study has discovered that gender differences

do not matter in creative thinking potential, as did show the findings from the study population. In addition, even though Zambia has adopted an Outcome-Based Education for its national curriculum, which prioritizes among others, the development of desired competencies that include creativity, for the secondary school learner. The findings obtained from the sampled population of Lusaka district grade 12 learners, show that learners in secondary schools have below average levels of creative thinking skills, thus indicating that the goals of producing a creative learner as set by the national curriculum are not being fully realized.

6.3 Recommendations

Arising from the findings of this study, the following recommendations to policy makers and suggestions for further research have been proposed:

A. Recommendations for Policy Makers

1. The Ministry of General Education (MoGE) through the Curriculum Development Centre (CDC) may explore methods that will enhance the learning process so that it can support the nurturing and development of creative thinking skills of the learning individual in secondary schools.
2. As the findings for this study have revealed that learners from private schools display better levers of creative thinking potential than those from public schools, thus the Curriculum Development Centre (CDC) should create deliberate policies will allow them undertake comparative evaluations of learning process in both school types so as to understand better ways of delivering the curriculum.
3. Policy makers should formulate deliberate policy that will ensure that teachers teach for creativity during every learning process in both private and public secondary schools, so as to enhance the development of creative thinking skills in every learner.

B. Suggestions for Further research

While the current study yielded a number of insightful findings, there still remains a number of areas that require further research. The following are some of these areas:

1. Finding out what makes learners from private schools display better levels of creative thinking skills than those of public schools.
2. Explore and formulate methods that will enhance the learning process so that it can support and nurture the development of creative thinking skills of the learning individual, in secondary schools.
3. Conduct further studies with similar objectives, but with a target population of different levels of education, so as to get a broader understanding of creativity in Zambia's education system.

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APPENDICES

Appendix A: Description of The Creativity Assessment Tool Used

The TTCT figural form consist of three activities that are made up of stimulus drawings that act as stating points for the test taker to: Construct a picture in an activity called *Picture construction*, Complete a picture in an activity called *Picture completion*, and to create images using *Lines*. The test however need to be taken in a game like manner atmosphere. Below is the permission and the TTCT terms of use.



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PERMISSION TO USE RESEARCH MATERIAL

Date: January 20, 2020

From: Scott Rich
Senior Manager of Assessments
Scholastic Testing Service, Inc.
480 Meyer Road
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To: Venon Kabengo
Master Degree Student
Department of Educational Psychology
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This agreement hereby grants permission to purchase and research certain material (hereinafter referred to as "Material") owned by Scholastic Testing Service, Inc. (hereinafter referred to as "Publisher"), for subsequent use in a research study conducted by Venon Kabengo within the Department of Educational Psychology, University of Zambia. By executing this agreement, the undersigned agrees to abide by all terms, conditions, and provisions as stated herein.

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"Torrance Tests of Creative Thinking, Thinking Creatively with Pictures, Figural Edition Form A and Form B; and ancillary materials including but not limited to manuals of direction, norms-technical manuals, and manuals of scoring and interpreting," by E. Paul Torrance, Ph.D.

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6. That no portion of the Material may appear outside of the Material in any form, or in any other paper, report, summary, article, or piece, published or unpublished by Venon Kabengo.
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- A. To restrict the use of the Material specifically as stated in this agreement. For any future research, permission must be requested.
- B. To send one (1) gratis copy of any reports, papers, synopsis of research, data analysis, or articles regarding said research, published or otherwise, to Scholastic Testing Service, Inc.
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Venon Kabengo:

Agreed: VENON KABENGO
Venon Kabengo (Print Name)

Date: 01/20/2020

Signature: 
Venon Kabengo (Sign Name)



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Signature: Scott Rich Title: Senior Manager of Assessments Date: 1/20/20
Scott Rich

Appendix B: Ethical Clearance Form



THE UNIVERSITY OF ZAMBIA

DIRECTORATE OF RESEARCH AND GRADUATE STUDIES

Great East Road | P.O. Box 32379 | Lusaka 10101 | Tel: +260-211-290 258/291 777
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RESEARCH DEPARTMENT

APPROVAL OF STUDY

25th September, 2020.

REF NO.HSSREC-2020-JAN-010

Venon Kabengo
LUSAKA

Dear Mr. Kabengo,

RE: "CRITICAL THINKING AND CREATIVITY SKILLS: A STUDY ON THE TEACHING AND LEARNING TECHNIQUES USED IN MATHEMATICS AND NATURAL SCIENCES EDUCATION IN SECONDARY SCHOOLS OF LUSAKA DISTRICT"

Reference is made to your protocol dated 1st January, 2020. HSSREC resolved to approve this study and your participation as Principal Investigator for a period of one year.

REVIEW TYPE	ORDINARY REVIEW	APPROVAL NO. HSSREC-2020- JAN-010
Approval and Expiry Date	Approval Date: 25 th September, 2020	Expiry Date: 24 th September, 2021
Protocol Version and Date	Version - Nil.	24 th September, 2021
Information Sheet, Consent Forms and Dates	• English.	To be provided
Consent form ID and Date	Version - Nil	To be provided
Recruitment Materials	Nil	Nil
Other Study Documents	Questionnaire.	
Number of Participants Approved for Study		

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Specific conditions will apply to this approval. As Principal Investigator it is your responsibility to ensure that the contents of this letter are adhered to. If these are not adhered to, the approval may be suspended. Should the study be suspended, study sponsors and other regulatory authorities will be informed.

Conditions of Approval

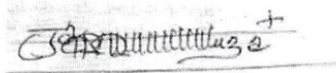
- No participant may be involved in any study procedure prior to the study approval or after the expiration date.
- All unanticipated or Serious Adverse Events (SAEs) must be reported to HSSREC within 5 days.
- All protocol modifications must be approved by HSSREC prior to implementation unless they are intended to reduce risk (but must still be reported for approval). Modifications will include any change of investigator/s or site address.
- All protocol deviations must be reported to HSSREC within 5 working days.
- All recruitment materials must be approved by HSSREC prior to being used.
- Principal investigators are responsible for initiating Continuing Review proceedings. HSSREC will only approve a study for a period of 12 months.
- It is the responsibility of the PI to renew his/her ethics approval through a renewal application to HSSREC.
- Where the PI desires to extend the study after expiry of the study period, documents for study extension must be received by HSSREC at least 30 days before the expiry date. This is for the purpose of facilitating the review process. Documents received within 30 days after expiry will be labelled "late submissions" and will incur a penalty fee of K500.00. No study shall be renewed whose documents are submitted for renewal 30 days after expiry of the certificate.
- Every 6 (six) months a progress report form supplied by The University of Zambia Humanities and Social Sciences Research Ethics Committee as an IRB must be filled in and submitted to us. There is a penalty of K500.00 for failure to submit the report.
- When closing a project, the PI is responsible for notifying, in writing or using the Research Ethics and Management Online (REMO), both HSSREC and the National Health Research Authority (NHRA) when ethics certification is no longer required for a project.
- In order to close an approved study, a Closing Report must be submitted in writing or through the REMO system. A Closing Report should be filed when data collection has ended and the study team will no longer be using human participants or animals or secondary data or have any direct or indirect contact with the research participants or animals for the study.

- Filing a closing report (rather than just letting your approval lapse) is important as it assists HSSREC in efficiently tracking and reporting on projects. Note that some funding agencies and sponsors require a notice of closure from the IRB which had approved the study and can only be generated after the Closing Report has been filed.
- A reprint of this letter shall be done at a fee.
- All protocol modifications must be approved by HSSREC by way of an application for an amendment prior to implementation unless they are intended to reduce risk (but must still be reported for approval). Modifications will include any change of investigator/s or site address or methodology and methods. Many modifications entail minimal risk adjustments to a protocol and/or consent form and can be made on an Expedited basis (via the IRB Chair). Some examples are: format changes, correcting spelling errors, adding key personnel, minor changes to questionnaires, recruiting and changes, and so forth. Other, more substantive changes, especially those that may alter the risk-benefit ratio, may require Full Board review. In all cases, except where noted above regarding subject safety, any changes to any protocol document or procedure must first be approved by HSSREC before they can be implemented.

Should you have any questions regarding anything indicated in this letter, please do not hesitate to get in touch with us at the above indicated address.

On behalf of HSSREC, we would like to wish you all the success as you carry out your study.

Yours faithfully,



Dr. J. Mwanza

DR. JASON MWANZA

Dip. Clin. Med. Sc., BA.M.Soc., PhD

CHAIRPERSON

THE UNIVERSITY OF ZAMBIA HUMANITIES AND

SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE - IRB

cc: Director, Directorate of Research and Graduate Studies
 Assistant Director (Research), Directorate of Research and Graduate Studies
 Assistant Registrar (Research), Directorate of Research and Graduate Studies

Appendix C: Participant Information Sheet

Research Title: A Comparative Study of Creative Thinking Skills Between Private and Public School Grade 12 Learners of Lusaka District, Zambia.

My name is ***Venon Kabengo***, I am a Masters student at The University of Zambia and am kindly requesting your participation in my research.

The purpose of the research is to gather information that will bring to light how the creative learners are in secondary schools of Lusaka district, so that policy makers may formulate policies that is based on scientific evidence.

The study requires the participation of private and public schools grade 12 learners who will be required to take part in a test exercise that is designed to measure creativity thinking skills.

All the information that is going to be obtained from every participant who consents to take part in the test will not be shared with any one and will only be used purely for educational purpose that this research is dedicated to. This includes personal and school information that is collected from this research project, the researcher will keep private and will not be published in the final documents, instead codes will be used to identify individual schools and participants.

However, the knowledge that the research will generate will be available for the public to have access whenever they are in need of it.

Participation in this research is entirely voluntary. It is your choice whether to participate or not. Equally, every participant reserves the all the rights to free choice, thus you may if you decide to change your mind later, withdraw your participation even if you had agreed earlier.

There will be no direct benefit to the participants, but your participation is likely to help the advancement of knowledge in the area being researched upon.

Contacts for Further Queries: Email: keynghope@outlook.com or on cell +260967887917.

Appendix D: Consent Form

Research Title: A Comparative Study of Creative Thinking Skills Between Private and Public School Grade 12 Learners of Lusaka District, Zambia.

Students Voluntary Consent

I have read (or have had explained to me) the information about this research as contained in the Participant Information Sheet. I have had the opportunity to ask questions about it and any questions I have asked have been answered to my satisfaction.

I now consent voluntarily to be a participant in this project and understand that I have the right to end the interview at any time, and to choose not to answer particular questions that are asked in the study.

My signature below says that I am willing to participate in this research:

Participant's name (Printed):

Participant's signature:/Date:.....

Researcher Conducting Informed Consent (Printed):.....

Signature of Researcher:..... /Date:.....

For students that are below the age of eighteen

Signature of parent/guardian:...../Date:.....