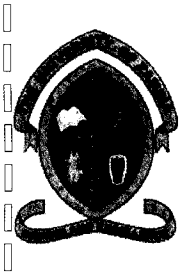


THE UNIVERSITY OF ZAMBIA
AND
ZIMBABWE OPEN UNIVERSITY

Teachers' Perceptions on the Implementation of the Revised Zambian Curriculum on Numeracy in Primary Schools, Solwezi, Zambia.

A Dissertation Report

By

Mukokwe Jonas

Submitted to The University of Zambia in collaboration with Zimbabwe Open University in Partial Fulfilment of the Requirements for the Degree of Master of Education

in

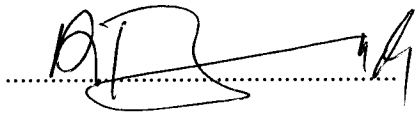
Educational Management

Lusaka, Zambia.

THE UNIVERSITY OF ZAMBIA IN COLLABORATION WITH ZIMBABWE OPEN UNIVERSITY

Approval Form

The undersigned certify that they have read, and recommend to the University of Zambia in collaboration with Zimbabwe Open University for acceptance a dissertation entitled "Teachers' Perceptions on the implementation of the revised Zambian Curriculum in Numeracy in selected Primary Schools of Solwezi district, North-western province, Zambia" Submitted by Mukokwe Jonas in partial fulfilment of the requirements for the Master of Education degree in Educational Management.



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DEDICATION

This dissertation is dedicated to my mother, Louise Mulyati, my wife Emma Mankishi, and all my children in remembrances of their support during my period of study.

ABSTRACT

The study established that primary school teachers' perceptions on the implementation of the revised curriculum on numeracy were many and varied across experience, geographical location. The study indicated that teachers have not read the contents of revised curriculum on numeracy, for them to internalise the goals that they need to pass on to learners. Furthermore, gender did not affect the way teachers perceived the implementation of the revised curriculum. However, they are aware about the revised curriculum through the changes they have seen in the syllabus and the delivered teaching/learning materials and they are generally happy in that learners are breaking through quickly in both numeracy and literacy.

The study has also established that class teachers who have taught over ten (10) years in service have an idea on best practices of teaching mathematics, and view primary school leavers as not adequately prepared for lifelong skills as stated in the revised curriculum and the SDGs goal number four (4).

The study was conducted using a purely qualitative methodology with triangulation done through lesson observation, oral interviews with other stakeholders such as town clerk, Head teachers, community members and learners.

This conforms to the theoretical underpins of this study; Human Capital and Systems theories. The capabilities and skills of learners have to be developed in order to enhance creativity, innovation and productivity among learners and this depends on many varied variables in an open system. Teacher efficacy, teaching/learning materials and the pedagogies of teaching mathematics play a vital role in shaping a learner in acquiring lifelong skills. Therefore, teaching of mathematics in Primary schools should be taken seriously.

ACKNOWLEDGEMENTS

I am indebted to the Ministry of Education, Science, Vocational and Early Childhood education for granting me permission to carry out this research in selected Solwezi schools of North-western Province, Zambia. To the Solwezi director of Education, Town clerk, all School Heads, Teachers and Learners in the sampled schools I say thank you for the cooperation and assistance that you offered to me.

I fully appreciate the great assistance and unwavering support which I received from my supervisor Dr D. Banda of The University of Zambia, Great East Road Campus who found time from his busy schedule and was always ready to challenge me with lots questions which helped me to remain focused even at times it would have been difficult to see the way forward.

To my mother louise Mulyati, my wife Emma Mankishi Mukokwe and all my children thank you for standing by my side and giving me the needed moral support and encouragement during some of my difficulty moments.

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ACRONYMS

ADL	Activities for Daily Living
AIDS	Acquired Immune Deficiency Syndrome
BESSIP	Basic Education Sub-Sector Investment Programme
CBD	Central Business District
CDAZ	Child Development Assessment for Zambia
CDC	Curriculum Development Centre
CPD	Continuing Professional Development
DODE	Directorate of Open and Distance Education
ECCDE	Early Childhood Care, Development and Education
ECE	Early Childhood Education
ECZ	Examinations Council of Zambia
ESS, S & C	Education Specialised Services, Standards and Curriculum
GCE	General Certificate of Education
HE H	Home Economics and Hospitality
HIV	Human Immunodeficiency Virus
ICT	Information and Communications Technology
IK	Indigenous Knowledge
MDGs	Millennium Development Goals
MoE	Ministry of Education
MESVTEE	Ministry of Education, Science, Vocational Training and Early Education
NEAP	National Environmental Action Plan
NGOs	Non-Governmental Organizations
OBE	Outcomes- Based Education
ODL	Open and Distance Learning
PEPFAR	President's Emergency Plan for AIDS Relief
PopFLE	Population and Family Life Education
SADC	Southern Africa Development Community
SDGs	Sustainable Development Goals
SHN	School Health and Nutrition
RSNDP	Revised Sixth National Development Plan
TEVET	Technical Education, Vocational and Entrepreneurship Training
TEVETA	Technical Education and Vocational Training Authority
UN	United Nations
UNESCO	United Nations Educational Scientific and Cultural Organisation
UNZA	University of Zambia
ZECF	Zambia Education Curriculum Framework
ZNQF	Zambia National Qualifications Framework
ZPC	Zambia Primary Course
ZOU	Zimbabwe Open University

Chapter I

1.0 Introduction

The chapter endeavours to present the felt need that necessitated an investigation into the perceptions of teachers on the implementation of the Zambian revised curriculum on numeracy in primary schools in selected schools of Solwezi district, North-western province, Zambia. The chapter starts with background to the study, statement of the problem, purpose of study, study goal/ objectives, research questions, significance of the study, definition of terms, delimitations, the limitations of the study and ethical considerations.

1.1 Background to the study

The Zambian educational curriculum places mathematics as one of the compulsory subjects in the primary schools in Zambia. Mathematics is considered to be pivotal in developing learners' critical and analytical thinking skills, popularly known as Higher Order thinking Skills (HOTs). Surprisingly, most primary school teachers have accorded very little attention to the development of this important skill among learners.

The pedagogical and didactic approaches that enhance the development of critical thinking are rarely used in the teachers' day to day classroom interaction with learners. It is the use of higher order thinking skills that critical issues are solved, a prerequisite to an innovative and inventive mind needed for technological advancement of a country.

Globally, the curricula of most developed countries emphasise practical application of real life problems and the use of constructivist approaches in teaching mathematics. Mathematics is used world over in everyday life by all of us. Common activities such as budgeting in a home, shopping, hunting, technological designs and decision making all require the application of mathematics. Yet the proficiency of mathematics in the country has not been so encouraging. The learners that complete primary school education hardly have any mathematical skills to enable them live a meaningful productive life.

Burton (1992:69) posits that, "everyone has, as matter of fact, a certain image of mathematics, without necessarily knowing much about the subject". It is in such context that ethno mathematics is conceptualised among people, it is part of us. We live and survive by application of mathematical concepts to make our lives better. Mathematics is an important technological tool for human advancement.

Next to what should be taught, a curriculum also combines the thought, action and purpose, that of being a specific, tangible subject that is always tied to decision-making within institutions (Null, 2001). A curriculum reflects the beliefs, ideology and vision of a nation. In Zambia, passing mathematics is a prerequisite to enter most tertiary institutions.

Parallel with mathematics education reform movements in many countries, the new education mathematics curriculum requires a significant shift in the teaching and learning of mathematics within the classroom. In contrast to the old curriculum, the new education curriculum in numeracy includes a larger emphasis on learner-centred instruction, problem solving, open-ended explorations, modelling real-life situations, and the use of technology as a tool to support mathematics learning (MOE, 2013).

Teachers are considered to have a critical role for the actualization of the ideas in the new curriculum. Hence, no matter what the curriculum suggests, it is the teacher who makes the ultimate decisions about what is going on in the classroom. The Teachers' potential to learn and adapt to innovations can lead to students learning and acquaintance with the innovations in the classrooms. In that sense, teachers are seen as both the means and ends of curriculum reform movements (Cohen & Hill, 2001). Therefore, any curriculum change should pay attention to what teachers know and believe. It is for this reason that this study was undertaken to establish teachers' perceptions on the revised Zambian curriculum on numeracy.

1.2 Statement of the problem

Zambia considers mathematics highly as a subject that is seen to play an important role in the country's technological advancement. It is this technological advancement that result in mass production and eventually national development. Various scholars attribute mathematical skills of creativity, innovation, and self reliance stated in the

Zambian curriculum to contribute to making learners productive. This individual productivity may collectively culminate into national development (Thenjiwe et al, 2012). That is one of the reasons why mathematics is made as one of the mandatory requirement subjects for entry to tertiary education in most countries.

In Zambia, it seems primary school leavers fail to effectively use mathematical skills acquired during the seven (7) years of being in school. Even the overall unsatisfactory performance in mathematics of 29 percent (%) at grade nine level of 2015 academic year is evidence of learners not acquiring mathematical skills (MOE, 2016). The grades seven (7) and twelve (12) performance are not any different from the 2015 grade nine performance.

Many In-service teachers' training programmes have been put in place to improve learner performance but they also seem not to improve the situation. Teachers' emoluments have been improved to the extent that most primary school teachers can now afford to purchase a good second hand vehicle from Japan, through loan schemes. Yet no meaningful improvement in learner performance in mathematics has been recorded in Zambia.

It is further believed that the curriculum will equip learners at all levels of education with vital knowledge, skills, positive attitudes and values that are necessary for contributing to the achievement of the Vision 2030. This is in line with the 2016 Sustainable Development Goals (SDGs) goal number 4 on education which states that "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" (UNESCO, 2015).

There are many pressures for the curriculum review, including responding to internal and external requirements driven by the Government or professional bodies, the need to create and maintain the learning "market", delineating content, delivering that content, and developing learners (MOESVTEE, 2012).

Despite revising the Zambian curriculum, Primary school leavers seem to lack lifelong and problem solving skills that enhance individual productivity and perhaps consequently national development. While government thinks this is the way to go, we do not know whether or not other stakeholders think the same. One wonders if teachers think that way. It was in this context that this study was conducted to

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establish teachers' perceptions on the implementation of Zambian Education curriculum on numeracy in primary schools.

1.3 Purpose of the study

The study was aimed at establishing teachers' various views on the implementation of the revised Zambian curriculum on numeracy and maybe generate useful information on other good practices of teaching mathematics in Zambian primary schools that might be used in future reviews.

1.4 Study Objectives

1.40 General Objective

To establish Teachers' perceptions on the implementation of the revised Zambian curriculum on numeracy in primary schools in Solwezi district, North-western Province, Zambia.

1.41 The specific objectives of the study are:

i. To establish teachers' perceptions on the implementation of the revised Curriculum on numeracy in primary schools in Solwezi district,
ii. To identify teaching and learning methods that teachers use during lesson delivery in their classrooms,
iii. To determine teachers' efficacy and training that enable them to handle new curriculum demands in primary schools,
iv. To explore the availability of teaching and learning materials that supports the implementation of the revised curriculum in primary schools.

1.5 Research Questions

The study will advance the following research questions:

i. What are the teachers' perceptions on the implementation of the revised curriculum in numeracy in Zambian primary schools?
ii. Which teaching methods enhance desired mathematical skills stipulated in the revised Zambian curriculum?
iii. Have teachers been adequately trained to handle new curriculum demands stipulated in the revised Zambian curriculum?
iv. Are teaching and learning materials that support the implementation of the revised curriculum available in primary schools?

1.6 Significance of the study

The study established teachers' perceptions on the implementation of the revised curriculum on numeracy, of which some might be of help in informing MOE policy makers and curriculum specialists on how to improve future curricula. Furthermore, the study may equip school administrators with effective management strategies to enhance the teaching and learning of mathematics in primary schools.

Lastly, the study might generate information that may add to the existing literature on teachers' perceptions and the implementation of the mathematics curriculum in Zambia.

1.7 Theoretical Framework

The theoretical framework underpinning this study on teachers' perceptions of the implementation of Zambian revised education curriculum is a combination of Schultz's Human Capital and Ludwig Von Bertalanffy (1954) Open systems

theories. Education can be considered as an open system that is not self-contained in its existence. It depends on other systems in the community for it to survive. While The Human Capital theory advocates that investing in human resource results in improved individual productivity hence collectively culminating into national development (Woodhall, 1997).

1.8 Conceptual Framework

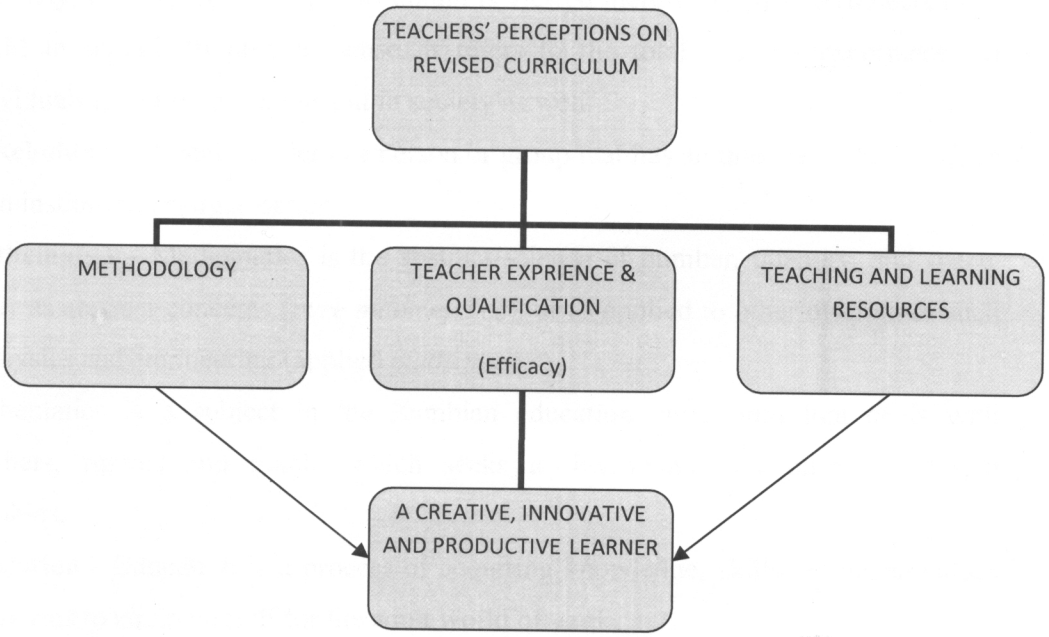

Figure 1 : Conceptual Framework

1.9 Scope of the study

The study on perceptions of teachers on the implementation of the revised Zambian education curriculum shall be conducted in North western province of Zambia, Solwezi district. One of the constraints of this study was difficulties in meeting all the stakeholders as the research was conducted during rainy season and people had

problems of movements to work places especially in rural parts of Solwezi district. Furthermore, interviewing officers at the District Director of Education's office needed a lot of visitations as most of them were either out for workshops or in the field supervising schools.

1.10 Operational Definitions

This section of the dissertation defines and clarifies the concepts used in this study.

Curriculum - The concept of curriculum is dynamic as there are changes that occur in society. In its narrow sense, curriculum is viewed merely as a list of subjects to be taught in school. In broader sense, it refers to the total learning experiences of individuals not only in schools but in society as well.

Stakeholders - A Stakeholder is a person or group that has an interest in the activities of an institution or organisation.

Mathematics - Mathematics is the abstract science of number, quantity, and space, either as abstract concepts (*pure mathematics*), or as applied to other disciplines such as physics and engineering (applied *mathematics*).

Mathematics is a subject in the Zambian education curriculum that deals with numbers, figures and graphs which seeks to investigate relationships between variables.

Education - Education is a process of acquiring knowledge, skills, attitudes, values and norms to equip oneself for the adult world of work.

Perception - Perception is the ability to see, hear, or become aware of something through the senses. In the curriculum context, perception is the way in which curriculum is regarded, understood or interpreted.

Planning - Planning is a process of selecting from alternatives or options, ways of putting into action and give effect to broad policy guidelines.

Constructivism - Constructivism is the theory of knowledge that argues that humans generate knowledge and meaning from an interaction between their experiences and ideas.

Team teaching - It is one of the procedures used in teaching in where teacher educators in the study area plan and teach together.

Team Planning - It means that cooperating with others including the learner to find ways to reach the educational goals while team teaching means working together with a close colleague or colleagues to deliver the material.

Indigenous language - It is a language of a place or a particular nation. For example, Zambia is a multi lingual state with at least 73 indigenous languages. English in Zambia is not an indigenous language.

Regional Official Language - Is one that has been selected for either teaching purposes or for the purpose of communication in Zambia where the regional official languages include: Bemba, Kaonde, Lozi, Lunda, Luvale, Nyanja and Tonga.

Official language - It is one that is chosen by authorities of the government for the purpose of communicating in places of work, and other government institutions. In Zambia, English is the official language being a neutral language and having some relation to technological and scientific terminology currently in use in our industries and related literature. English is a medium of instruction right from grade one.

Learner-Centred approach - It is the process intended to promote the holistic development of the child (learner) that is, physical, intellectual, social, affective, moral and spiritual qualities for their own fulfilment and the benefit of their immediate society.

Medium of Instruction - This is a language that is used to teach other subjects. In Zambia, English is used as a medium of instruction right from grade one.

Foreign Language - This is a language that comes outside one's community. In Zambia we have English as one of the foreign languages though it is used as our official language.

Local Language - This is a native language found in an area or community. All Zambian languages apart from foreign ones are all local languages.

1.11Delimitation

The study was conducted in selected primary schools of Solwezi district, North-western province of Zambia.

1.12 Limitations of the study

There were some limitations to this study. Firstly, the findings of this study may not be generalised to the whole country, as the study was only restricted to a few primary schools of one district. This posed inadequate representation to merit its findings to be universal.

Finally, most respondents were questionnaire fatigued, as many students were carrying out various researches in the same schools visited. This resulted in not achieving the targeted 100 teacher respondents.

1.13 Ethical Considerations

The following ethical considerations were observed. Firstly, respect of participants and their views was high on my agenda. All participants were accorded the respect they deserved. Informed consent was obtained before interviewing any respondent.

Secondly, privacy and confidentiality of respondents was also taken into consideration during information collection. In this regard no names of respondents were written.

Chapter II

2 REVIEW OF LITERATURE

2.1 Introduction

This chapter reviews stakeholder's perceptions towards the new Zambia mathematics curriculum in primary schools. It focuses on perceptions in general as they relate to the learning and teaching of mathematics and learners' performance in the subject and/or quality of life they lead after completing seven years of primary education.

2.2 Related Literature

Stakeholders' perceptions play a critical role in shaping the countries curriculum implementation and review. Curriculum reviews determine the way teachers deliver their day to day lessons since goals of the education system are clearly stipulated in there. Educators believe that understanding of perceptions and what education involves is essential if education is to achieve its ultimate goal (Mwamwenda, 1996).

As defined earlier in the operational definition, perceptions are individuals' particular ways of understanding, regarding, interpreting or thinking about something, in this case "mathematics curriculum" (Bandura, 1986). This individual understanding is independent of how others interpret mathematics curriculum. This interpretation is a function of prior knowledge gained by different individuals through interaction with the environment.

The perceived ideas about mathematics can either be positive or negative depending on value judgement of each stakeholder. If one stakeholder has seen accrued benefits to mathematical skills acquisition, then such an individual will value and hold mathematics as subject in high esteem. This also implies that, a positive perception of mathematics will enable one to support the teaching and learning of mathematics.

Many researchers such as Alausa (2000), Fisher and Rawnsley (1998) show that perceptions are very important to an individual as they play a critical role as they help in the manner one view the world and how they feel about what they encounter in

their daily lives (Mangal, 2001). What people encounter shape their experience and determine their value judgement.

This assertion suggests that the learner's learning process and understanding of mathematics is affected by their way of life. The way people live in a particular environment and they way they are brought up by their parents and type of community they live in determine the kind of perceptions individuals will have towards mathematics (Goldstein, 1980).

Therefore, the most consistent influence on perception is past experience (Mulendema, 2007). Some people argue that some education systems able its people that have passed through it to be self reliant and innovative. The case at hand is the Congolese and Zimbabwean education systems, where the curriculum has proved to be relevant and meaningful to the people of those countries.

At grades 1 and 2, much time will be devoted to teaching initial literacy and numeracy skills so that learners acquire the competences for further learning. The minimum learner-teacher contact time for lower Primary level is at least 21 hours per week. The duration for a single period at lower Primary (Grades 1 to 4) is 30 minutes. While the minimum learner-teacher contact time for Upper Primary level (Grades 5 to 7) is at least 27 hours 40 minutes per week. The duration for a single period at this level is 40 minutes (MOEVSTEE, 2012).

From the above statement, it is clear that much emphasis has been given to literacy and numeracy in primary education. However, the reason given for offering these two subject skills that of "learners acquiring the competences for further learning" maybe the main reason why learners fail to acquire the actual problem-solving skills in numeracy learning area.

Merely, learning mathematics as a tool for learning other subject is underscoring the importance of mathematics in the learners' acquisition of problem-solving skills for lifelong learning that is essential for national development.

In curriculum planning, educational planners must be visionaries and futuristic in order for them to formulate educational systems that are supportive, sensitive, facilitative and responsive to national development projects and programmes and that which is planned must be implemented (Coombs, 1970). Educational planning is the application of rational, systematic analysis to the process of educational development

with the aim of making education more effective and efficient in responding to the needs and goals of learners and society (Coombs, 1970).

Therefore, developing countries ought to plan and teach mathematical skills in primary schools that will enable learners to be analytical, creative, innovative, productive and self-reliant. As these learners become productive, communities, regions and ultimately the nation will become productive. This in turn will make the nation attain sustainable economic development.

One of the main purposes of educational planning is the generation of economic growth strategies through long term investment in human capital. Educated and skilled personnel stimulate economic development and acquisition of mathematical skills enables learners to be problem-solvers and innovative.

Todaro (1977) a renowned educational economist sums up the purpose of educational planning when he argues that educational needs for both young people and adults have to be taken into consideration through the four types of educational plans namely; General basic education, Family improvement education, Community improvement education and Occupational education.

General basic education is the type of education designed to promote literacy, numeracy and elementary understanding of science and one's environment and primary education strive to achieve these broad goals. Yet primary school leavers have not exhibited the desired competences that can enable them lead a productive and self-reliant life.

Family improvement education is educational planning that is primarily concerned with acquiring improved knowledge, skills attitudes that are useful in the improvement of the quality of family life. Family life is improvement in terms of healthcare, nutrition, home making and childcare, home repairs, maintenance and improvements and family planning.

While Community improvement education is education planned for community economic development and empowerment. Whereas, Occupational education is education that imparts particular knowledge and technical skills that are appropriate, relevant and associated with various economic sectors.

There seemingly close linkages between education and the informal sector. The growth of the informal sector in developing countries has precipitated a rethinking of its role in the economy. The informal employment not only continues to exist but

actually grow, while the formal employment in the formal sector is declining. Is there a way Primary school leavers can be equipped with to make them excel in the informal employment? Can equipping them with problem-solving skills help them become more productive in the informal sector?

In Angola, Nigeria, South Africa, Uganda and Kenya, a majority of informal sector workers are active in retail trade (Marcelli, E. Et al, 1999). Can the skill of negotiations or entrepreneurship be necessary in the primary school curriculum? It is clear that the high percentage of jobs in the informal sector in most developing countries are held by people with less education, mostly Primary school leavers.

This is consistent with the Gallaway and Bernasek (2002) study, which found that people with the highest levels of education were more likely to be found in the formal sector, whereas those with the lowest levels had the highest probabilities of working in the informal sector.

In education, cost-benefit analysis is concerned with the return to expenditure on education, viewed as an investment. The cost-benefit approach looks at each level of education as investment in human beings with the purpose that the returns will help to improve the whole country's economy (Blaug, 1967). This investment can only be realised if the school leavers acquire the necessary knowledge, skills, attitudes, values and morals that can make then creative, innovative and productive in their day to day life.

This entails that class teachers have change their pedagogies to using constructivist approaches that enable learners to construct their own knowledge. Such experiences will make learners to able to solve various life problems in everyday life with easy and it will become their life style. Constructivist approaches are likely to churn out primary school leavers who are good citizens, marketable, employable, entrepreneurial and responsible. These characteristics are desirable and that is what the Zambian curriculum is expected to yield.

Furthermore, education is meant to improve productivity at work. Human capital theorists argue that education bestows expectations and attitudes which bring about greater efficiency and satisfaction (Wan, 2007).The completion of primary education is supposed to significantly enhance the chances of running a business in the informal sector. Such school leavers will be equipped with the necessary skills to optimise their resources and sustain their businesses.

In relation to education and employment, Nyerere once said: "People cannot be developed". They can develop themselves. For, while it is possible for an outsider to build a man's house, an outsider cannot give a man pride and self confidence in himself as a human being. Those things a man has to create in himself by his own actions. He develops himself by what he does; by making his own decisions; by increasing his understanding of what he is doing and why; by increasing his knowledge and ability. Thus, a man is developing himself when he grows or earns enough to provide decent conditions for himself and his family; he is not being developed when someone gives him these things (Nyerere, 1973:60).

This implies that provision of education would make an individual self reliant in terms of knowledge and skills to engage in profitable work activities. This entails that educational planning for rural primary education should include subjects in school curricula that are centred on vocational and technical courses, practical in nature and the transmission of self reliance skills.

This is in line with research done by Chaube and Chaube (2005:103) that posits that, "Education should be closely related to the actual realities of life in all conceivable aspects". This realism philosophy advocates for education for life. It argues that education reflect the society in which it is being offered. It should prepare and empower the learner to fit into the environment in which they reside. Hence, learners who have acquired mathematical skills should adequately be prepared to take up roles of developing that particular society. Zvogbo (1996) also supports this assertion when he said, "Education has been regarded as a tool for human capital or the panacea for all national developmental challenges that are required to service the various socio-economic and socio-political institutions and structures". Based on this premise, the curricula of most countries are designed with what society believes will prove worthwhile knowledge to humanity. The realist perspective accommodates both academic and vocational education in order to address societal needs as propounded by society itself. The Zambian new educational curriculum has embraced this conceptual understanding of accommodating both academic and vocational education through the introduction of the career pathway.

Zvugbo (1996) also argue that most governments in developing countries seem to have fallen for the fallacy that academic education is the solution to problems of underdevelopment. Hence, the educational systems expanded quantitatively while no

correspondent growth was realised in the economic sectors to facilitate absorption of school leavers into employment and/or poses relevant vocational skills to enable them live a sustainable and self reliant life.

The legal conceptual framework in the education system in Zambia has now been crafted with this realist philosophy in mind. The policy makers in Zambia believe that introducing a curriculum reform through the vocationalisation of the curriculum would reduce failure rates, ensure educational quality and employment creation.

Adopting the realist philosophy in primary mathematics entails using the constructivist approach to teaching and learning. DeVries, Zan, Hildebrandt, Edmiaston, and Sales (2002) asserted that "teachers who have been accustomed to teaching by telling and directing children's work must shift from seeing themselves as central in producing learning to seeing the child as central"(p. 36).

From the study conducted by Thenjiwe Emily Major *et al.*, 2012) one can conclude that there was a lot of spoon-feeding in most classes. Students were not given tasks that encouraged them to be doers and thinkers of mathematics, but rather to be consumers of mathematics concepts. Knowledge construction was very limited in most classes making learning more teacher-cantered. The continued teacher domination in the Botswana teaching/learning environment will result in learners who cannot think deeply and critically. Knowledge is not passively received, but actively built up by the learners. Constructivism, therefore, encourages learners to be given the opportunity to construct their own knowledge from the previous experiences so at to be able to apply theory to practice and to make meaningful connections to what they learn to the real world.

The above arguments confirm both the Human Capital and Open Systems Theories. Human capital theory rests on the assumption that formal education is highly instrumental and necessary to improve the productive capacity of a population. It is for this reason that Primary school learners need to acquire lifelong skills yielded by mathematics education to enable them be critical thinkers. In short, human capital theorists argue that an educated population is a productive population. Human capital theory emphasizes how education increases the productivity and efficiency of workers by increasing the level of cognitive stock of economically productive human capability, which is a product of innate abilities and investment in human beings. The

provision of formal education is seen as an investment in human capital, which proponents of the theory have considered as equally or even more worthwhile than that of physical capital (Woodhall, 1997).

Furthermore, the curriculum interacts in an open system with other critical variables such as political party's ideologies, employers', Parental and international organisations' demands to meet society's expectations. For example, a school is a system made of many sub-systems such as school administration, students, teachers, parents, departments, who all need to work together to achieve the organisational goals (Slocum et al, 1979). The school also interacts with various external systems such as suppliers, customers, stakeholders and government agencies. Therefore, the macro-environment and micro-environment both work together in an interdependent manner for the school to achieve competitive advantage.

Based on the significance of education, the concept of human capital has been brought to the forefront of many discourses in the field of economic growth and development. Studies have shown that improvements in education accelerate productivity and contribute to the development of technology, thus improving human capital. More than anything else, it has been the spectacular growth in the oriental countries' economies that has given education and human capital their current popularity in the field of economic growth and development. Countries such as Malaysia, South Korea, Singapore, Thailand and Taiwan have achieved unprecedented rates of economic growth while making large investments in education. In the statistical analysis that accompanied his study, the World Bank (1993) found that improvement in education is a very significant explanatory variable for East Asian economic growth. There are several ways of modelling how the huge expansion of education accelerated economic growth and development. The first is to view education as an investment in human capital. A different view of the role of education in the economic success is that education has positive externalities; educate part of the community and the whole of it benefits.

The idea that education generates positive externalities is by no means new. Many of the classical economists argued strongly for governments' active support of education on the grounds of the positive externalities that society would gain from a more

educated labour force and populace. Smith (1976) reflects such progressive contemporary thought when he wrote that by educating its people, a society derives no inconsiderable advantage from their instruction. The more they are instructed, the less liable they are to the delusions of enthusiasm and superstition, which, among ignorant nations, frequently occasion the most dreadful disorders. Instructed and intelligent people are always more decent and orderly than ignorant ones. Smith views the externalities to education as important to the proper functioning not only of the economy but of a democratic society.

Chapter III

3.0 RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research methods that were employed in the collection and analysis of data for this study. In addition, this chapter discusses the credibility of the data collected and the limitations of the study.

3.2 Study Design

The research used a qualitative research design. This is so, because the data collected comprised subjective information from feelings, experiences and opinions of stakeholders that cannot be quantified, and borrowed from the quantitative techniques in the presentation of data through graphs. The study design is shown below:

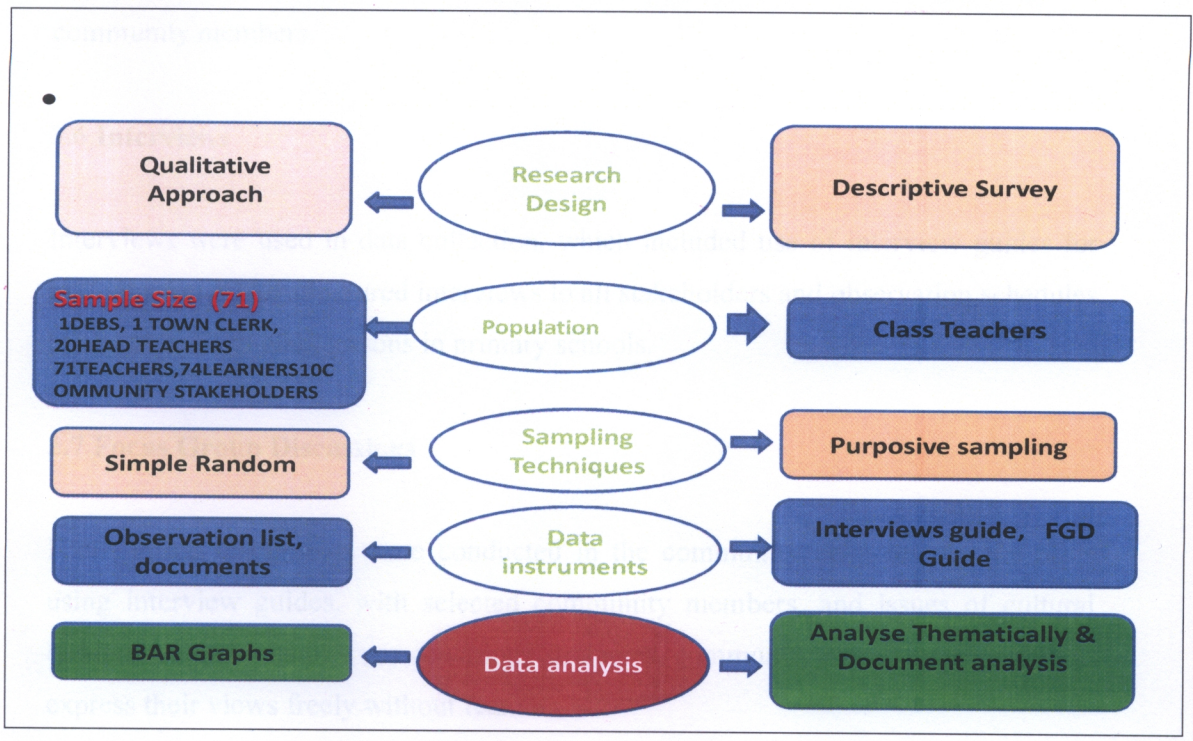

Figure 2: Study Design

3.3 Study Population

The study population was all primary school teachers in Solwezi district.

3.4 Sample

The intended subjects were Officers from the District Director's of Education office, Local Government, 20 Head Teachers, 20 community members, 100 Class teachers and 100 learners. The sample of 100 Class teachers was considered by use of Priori Power Analysis with moderate effect at the (two tailed) 0.05 level of significance and statistical power of 0.95 (Erdfelder et al, 1996).

3.5 Sampling Procedures

Schools, teachers and learners were purposefully sampled to include 5 private and 15 government schools from the sampling frame of Primary Schools in Solwezi district. Focus groups discussions and the results were used later for qualitative testing. As for community members, snow ball technique was employed to identify knowledgeable community members.

3.6 Interviews

Interviews were used in data collection, which included use of interview guides for oral interviews and structured interviews to all stakeholders and observation schedules to observe actual class lessons in primary schools.

3.7 Focus Group Discussions

Focus group discussions were conducted in the community on a one to one basis using interview guides, with selected community members, and issues of cultural barriers were avoided by use of various strategies, community members were able to express their views freely without fear.

3.8 Observations

Structured observation was one of techniques used in data collection for triangulation purposes. A total of 16 lessons were observed in 16 schools out of the expected 20 primary schools.

3.9 Research instruments

The instruments used in data collection included the observation guide, interview guide, questionnaires and secondary data collection from offices.

3.10 Data Collection

The data was collected from questionnaires for triangulation purposes, and written notes were vital as well from interviews with various stakeholders on curriculum implementation.

3.11 Data analysis

Data has been analysed thematically, according to the nature of dependent and independent variables borrowed from descriptive statistics through measures of association and relationships among variables.

Chapter IV

4.0 PRESENTATION OF FINDINGS, DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

This section endeavours to present, analyse, interpret and discuss the findings of the study. The four (4) tables and their corresponding four (4) figures below together with information in the related literature will be used extensively.

4.2 Presentation of findings

Teachers' perceptions on the implementation of the revised Zambian Curriculum in Primary Schools across gender and experience, Solwezi, Zambia in percentages (%)

SEX	TR. EXPERIENCE	LEARNER LIFE SKILLS	PBL USE	T/L RESOURCES	CURRICULUM VIEW
MALE	1 YR	100	100	73.3	86.7
	2 TO 4 YRS	50	100	50	100
	5 TO 9 YRS	50	50	100	100
	10 TO 14 YRS	0	66.7	66.7	66.7
FEMALE	1 YR	50	64.3	71.4	57.1
	2 TO 4 YRS	60	40	100	60
	5 TO 9 YRS	64.7	76.5	76.5	70.6
	10 TO 14 YRS	56.3	75	75	75

Table 1

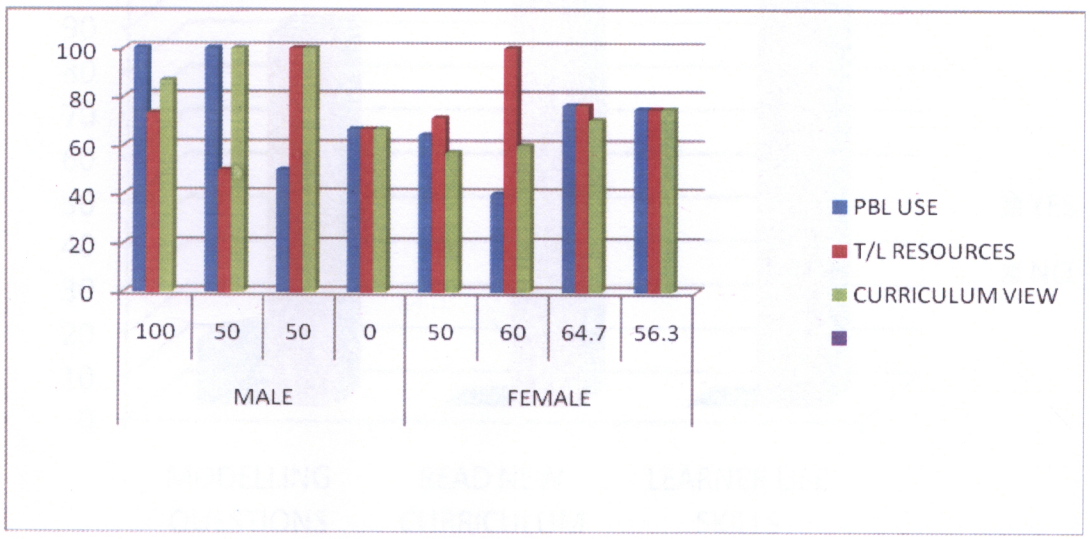

Figure 3

There were marked differences in responses by teachers according to gender and experience. For instance, "experienced male teachers" view a primary school learner as lacking lifelong skills

0% of the "experienced male teachers" felt primary school learners had no lifelong skills, while over 60% of their female counterparts felt otherwise.

FOCUS GROUP INTERVIEWS WITH TEACHERS RESULTS BY (%)

	Modelling Questions	Read Revised Curriculum	Learner lifelong skills
Yes	14.8	0	0
No	85.2	100	100

Table 2

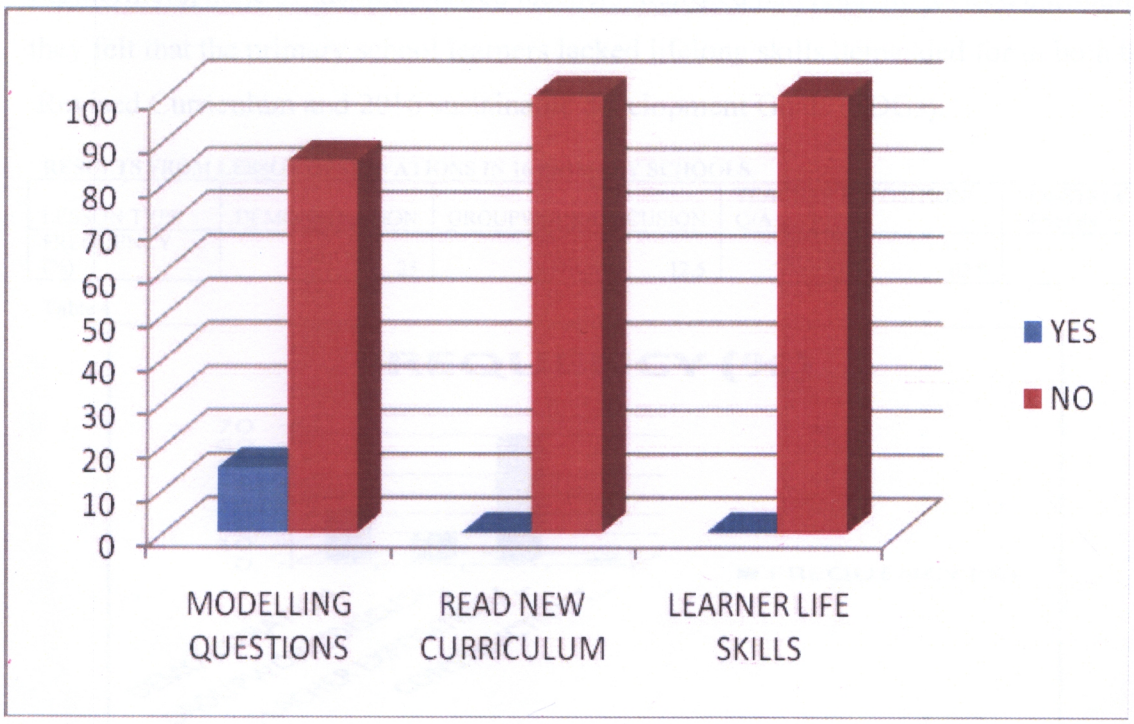

Figure 4

CLASS TASK TYPE GIVEN TO LEARNERS IN CLASS

TASK	NUMERICAL EXERCISES	DEBATE/DISCUSSION	RESEARCH	MODELLING
NO. OF TEACHERS (%)	81.5	7.4	7.4	3.7

Table 3

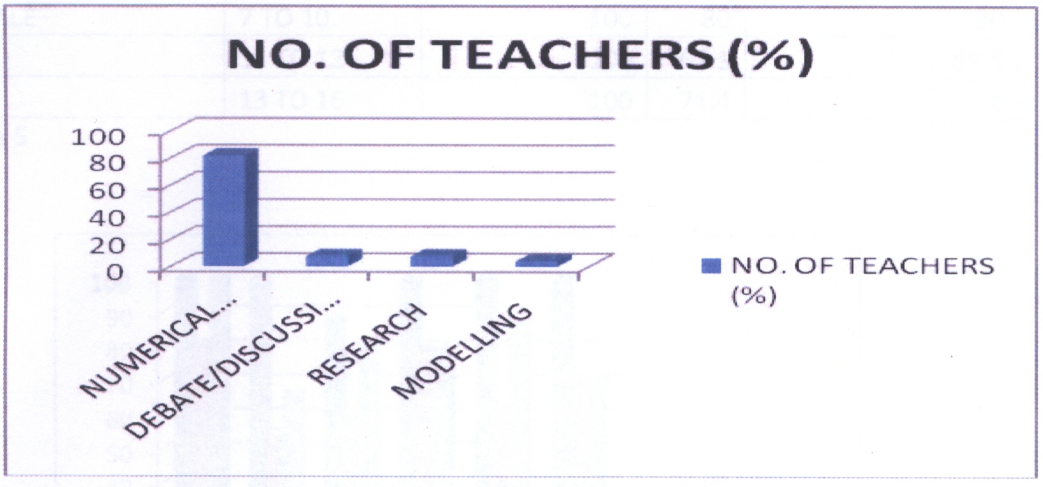

Figure 5

Figure 4 and 5 indicate that very little of constructivist approaches in teaching of learners was used in the sampled schools in Solwezi district as indicated by extremely low percentages in modelling, research and debate type of questions. This is in line with what one male teacher at Kimakolwe said and i quote " It is time consuming to use learner centred methods". Furthermore, none of the interviewed teachers indicated had read the revised curriculum and they felt that the primary school learners lacked lifelong skills demanded for in both the Revised Curriculum and 2016 sustainable development Goals (SDGs).

RESULTS FROM LESSON OBSERVATIONS IN 16 PRIMARY SCHOOLS

LESSON TYPE	DEMONSTRATION	GROUPWORK/DISCUSION	TEACHER EXPOSITION/ Q/A	CONSTRUCTIVIST LESSON
FREQUENCY (%)	25	12.5	62.5	0

Table 4

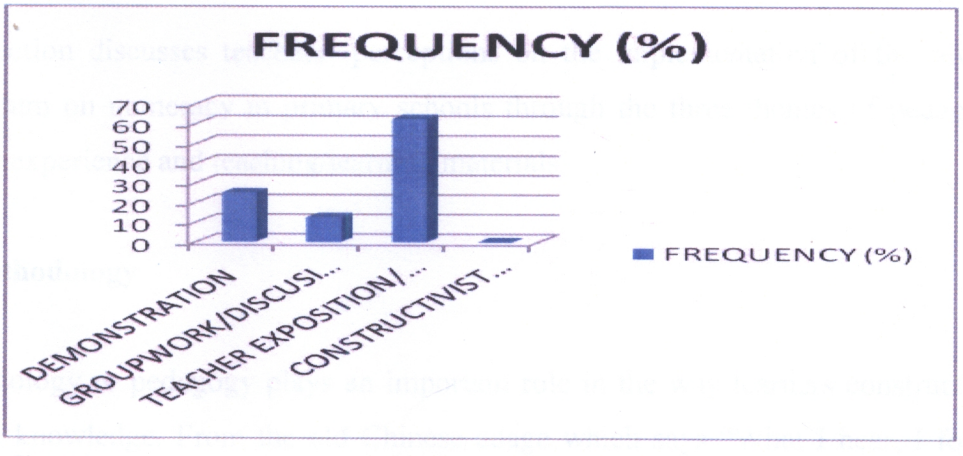

Figure 6

FINDINGS IN (%) OF LEARNERS' RESPONSES IN SOLWEZI PRIMARY SCHOOLS

SEX	AGE	TR. DEMO	PBL	MODELLING
MALE	7 TO 10	100	80	100
	11 TO 12	100	55.6	66.7
	13 TO 16	88.2	58.8	82.4
FEMALE	7 TO 10	100	80	80
	11 TO 12	100	62.5	87.5
	13 TO 16	100	71.4	71.4

Table 5

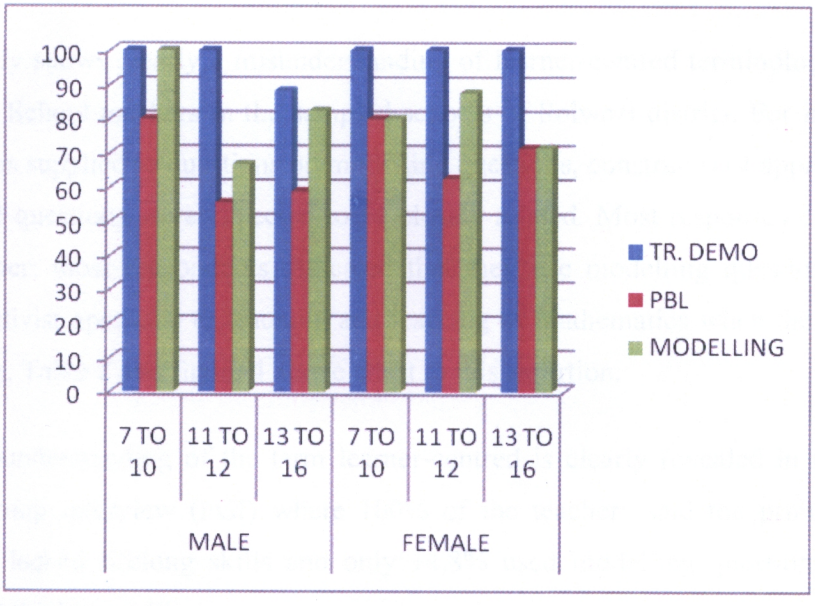

Figure 7

4.3 Discussion

4.4 Introduction

This section discusses teachers' perceptions on the implementation of the revised curriculum on numeracy in primary schools through the three themes of pedagogy, teacher experience and teaching/learning materials.

4.5 Methodology

Methodology or pedagogy plays an important role in the way learners construct and acquire knowledge. From the old Chinese adage which says "What I hear, I forget,

what I see, I remember, and what I do, I understand", a number of lessons can be drawn from there. It is clear that meaningful learning comes about through "doing" or manipulations of the actual problem either in reality or simulation.

From table 1 and figure 3 above, most inexperienced male teachers with teaching experience of below four (4) years viewed their teaching as "learner-centred" through the use of Problem Based Learning (PBL). Whereas, less than 60% of their experienced male counterparts, viewed their teaching as learner-centred. Again, over 75% of the experienced female teachers in the sampled schools viewed their teaching as "learner-centred", indicating different perceptions according to gender as well.

The study shows clearly a misunderstanding of learner-centred terminologies among Primary School teachers in the sampled schools of Solwezi district. For instance the responses supplied to questions on modelling questions, constructivist approaches and practical questions were expected to be closely related. Most responses contradicted each other; most respondents indicated that they use modelling questions and not constructivist approach to teaching and learning of mathematics when the two imply the same. Table 2 and figure 4 above attest to this assertion.

The misunderstanding of the term learner-centred is clearly revealed in the teacher focus group interview (FGI) where 100% of the teachers said the primary school learners lacked lifelong skills and only 14.8% used modelling questions to evoke learners' thinking skills.

Furthermore, results from the researcher's lesson observations showed that 62.5% of the teachers in the sampled schools use teacher exposition method while only 3.7% used modelling and simulation. The implication is that learners are spoon fed and their thinking abilities are suppressed because they follow only the teacher's line of thinking. Divergent thinking is not encouraged in teacher-centred approaches such as Teacher exposition method.

To produce innovative thinkers, modelling of real life situations, practical questions need to be given to learners to attempt. In making or assessing learners work, teachers have to explore all correct and incorrect responses, to make learners learn from their mistakes. This was another perception given by teachers at Kiikombe primary school

as a result of implementing the revised curriculum, in particular through the use of familiar language to lower grades in primary schools.

In the sampled schools, teachers of Mathematics first mentioned the lesson topic, then defined the topic, highlighted a few examples, followed by a class exercise and then homework. This type of teaching characterised most of the lessons observed by the researcher in the sampled schools of Solwezi district, north-western province of Zambia. This implies that learners are incapable of constructing their own learning; they need to be told what to memorise and later reproduce. This spoon feeding type of teaching was confirmed by learners in their responses in questionnaires. Learners indicated that, their class teachers first explain the main concept of the lesson, gave a few examples followed by a class exercise and then homework. This implies very little opportunity is given to learners to explore their own ideas, a pre-requisite stage in the constructivist approach.

What the study further revealed, was that most teachers were teaching without having had an opportunity to read the contents of the revised curriculum on numeracy. Therefore, the District Education Office and Head teachers in Solwezi need to do more on orienting teachers on the revised curriculum. Both national policy documents and international instruments to which Zambia is a signatory should be availed to teachers to enable them follow global trends.

The past shortcomings of the Zambian educational curriculum could many and varied, but may be our cooperating and supporting partners in education intentionally recommended or prescribed an educational system really meant for "basic education" and not "education for development". This implied that people in developing countries only needed basic education, for basic skills in health, agriculture and education. This could be seen from the international agencies' funding trends that were biased towards Universal Primary education (UPE) and not tertiary education.

4.6 Teacher Experience and Qualification

Human Capital Theory (HCT) posits that investment in human capital will lead to greater economic outputs however the validity of the theory is sometimes hard to

prove and contradictory (Woodhal, 1997). It is difficult to quantify education in monetary terms, but it is clear from the rational and optimisation decisions carried by those who have been to school over those who have not. Optimisation make educated members of society to be economically productive than their uneducated counterparts. It is for this reason that this study was conducted to popularise the constructivist approaches of teaching in order to make primary school learners become creative, critical, innovative and productive members of society.

From the study, teacher experience manifested in the way various categories of teachers viewed a primary school learner in terms of lifelong skills emphasised in both the revised curriculum on numeracy and the sustainable development goal number four (4). Table 1, for instance, indicate that 100% of teachers with one (1) year of teaching experience view most primary school learners as having lifelong skills while zero percent (0%) of those with over 10 years teaching experience viewed the same learners as lacking lifelong skills.

4.7 Teaching/ Learning Materials

Furthermore, the research also showed that, primary school teachers in the sampled schools are aware of the revised curriculum and they have witnessed the changes in terms of materials (text books) and syllabi, but they have not critically read the contents of the revised curriculum and its demands.

In some sampled schools such as Kiikombe, among the materials supplied to primary schools are the ZEDU pads. These are mini computers programmed with academic work to suit primary school learners. These mini computers have motivated the learners such that absenteeism has drastically reduced among learners. Equally teachers are finding it exciting to teach using modern technology. There were reports that through the use of such gadgets learners are breaking through quickly in both numeracy and literacy.

However, it hoped that these minicomputers are fitted with software that can be upgraded should there be a change in the content and/or curriculum. Otherwise these nice gadgets will be rendered obsolete when such changes occur.

In addition, most teachers said materials to support the implementation of the revised curriculum have been delivered to schools, but they are insufficient and teachers are using old materials in teaching mathematics. This trend has made teachers to use the traditional approaches of explaining the concept, give numerical examples and a class exercise for learners to try out in their exercise books. This spoon feeding approach cannot produce critical and innovative thinkers, as learners are merely reproducing memorized facts. Also, some materials delivered to primary schools are of poor quality. One such material is a mathematics text book by "MK" publishers; it has wrong concepts and a lot of mistakes. There is urgent need to review such textbooks to suit the current curriculum demands.

The study also revealed that there is poor reading culture among primary school teachers in the sampled schools of Solwezi district. Most schools have either one hard copy or at least a soft copy of the revised curriculum, but none of the teachers in the sampled schools have taken keen interest to read that copy, photocopy a personal copy or visit the Zambian pages on the website with an intention to read the revised curriculum. There is need to popularise reading through television lesson programmes and establishment of local public libraries in rural communities.

It is difficult to comprehend how teachers in the sampled schools implement their lessons without a clear understanding of the curriculum demand. The revised curriculum demands that the primary school leaver should be analytical, creative, innovative, productive and self-reliant which implies having lifelong skills. This desire is also re-echoed in the United Nations Sustainable development goals (SDGs), goal number four (4).

Some teachers talked to during the focus group interviews, lamented that very little consultations were made to take into consideration what the majority of teachers felt should be included in a curriculum, as they are a major stakeholder and implementers of the curriculum.

Chapter V

5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This section highlights the summary, conclusion and recommendations of the study.

5.2 Summary

The study established that primary school teacher in Solwezi district have not adequately been oriented on the revised curriculum in numeracy. In fact teachers need adequate training to handle the new demands of the revised curriculum. The study also indicates that teachers have not read the contents of revised curriculum on numeracy, for them to internalise the goals that they need to pass on to learners.

Furthermore, training of teachers through continuing professional development (CPD) has not done much in sensitising teachers in the use of learner-centred methods such as constructivist approach. Teachers' perceptions on the revised curriculum were many and varied according to experience, geographical location and gender.

From literature, the perception process explains the manner in which information from the environment around us is selected and organised to provide meaning for the individual. Past experiences and perceptions tend to affect new perceptions. Despite the fact that a group of teachers may "physically see" the same thing, they each have their own version of what is seen. Previous curriculum adjustments and reforms seemingly did not yield much change in producing self-reliant learners, so even the current revised curriculum maybe seen to fall under the same category.

However, they are aware about the revised curriculum through the changes they have seen in the syllabus and the delivered teaching/learning materials and they are generally happy in that learners are breaking through quickly in both numeracy and literacy.

In some cases, the teaching materials are inadequate and they have resorted to teaching the revised curriculum using old books, a scenario that has brought a mismatch in the teaching methods. The revised curriculum demand for lifelong skills

which can be acquired through the use of constructivist approaches, while the old books use teacher-centred approaches.

The study has also established that class teachers who have taught over ten (10) years in service have an idea on best practices of teaching mathematics, and view primary school leavers as not adequately prepared for lifelong skills as stated in the revised curriculum and the SDGs goal number four (4).

On gender, the study has not shown any convincing difference in the way they perceive the revised curriculum. However, geographical orientation of the schools has shown a marked difference in the way the revised curriculum is perceived. Schools around the Central business Centre (CBD) have made great strides in implementing the revised curriculum and are satisfied with the curriculum demands than schools far away from the CBD. Those teachers teaching far from the CBD have not yet experienced the benefits of the implementation of the revised curriculum.

5.3 **Conclusion**

The study has revealed a lot of both good practices and challenges on how best to teach mathematics in primary schools. An attempt to distribute materials in terms of text books to all the schools has been made, though text books by "MK publishers" have a lot of mistakes and they need to be revised. Furthermore, ZEDU pads have been distributed to Kiikombe Primary School and this has motivated both teachers and learners at the School.

In addition, the perception of Primary School teachers in Solwezi district over the implementation of the revised curriculum differs across both geographical orientation and experience of teachers. For instance, teachers who have taught over ten (10) years in service feel that, learners in primary schools lack lifelong skills that can make them innovative and productive members of society, a prerequisite for national development.

On the other hand, the difference in perceptions between experienced and inexperienced teachers with regard to learners' innovativeness could be explained in the following way. The experienced teachers most likely teach higher grades (upper primary school) where the learners have had very little impact of the revised

curriculum due to its late implementation in schools. As a result teachers have not seen its effectiveness among learners. Whereas, new teachers mostly teach low grades and have seen the full impact of the implementation of the revised curriculum and how learners are easily breaking through in both literacy and numeracy. However, teacher efficacy cannot be watered down by the above view.

On geographical orientation, teachers working near the CBD have experienced the benefits of the implementation of the revised curriculum through material support such as ZEDU pads and other educational materials especially in the Early Childhood education sections than those teachers placed further away from the CBD.

This conforms to the theoretical underpins of this study; Human Capital and Systems theories. The capabilities and skills of learners have to be developed in order to enhance creativity, innovation and productivity among learners and this depends on many varied variables in an open system. Teacher efficacy, teaching/learning materials and the pedagogies of teaching mathematics play a vital role in shaping a learner in acquiring lifelong skills. Therefore, teaching of mathematics in Primary schools should be taken seriously.

5.4 **Recommendations**

This section looks at recommendations based on research findings.

1. Curriculum Development Centre (CDC) should conduct sensitisation workshops through a cascade system to train all Primary school teachers on the revised curriculum on numeracy,
2. School Managers should equally be trained on the importance of the use of constructivist approaches by teachers,
3. Learners should also be sensitised to value learning by constructivist approaches,
4. JETS, Debate and inter-class/school Quiz should be popularized in primary schools,
5. Text books published by MK need urgent review to correct errors and replaced for use in Primary schools,

6. Social welfare centres should be introduced in local communities to engage women and youths in reading activities, to improve the reading culture among citizens,
7. Introduce public libraries in all local communities,
8. Popularise open learning (Night School) in local communities
9. Increase and stabilize funding and supply of teaching/learning materials to Primary schools
10. Introduce mobile cinemas to teach the rural communities on basic education.

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Appendix V: INTERVIEW SCHEDULE (Teachers Focus Group Meeting)

THE UNIVERSITY OF ZAMBIA SCHOOL OF EDUCATION
MASTER OF EDUCATION (UNZA/ZOU)

1. How long have you been teaching at this school?
2. Which subject is mostly hated by pupils?
3. Which subject is liked by most pupils?
4. Which subject do most pupils fail in?
5. Do you team teach?
6. How do you plan your work for teaching your class?
7. Which of the methods or approaches receives more attention among pupils?
8. What type of questions do you set as your class activities such as exercises, debate, research or assignments?
9. Which textbooks do you use when teaching mathematics?
10. Make a list of any recommended pupils' books that your pupils read?
11. In your view, do you think teaching of mathematics using word problems is effective?
12. How would you like the mathematics subject to be taught?
13. Have you read the new Zambian curriculum on numeracy in Primary schools?
14. What does the new Zambian curriculum on numeracy in Primary schools state?
15. What can you say about the new Zambian curriculum in numeracy?
16. In your view, why do primary school leavers fail to be self-reliant?
17. As teachers do you have sufficient range of courses for professional development?
18. Do your assessment tasks include modelling real-life situations?
19. At times, do you use open-ended explorations to your learners in class?

Thank you for your cooperation.

Appendix VI: INTERVIEW SCHEDULE (Community stakeholders: FGM)

THE UNIVERSITY OF ZAMBIA SCHOOL OF EDUCATION
MASTER OF EDUCATION (UNZA/ZOU)

1. Are you aware about the new Zambian curriculum?
2. Have you read its content on numeracy in Primary schools?
3. In your view, do you think grade 7 school leavers are equipped with adequate skills to lead a creative, innovative and productive life?
4. What could be some of the reasons why grade 7 school leavers fail to be self-reliant?
5. Do you think there is a link between learner acquisition of mathematical skills and learner innovation?
6. Do you agree with the assertion that learner acquisition of mathematical skills can lead to national development?

Appendix VII: OBSERVATION SCHEDULE

THE UNIVERSITY OF ZAMBIA POST GRADUATE STUDIES – UNZA/ZOU

1. Number of teachers presenting in a mathematics lesson.

.....

.....

2. Language(s) used in lesson delivery and grade/class

.....

.....

3. Methodology applied

.....

.....

4. Teaching aids used in lesson delivery

.....

.....

5. Text books/Library books to support new curriculum

.....

.....

6. Mode of writing notes for teaching/class activities

.....

.....

7. Learner-Teacher rapport

.....

.....

.....

APPENDIX VIII: AN INTERVIEW ON THE IMPLEMENTATION OF REVISED CURRICULUM ON TEACHING MATHEMATICS IN PRIMARY SCHOOLS

Your response will be treated anonymously and confidentially.

INSTRUCTIONS:

1. Give oral responses to the following questions being asked
2. No name is required for any personal identification in this interview.
3. Where in doubt seek clarification from the researcher.

(For official use only)

PART A PERSONAL DETAILS (Teachers)

1. **Age**

Which is your age category?

21-30 years	**31-40 years**	**41-49 years**	**50-60 years**

2. Gender

Male	
Female	

3. Work place (Station)

4. Period of service at the above mentioned work place (In years).
5. Total number of years served for the Ministry (in years)
6. In which study area/stage focus (teaching grade)/ are you?

PART B BACKGROUND

7. Where were you trained as a teacher?

Primary College	Secondary college	University	Any Other

8. Did the training you took have an impact on what you are currently teaching in the school?
9. If you went to Primary College of education which courses did you learn?
10. If you went to secondary College education or University which courses did you learn?

11. Have you ever taught at pre-School?
12. If your answer to question 13 is yes, how long did you teach there?
13. How long have you taught at primary school level?
14. Do you like teaching mathematics in class?
15. If your answer to Question 16 is yes , give reasons
16. If your answer to Question 16 is No , give reasons
17. Do you team plan and teach at times?
18. In your view are the Primary School leavers analytical, creative, innovative or productive?
19. Do you use problem-solving approaches in your teaching?
20. If your answer to question 21 is yes, mention some of the teaching strategies that you use in class
21. Do learners like /enjoy problem-solving approaches?
22. What are some of the reasons learners give to support your answer in question 23?
23. Does administration support you in using learner-centred approaches?
24. Are Teaching/Learning resources readily available to support you in using learner-centred approaches?
25. Does the curriculum give clear view of what is expected from learners?
26. Does the class size limit your teaching styles?

End of interview

Thank you for your cooperation

Appendix IX: (Administrators): Town Clerk Office staff, District Director of Education Office Staff and School Head Teachers

(For official use only)

1. Do agree that Mathematics should be considered as vital in the primary curriculum.
2. Why do you think Mathematics should be taught in primary schools?
3. Do you think Learner-centred approaches should be taught in schools
4. Why do you think it is better to use learner-centred approaches in teaching mathematics in primary schools? Do you think using Problem-Based learning (PBL) is good in primary schools?
5. Are you a supporter of constructivism paradigm in teaching mathematics in primary schools?
6. In your view, is the time allocated to mathematics teaching adequate?
7. Do you support your teachers taking learners for field visits?
8. What are some of the reasons contributing to your answer in question 7? State the contact time per week per class (number of periods per week)?
9. What is your average teacher-pupil ratio in school(s)?
10. What is the pupil-text book ratio in school(s)?
11. Are there enough teachers to support learner-centred methodologies in teaching mathematics?
12. Do you think teaching of mathematics in primary schools is effective?
13. Do you think teaching of mathematics in primary schools is effective using team teaching?
14. Do you think teachers' assessment tasks relate to learners' daily life situations?
15. Do you think a Primary School leaver is analytical, creative, innovative or productive?
16. Suggest better methods that should be used for effective teaching of mathematics in primary schools.

End of interview.

Thank you for your co-operation.

Appendix X: (Learners) AN ORAL INTERVIEW ON: THE IMPLEMPLEMENTATION OF REVISED CURRICULUM ON TEACHING MATHEMATICS IN PRIMARY SCHOOLS

Your response will be treated anonymously and confidentially.

INSTRUCTIONS:

1. Give oral responses to the following questions being asked
2. No name is required for any personal identification in this interview.
3. Where in doubt seek clarification from the researcher.

PART A PERSONAL DETAILS (Learners)

(NB: For official use only)

1. **Age**

Which is your age category

7-10 years	11-12 years	13-16 years	Over 16 years

2. Gender

Male	
Female	

3. Name of your School

4. Period of learning at the above mentioned school (In years).
5. Total number of years in school (In years)
6. In which stage focus (Grade) are you?

BACKGROUND

7. Where was your teacher trained?
8. Did the training of your teacher have an impact on how you are currently learning?

9. If your teacher went to a Primary College of education, is the teaching in class effective

10. If your teacher went for University education or University, is the teaching in class effective?

11. Have you ever learnt at pre-School?

12. If your answer to question 13 is yes, how long did you learn there?
13. Do you like / enjoy learning mathematics in class?
14. If your answer to Question 16 is yes , give reasons
15. If your answer to Question 16 is No , give reasons
16. Do you learn in groups?
17. Does your teacher always give examples and an exercise when teaching your class?
18. Does your teacher use problem-solving approaches in your class?
19. Does your teacher give a real life problem and let you try solving it out in class?
20. If your answer to question 21 is yes, mention some of the teaching strategies that your teacher uses in class
21. If your answer to question 21 is yes, how are correct answers shared with all learners in class?
22. Do you like problem-solving approaches?
23. What are some of the reasons that you have to support your answer in question 2
24. Does your teacher use a variety of teaching learning resources including pupils' text books?

Appendix XI: Community stakeholders

(For official use only)

1. Do you agree that Mathematics should be considered as vital in the primary curriculum?
2. Do you support the assertion that Mathematics should be taught in primary schools?
3. Do you agree that Learner-centred approaches should be emphasised in schools?
4. Why do you think it is better to use learner-centred approaches in teaching mathematics in primary schools?
5. Do you think using Problem-Based learning (PBL) is good in primary schools?
6. Are you a supporter of constructivism paradigm in teaching mathematics in primary schools?
7. In your view, is the time allocated to mathematics teaching adequate?
8. Do you support teachers taking learners for field visits?
9. What are some of the reasons contributing to your answer in question 35?
10. State the contact time per week per class (number of periods per week) that you consider to be adequate in Primary Schools?
11. What is the average teacher-pupil ratio in school(s)?
12. What is the pupil-text book ratio in school(s)?
13. Are there enough teachers to support learner-centred methodologies in teaching mathematics?
14. Do you think teaching of mathematics in primary schools is effective?
15. Do you think teaching of mathematics in primary schools is effective using constructivist approach?
16. In your view are the Primary School leavers analytical, creative, innovative or productive?
17. Suggest better methods that should be used for effective teaching of mathematics in primary schools

End of interview.

Thank you for your co-operation.