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**DEPARTMENT OF APPLIED EDUCATION**

TEACHERS' PERCEPTIONS ON THE USE OF MODELS IN THE TEACHING AND  
LEARNING OF GEOGRAPHY IN GWERU URBAN HIGH SCHOOLS.

**BY**

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## **DEDICATION**

This project is a special dedication to my father and mother Mr and Mrs Manyati, my sisters Nyasha and Panashe as well as my young brother Tanatswa. I would like to thank them for the continuous support that they gave me during this whole study.

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## ABSTRACT

The study sought to establish teachers' perceptions on the use of Geographical models in the teaching and learning of Geography in Gweru urban high schools. The study adopted the descriptive survey design which enabled the researcher to collect data through the use of personally distributed questionnaires, personal interviews and observation. The design helped the researcher to elicit valuable knowledge about opinions, attitudes and views on the use of models in teaching Geography. The sample was made up of thirteen teachers, six school administrators, forty-eight students and one Geography Inspector. Data gathered was presented in tables and pie-charts. Thematic and comparative analysis followed the presentation of data. Challenges included shortage of models, time constraints, large classes and shortage of accompanying accessories like computer packages with geographical models. The results of the study paint a gloomy picture on model use in the teaching and learning of Geography. The research recommends that school administrators have to staff develop and in-service their teachers regularly on the use of models in teaching Geography. More so, there is need for the Ministry of Primary and Secondary Education to redesign the syllabus. Lastly, there is need for the government and the corporate world to assist and provide internet connections at lower rates that are affordable to schools so that models can be fully used in schools.

## LIST OF ACRONYMS USED

<b>“A” Level</b>	Advanced Level
<b>CDU</b>	Curriculum Development Unit
<b>DEO</b>	District Education Officer
<b>GoZ</b>	Government of Zimbabwe
<b>HOD</b>	Head of Department
<b>PED</b>	Provincial Education Director
<b>INSET</b>	In Service Education Training
<b>MSU</b>	Midlands State University
<b>SDC</b>	School Development Committee
<b>UNESCO</b>	United Nations Education, Scientific Cultural Organisation
<b>ZIMSEC</b>	Zimbabwe Schools Examinations Council

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# CHAPTER ONE

## RESEARCH PROBLEM

### 1.0 Introduction

Zimbabwe is a developing country in which schools from the urban areas differ from those in rural areas. Instructional media make teaching concrete, and effective as well as interesting since they are sensory in nature. The research therefore sought to assess teachers' perceptions on the use of models as instructional media in the teaching and learning of Geography at Advanced Level in Gweru urban high schools. This chapter therefore presents the following key features of the research; background of the study, the statement of the problem, research questions, and significance of the study, limitations, delimitations as well as definition of terms and summary of the study.

### 1.1 Background of the study

The teaching and learning of Geography encompasses a number of instructional media that have to be applied and one of them is models. Models maybe used by both teachers and students during the lesson or outside the lessons. Some teachers are using them while others are still hesitant to accept this idea of using models as instructional media thus the researcher would like to unravel the perceptions behind the use of models in the teaching and learning of Geography. Research evidence is however, overwhelmingly in support of models as effective instructional media, perhaps supporting the notion that, what is important is not the concept of models as instructional media but rather the way they are used by teachers in classes.

The use of models is a constructivism learning approach based on John Dewey and Jean Piaget. According to Ates (2013) he called them the 5E models in the teaching and learning of Geography as they incorporate five phases of learning; Engagement, Exploration,

Explanation, Elaborating and Evaluation. The use of models therefore, provides students with a more permanent learning by sharpening top-end learning skills within their learning process in schools. Thus, through the use of models in the teaching and learning process in Geography as a discipline, models have the potential to contribute to positive benefits as they are easy to apply when used in schools.

More so, the use of models in the teaching and learning process of Geography at “A” Level enhances curiosity. Research by students on different concepts that they are asked to look at promotes active research skills through different activities that they do. These are necessary as information generation and understanding of concepts is brought about hence satisfaction on the part of the students’ expectations is brought about in the teaching and learning process in Geography.

Students’ engagement within lessons in Geography is also an outcome through the use of models. Creation of students’ own concepts is encouraged and promoted as a result, Martin, (2000) cited in Ates (2013). Thus, through the promotion of constructive active learning through the use of models in the teaching and learning process, students can be able to use their previous information that they would have acquired through reading or research be it in books, the internet or any other source of information to be an outcome.

Mental engagement on the part of students is brought about through the use of models as questions like, “What are you seeing from the printed document (non-mathematical models) or from the object by the teacher within the classroom (mathematical models)?” Mental engagement is promoted as the teacher does not have to tell pupils anything. Rather he/she only starts by asking them questions pertaining to the topic to be learnt that particular day. Question and answer is promoted through the use of models in Geography at “A” Level at the

engagement stage in schools hence they have to be used within the teaching and learning process.

Through the use of various visuals in the teaching and learning of Geography at “A” Level in schools, learning is facilitated and necessitated. Questions asked from the various visuals within the classroom would allow attention of students to be raised whilst their current knowledge would be tested. Teachers would therefore be able to provide missing information within the learning process. Questions with question marks will attract students’ attention thereby making it a vital importance for teachers to make use of models within the teaching and learning of Geography at “A” Level in schools.

Furthermore, Hurst (1972) cited in Rana (2013) agrees that, models play a pivotal role in the teaching and learning of Geography in schools. Models guide the visualization of complex interactions and organizational frameworks for the classification and manipulation of geographical data. However, it appears that Geography teachers have mixed perceptions on the use of models as instructional media since a number of teachers feel that models such as Globes are difficult to use in classrooms as instructional media.

More so, models in the teaching and learning of Geography at “A” Level provide the exploration of ideas, concepts and theories amongst other things. Students are involved within the topic taught by the teacher, (Ates, 2013). This, therefore, provides students with the chance and opportunity to build their own understanding from the taught topic. Students would have direct opportunity to be involved with phenomena and materials under study, for example with the use of Globes. Students would work together either in groups or teams, and this would build a set of common experiences that would promote sharing and communication to be an outcome. Dramatization, group work, discovery learning and role



play would be promoted through the use of models in the teaching and learning of Geography at “A” Level hence, its role should not be undermined or underestimated.

During his stint on teaching practice, the researcher found out that “A” level teachers were not making use of models in the teaching and learning process. Thus, students were not provided with an opportunity to share their results that they would have obtained from the exploration stage be it in groups or as pairs. The use of models facilitate explanations on topics or concepts under study. Model use during the teaching and learning promotes interaction amongst and between students thus, the teacher’s role during the learning process would be that of a facilitator whenever necessary. More so, the teacher would only act as a guide during the teaching and learning process as he/she has to first explain what has to be covered from the given topic. Understanding of the topic is facilitated by the teacher to students hence learning is an outcome.

Chitanana (2012) posits that models are effective as students can have the chance to observe the mechanical principles involved when teachers point out to each part of the model while explaining relationships to concepts to be taught. Simplified structuring represents apparently major structures or associations in a general form and offers highly subjective approximations in that they do not include related annotations or amounts. All types of media be it photographs, maps, handouts amongst others do not present sufficient expression of the forms of moderate size on which they live. The use of models within the teaching and learning of Geography at “A” Level in schools is a means of improving the methods of illustrating what the teacher wishes to present to the class.

Munowenyu (1999) observes that besides transmitting general information in a highly compressed form, models can also in certain circumstances express theory as precisely as any verbal formulation. Maclellan (2012) points out that the use of models in schools

support learners to improve critical intellectual abilities and acquire Geo-scientific ideas hence models also assist pupils to note the difference between abstraction and reality in schools. Teachers normally introduce new concepts to the pupils with readings from textbooks only. A third dimension that so characterizes all geographical forms within the teaching and learning of Geography can be facilitated and promoted through the use of models in schools. Even if models are used in the teaching and learning without all necessary detail, they would still possess effective and suggestive forms making it vital and important to make use of them within the teaching and learning process.

However, for pupils to grasp the concepts better there is need for hands on activities, demonstrating the lesson key points as supported by Gay (1996), “Tell me and I forget. Teach me and I remember. Involve me and I Learn”. Interactive learning activities through the use of models in schools therefore can be used to build upon what the students have read in the text and what they have discussed in class. Hence, in this regard, many teachers in schools do not realize that the use of models in the classrooms as instructional media fosters curiosity and creativity as well as establishment of relationships between concepts as well as solidifying pupils’ knowledge in the classrooms.

Mutambirwa (1980) cited in Munowenyu (1999) posits that models manifest idealized or simplified representation of reality, hence models may not be criticized for their simplicity and for being unrealistic, because of the underlying assumptions including the constraints behind the use of models is built are not fully appreciated. Generally, the greater the complexity in a model, the lesser the regularity in the underlying assumptions and constraints the model is. Simple models may not be as powerful media as complex ones for planning and other purposes but in practice, they are very attractive to pupils. Given this notion, teachers in schools end up in a paradox of decision making on whether to use models in the classrooms or not.

Despite the pedagogical emphasis on the use of models, teachers are hesitant to make use of models as instructional media in the teaching and learning within the subject Geography. Models play a pivotal role in the subject as they motivate learners and teachers in the teaching and learning process. Abstract and concrete concepts, theories and ideas are taught and clearly laid out if models are used within the teaching and learning process of Geography when used appropriately by teachers or learners. The importance of models in Geography entails that we try to depict the general rather than unique situations, (Small and Witherick, 1986). Thus, through the use of models in Geography, generalization and formulation of laws relating to the physical and human Geography as well as an increase in the possibility of accuracy and prediction is brought about.

Chitanana (2012) also argues that the use of models in the teaching and learning process would be to provide students with opportunities to solve realistic and meaningful problems. The learner would therefore experience the real world application and then construct his/her own knowledge. Assessment and evaluation of the learning process can be promoted through model use in Geography thus it becomes part of the learning process for students as they can be able to judge their own progress.

## **1.2 Statement of the problem**

The use of models in schools is a cause of concern by the ZIMSEC examination board at Advanced Level stage (ZIMSEC, 2013-2016). Model use in the teaching and learning of Geography is a constructivist teaching method that puts the learner at the fore front. The problem is that teachers are failing to make use of models as instructional media in the teaching and learning of Advanced Level Geography in schools. Teachers in high schools prefer to make use of other teaching methods like the chalk and talk, problem solving and question and answer. Thus, there is limited use of models in the teaching and learning of

Geography at Advanced Level. Teachers are therefore giving students little opportunity to explore and be creative about ideas of the societies or environment by not taking learners to places of concern within the classroom through the use of models. It was against this background that this study sought to find out teachers' perceptions on the use of models in the teaching and learning of Geography in Gweru urban high schools.

### **1.3 Research questions**

- a) To what extent are models being used as instructional media in Geography Advanced Level schools?
- b) What do teachers think about the use of models as instructional media in schools?
- c) What problems are faced by teachers when trying to use models in the teaching of Geography?

### **1.4 Significance of the study**

#### **1.4.1 Significance to the Researcher**

The study will help the researcher to explore in greater detail teachers' different perceptions on the use of models as geographical instructional media in schools. Thus the study will also assist the researcher to establish possible strategies that can be used to improve the use of models in schools. This will enhance the researcher's professional capacity in research methods as well as fostering resourcefulness and accountability when solving similar problems later in life.

#### **1.4.2 Significance to teachers**

The study explains very well on the importance and functions of using models as instructional media at “A” Level, therefore, the school authorities will benefit as they would equip the classroom to be conducive for the teaching and learning of Geography. Teachers in the Geography Department in Gweru schools will benefit through staff developmental projects and INSET that will be conducted. More so, the research will assist teachers in using relevant and appropriate models at different stages and levels to promote learning to be an outcome. Thus the research findings also encourage teachers to be competent by adopting new methods of teaching the subject so as to meet the demands of Geography.

#### **1.4.3 Significance to the schools**

If research findings are presented to the Gweru Geography cluster through seminars and in-service training, schools will benefit a lot more. It will present views by teachers suggesting solutions to the problems faced by teachers in the implementation of models. Others will benefit when this study is used as literature by researchers who might want to investigate on the similar problem.

#### **1.4.4. Significance to the Government**

The study also intends to advise the Government and the Ministry of Primary and Secondary Education to implement policies that ensure that maximum utilization of various instructional media as well as methodologies prescribed in the syllabus for the teaching and learning of Geography. Instituting of relevant teacher training programmes in the curriculum as well as having budgets for instructional media and localisation of the Geography syllabus would be done. Thus the research is of importance to both teachers, the researcher as well as students and all the stakeholders involved being parents and the Ministry of Primary and Secondary Education at large.

### **1.5 Delimitations of the study**

The research focused on perceptions of teachers' on the use of models as instructional media in the teaching and learning of Advanced Level Geography in schools in Gweru urban.

### **1.6 Limitations of the study**

The researcher encountered several constraints during the study. Some of which includes:

- The participation within the study was not compulsory and those who did not want to be interviewed and participate for reasons best known to them might be the ones who could give crucial and vital information. This threatened validity of the results. The researcher had to assure the respondents that the information gathered would solely be used for academic purposes only.
- Due to the requirements of the Provincial letter, some of the teachers took the questionnaires and administered them at their own time to students. This might have led to biased findings from students that were missed. However, the researcher used triangulation to verify on data provided from questions through interviews.
- Owing to time constraints, the researcher had to carry out spot interviews. However, to overcome this challenge, the researcher carried out part of research during the vacation.
- There is a possibility that some participants could have lied deliberately in order to paint a bad picture about the situation in schools.

### **1.7 Definition of terms**

#### **Learning**

Is about how we perceive and understand the world, and making meaning. But 'learning' is not a single thing; it may involve mastering abstract principles, understanding proofs,

remembering factual information, acquiring methods, techniques and approaches, recognition, reasoning, debating ideas, or developing behaviour appropriate to specific situations; it is about change.

### **Teacher**

Is an adult in a classroom who exercises his/her friendly authority over his learners treating them equally, in a climate of teacher-pupil interaction for a conducive learning environment.

### **Teaching model**

These are physical objects that are used as teaching tools in order to engage students and introduce practice or remediate a variety of concepts. Thus a model may be regarded as a formalized expression of a theory. More so, it is a simplified structuring of reality that represents supposedly features or relationships in a generalized form.

### **Perceptions**

These are views, visions or sight, as for a more particular position, a sight or prospect from a particular position, typically on appealing on. These are views by teachers on the use of models in the teaching and learning of Geography.

### **1.8 Summary**

This chapter gave a brief background of the research problem and spelt out the aims of the study and its significance. Furthermore, the chapter highlighted physical and conceptual boundaries of the study. The limitations on the study were also discussed. In brief, this chapter introduced the whole research project. The next chapter presents literature review.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 Introduction**

Despite models having different types, sub-types, definitions and functions, they are one of the most interactive teaching and learning instructional media that can be used in schools to enhance learning. Researches and textbooks have been written and published as from 1964 up to date on the use of models as a constructivism approach to the teaching and learning of Geography in schools. Literature review prompted the researcher to expand his understanding of the topic and it helped to broaden the knowledge and perspective of the topic. The presentation fell under the following subheadings; models in the teaching of Geography, classification of models, importance of using models in teaching Geography, functions of models in teaching Geography, problems faced by teachers, influential factors for not making use of models and the summary.

#### **2.1 Definition of literature review**

Sekaran (2003) states that literature review is the documentation of a comprehensive review of both published and unpublished work as sources of data in the areas of specific interest to the researcher would be looked into and made use of within the study. According to (Tuckman, 1994), literature review looks at the various concepts and theories which inform the research.



## **2.2 Models in the teaching and learning of Geography**

Castle, Rodgers and Sherman (eds.) (2005) define teaching models as a simplified representation or 'abstraction of reality'. Thus, the use of models helps students to grasp the notion and help students to visualize the idea the concepts being taught, for example the six day factor model in Climatology. Hence, this implies that models are instructional media designed to help pupils to understand complex ideas by presenting them in a simplified and familiar ways. This therefore means that there is a need by teachers to make use of models in the teaching and learning process of Geography at Advanced Level as this actively involves learners in the learning process.

Rana (2013) has it that a model is. "...a skeletal representation of a theory." Models are concrete, hence, they are idealized representation of reality that are intended to demonstrate certain properties of the real world whilst theory is abstract. By model building students' abstract certain factors from reality so that rather than having to consider simultaneously a whole host of them, they can deal with what they perceive as the essential few". This also implies that, models do not convey the whole truth of items under study, but only a comprehensible part of it. This means that in trying to figure out the geographic structuring of a particular region, geographers often attempt to reproduce the conditions of reality by substituting it with simpler forms, in other words, geographers try to simplify and replicate reality by constructing models.

More so, Ritzhaupt and Kumar (2013) define a model as a simulation tool that scientists and social scientists make use of to represent the key components of a process. It can also be a set of linked processes that allows them to vary the input to understand how the process works and to predict outcomes in the real world. Models use has got a fundamental feature that through their construction highly selective attitude to information has involved in the teaching of the discipline. Thus, models can therefore be seen as a selective approximation by

which the elimination of incidental detail, allows some fundamental, relevant or interesting aspects of the real world to appear in some generalized form. This therefore means that models can be thought of as selective pictures and a direct description of the logical characteristics of our knowledge of the external world. This shows that each of these pictures gives undue prominence to some features of our knowledge making it vital to make use of models as instructional media in the teaching of Geography at “A” Level.

The most fundamental feature of models is that their construction has involved a highly selective attitude to information. Models can be viewed as selective approximations, which by the elimination of incidental detail, allow some fundamental, relevant or interesting aspects of the real world to appear in some, generalized form. Each of them directs such a bright light on our part of the scene that it obscures other parts in a dark shadow. Only by being unfaithful in some respect can a model represent its original. However, Aracentia (2001) asserts that time allocation to a subject must be sufficient enough to provide students with enjoyable activities and worthwhile learning. Time is an important factor for effective learning to be an outcome in schools.

Furthermore, Chitanana (2012) acknowledges that studies by educational researchers suggest that approximately 83% of human learning occurs visually, and the remaining 17% through other senses 11% through hearing, 3.5% through smell, 1% through taste and 1.5 % through touch. The studies further suggest that three days after an event, people retain 10% of what they heard from an oral presentation, 35% from a visual presentation and 65% from a visual and oral lesson presentation. This therefore means that through models in the teaching and learning of Geography at “A” Level stage in schools. Instructional media use is to make teaching concrete, and effective as well as interesting since they are sensory in nature. Understanding of concepts and content learning is facilitated hence the provision of cues for

memory is brought about for visual learners. Instructional media should be used to supplement the teaching and learning process at “A” Level in schools.

### **2.3 Classification of models**

Models are constructed to meet different requirements in schools, and they may be categorized as mathematical and non-mathematical models, Munowenyu (1999). More so, the categorization of models and some specific typologies have also been presented by scholars like Ackoff, Haggert and Chorley in 1960s'. Chorley devised two classifications of models. Thus he regarded all models as being analogues of some kind, and suggested his first classification in 1964 whereby he identified only two types that is Mathematical and non-mathematical models. (Chorley, 1967) later presented a presentation that was revised and extended the classification system. The new classification incorporated all those types of models he discussed earlier and also included the ones that have been devised. The classification is relatively the most extensive and complete. It consists of three major categories of models with a number of sub-types (Harvey, 1969, 155). However, Rana (2013) further extended these classifications into three sub-groups that is Natural models, Physical models and General models. All these models have their own subtypes and the recent classification is as follows:

#### **2.3.1 Natural analogue system model**

They are simplified models that are used as a basis for further analyzing predictions by their translation into similar natural circumstances. Their natural world phenomena are where their explanations are based on and where they are brought from. This group of models involves searching for events of different places at different situations being observed. It is categorized into two sub-types that is Historical analogue and spatial analogue model.

### **2.3.1.1 Historical analogue**

These types of models represent analogous events at different times. The demographic transition theory is an example as it is derived from historical analysis and searching for differences between different countries at different times under study.

### **2.3.1.2 Spatial analogue**

These models represent comparable events in certain situations at different places (Rana, 2013). Christaller's Central place theory in Geography studies is an example in the study of urban land use planning. However, Brunet (2001) suggests that models that are used in Geography come from elsewhere. In addition, other models have worked better and earlier than we have today. This therefore makes them inefficient to make use in the teaching and learning.

### **2.3.2. Physical models**

These are classified into Mathematical and Non-Mathematical models with different sub-types as follows:

#### **2.3.2.1 Mathematical models**

These models are built up by translating conceptual models into the formal logic of mathematics. The process involves translating physical, chemical and or biological concepts about a system into a set of mathematical symbols relationships and in this situation, symbols are utilized as a form of short hand to describe complicated systems in the real world, White, Mottershead, and Harrison (1992).

Ackoff, (1962) cited in Rana (2013) also insists that mathematical models represent reality by some symbolic system, and such a system of mathematical equations or statistics are used

hence they have been termed symbolic models. More so, the use of Mathematical models in Geography entails the use of Software to describe relationships that are non-physical in nature. These make use of statistics for example Regression lines, Chi-Square tests or even those that are conceptual in nature amongst other variables that need to be tested through the use of symbols. Thus, Mathematical models are classified into three subtypes that is Deterministic models, Stochastic and Experimental design models respectively as they are classified according to the degree of probability associated with their prediction when used as follows.

#### **2.3.2.2 Deterministic models**

The use of deterministic models in Geography means that the certainty of the effect of its use comes when its outcome or results of the exercise are pre-conceived or are more or less the same and are more or less sure to come true for them to be called deterministic models.

#### **2.3.2.3 Stochastic models**

These models when calculated over and over again, they often give different results. Thus, there is doubt about the exact effect of a given cause as the laws of probability strictly govern this type of model.

#### **2.3.2.4 Experimental design models**

These models involve some practical procedures like those in laboratory or in field. They are mainly used in defense or planning processes. However, Zvobgo (1986), insists that, material resources are hard to come by and are a constraint in the achievement of many planned activities as they are difficult to construct.

### **2.3.3 Non-Mathematical models/Hardware models**

These models include conceptual and hardware models. Conceptual models represent a number of concepts or ideas about a system; however, they are unable to test these ideas in any formal way, White et.al (1992). They are formulated from observations of real situations or from deductive reasoning for example the Von Thunen's theory of land use zonation around a city. Hardware models according to Rana(2013) are those models made that are made of concrete materials, have been built in laboratories and are either scale models or simple analogue models. These models are those that pupils or teachers construct, for example, stream channels of variable shapes and sizes which will be "fed" with different discharges and sediment loads and the resultant changes being monitored within the classroom. For this study, the researcher will be researching on the perceptions of teachers' on the use of mathematical models only.

The scale or analogue models may both have subtypes and means a kind of figurative representation when used. Scale models make use of the same material as in the real world phenomena but a change is on scale for example in Map work. Thus some scholars like Ackoff(1962) cited in Rana(2013) calls them 'iconic models as they are three-dimensional models that are made of the same material but on different scale and an example of such type of a model is the Globe which is an iconic model of the real Earth used in a classroom situation.

#### **2.3.3.1 Scale models**

According to Rana (2013) these types of models makes use of the same material as those in the real world phenomena, but with a change in scale only. Thus Ackoff's classification such models has been designed as "iconic". In addition, the use of models in the teaching and learning process means that geographic awareness in students is developed. This is facilitated

through the use of maps to represent places, students through the use of models explore positional and directional words and derive to their own meaning by identifying significant locations within the classroom hence learning is an outcome. Preparation of students for a more in-depth study of human-environment interactions in subsequent grades is therefore brought about through the use of models in the teaching and learning process of Geography as a whole.

### **2.3.3.2 Analogue models**

These types of models have real world properties represented by different properties Ackoff, (1962) cited in Rana(2013). These models also involve a change in materials used in building the model together with a change in scale. More so, Ackoff (1962) calls them “Simulation Models”.

### **2.3.4 General systems models**

Is a newer concept as it treats the structure of geographical landscape as an assemblage of interacting parts and attempting to represent the process as such. It has three subtypes which are synthetic, partial and black box.

#### **2.3.4.1 Synthetic systems models (synthesis)**

Reality and the model used to represent it provides a perfect match thus these models simulate reality in a structured way hence they try to bring about reality through their representation. These types of models are artificially built and they are similar to experimental design models.

#### **2.3.4.2 Partial systems models**

These are mainly concerned with relationships that are workable and to derive to results is an attempt as incomplete knowledge from the internal workings within the system is an outcome. This therefore means that the selected model might have a chance of similarity with that it represents in the real life situation.

#### **2.3.4.3 Black box systems model (black box)**

These models tries to derive to results from a situation in which no knowledge pertaining the internal workings of the system under study.

### **2.4 Importance of models in the teaching and learning of Geography**

Chitanana (2012) envisages that good teaching models helps pupils to visualize on objects (either too big or too small) process or abstract idea. Models therefore improves the understanding capacity of pupils on complicated things through the use of analogues based on something well known by students. Munowenyu (1999) posits that, models have an organizational function with respect to data and also fertility in allowing maximum amount of information to be squeezed out of the data and also the systematic function of model building is useful in that it enables reality to be viewed in terms of interlocking systems.

More so, Gerlach and Elly cited in Chitanana (2012) states that “Teaching without media (technology) in today’s schools is a distinct handicap; for teaching with media (technology) can extend opportunities for learning.” hence the use of visual aids in the teaching of Geography through models is essential. Students’ learning through the use of models in the teaching and learning of Geography is improved as it is able to cater for all learning styles being visual, auditory and kinesthetic/tactile learners within a classroom.



MacLellan (2012) has it that models are physical objects that are used as instructional media in order to engage students and introduce practice or remediate a variety of concepts. This means that through the use of models in the teaching of Geography in schools, students are able to remember material better and feel a much greater sense of accomplishment when the task is completed. This is so because students who have difficulties in learning due to language barriers, auditory deficiencies or behavioral issues have a much easier time to stay engaged in task when models are introduced and used as instructional media in classes.

Gilbert (1998) points out that models form a bridge between the observations or observational and theoretical levels. This means that the use of models as instructional media in schools enables some group of phenomena to be visualized and comprehended by pupils who could otherwise not because of their magnitude or complexity.

## **2.5 Functions of models in the teaching and learning of Geography**

The use of models in the teaching and learning of Geography encompass nine functions that is materialistic/structural, mental, consistent, normative, orderly, constructional, informative and reasoning (Rana, 2013). This therefore means that the use of models in the teaching and learning process of Geography should not be undermined as they foster learning to be an outcome. Hence theory remains theory until it is transformed into practice through the use of models to explain them in the classroom.

Carwright (1983) says bluntly, “A model is a work of fiction. Some properties ascribed to objects will be germane properties ... but others will be merely properties of convenience.” Similarly, models do not reduce the skeletal calculus of theory, and may well survive even when associated theory is discarded. Hacking (1983) writes, “Models tend to be robust under theory change that is you keep the model and dump the theory. There is more local truth in the inconsistent models than in the most high-brow theories.” Thus models should not be

undermined in the use of the teaching and learning process of Geography as instructional media.

## **2.6 Problems encountered when making use of models as instructional media**

There is a general confusion surrounding the term “model” that is reflected in geographic research where different opinions have been found (Rana, 2013). The meaning and functions of the term “model”, thus requires some careful methodological investigation. Hence, it can be realized in this regard that there are some complications involved in the use of models as instructional media in schools regardless of the fact that they perform a critical role in the teaching and learning of “A” Level Geography. Therefore, it is against this background that the researcher wants to explore the perceptions by teachers’ on the use of models in the teaching and learning of Advanced Level Geography.

Chitanana (2012) agrees that a model is a copy of a real object. They are the closest alternative to real things and are often more convenient and suitable for teaching purposes than real things. Thus, he further argues that a model can be an enlargement, a reduction, or the same size as the original. The use of models in the teaching and learning of Geography has got advantages like showing movements and helping in the clarification of the topic under study and thus help in the retention of the information by students. However, Chitanana (2012) protests that the use of models in the teaching and learning may oversimplify the real object, thereby risk misrepresentation of the real object. In addition, a lot of time might be involved in the preparation and during presentation. This alone makes models use in the teaching and learning ineffective if a misinterpretation has been done on the part of the student.

Rey in Brunet (2001) defines a model as a, “system representing the essential structures of reality.” Models use in the teaching and learning of Geography are of importance as students’

needs are catered for though visual representation within the classroom. However, Brunet (2001) argues that, models are a prediction and application of reality. They force to represent reality as well as to fit reality whenever they are applied. This therefore makes the use of models difficult as misinterpretation of reality is an outcome whenever they are made use of in the teaching and learning.

Teachers are making use of teacher centred methods in the teaching and learning process in schools. This is supported by Fisher and Binns (2000) and Osananya (2002) who points out that there is a tendency by teachers to rely more on the use of “teacher chalk and talk”. This suggests that the exclusion of models as instructional media by teachers in the teaching and learning of Geography hence depriving students of valuable learning experiences.

There is inadequate supervision of teachers in schools due to low levels of commitment by supervisors in schools. Pettes (1997) and UNESCO (2009) also insist that there is need for commitment by administrators in order for teachers to successfully utilise instructional media. Thus, there is need for teachers, supervisors and school administrators to be more positive towards the use of models use as instructional media in order to overcome the challenges encountered in schools. Supervisors are important in stimulating and providing a conducive supervisory and teacher improvement through assisting and identifying problems in their teachers in the teaching and learning process.

In addition, in a study that was conducted, Ritzhaupt and Kumar (2013) saw that teachers in America were not able to make use of iPads to the full potential in a number of classrooms. Rather, desktops and laptop computers were being used to replace the use of iPads. Teachers are not able to make use of technology so as to foster learning in schools. The use of technology as instructional media to enhance learning is not being facilitated in classrooms. Teachers around the world are confined to the use of traditional teaching methods as they do

not have requisite skills and technical know-how on the use of technology especially software models.

## **2.7 Summary**

There is need for teachers at Advanced Level Geography to use models in the teaching and learning process. Several authors showed that models enhance learning to be an outcome in the teaching process. The study also shows teachers' perceptions and indicates the importance of using models as instructional media in Geography. It highlights on the use of models and none use of models in the teaching and learning of Geography. However, Sayer, (1984: 179) as cited in Castlea, et.al. (2005) states that the use of mathematical models as an aid to causal explanation is inevitably problematic because, as a language, mathematics is acausal and astructural. It lacks the categories of producing, 'generating' or 'forcing' which we take to indicate causality. Thus the research tends to focus on mathematical models use only in schools.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.0 Introduction**

Conducting a research requires the gathering of data from the target group, presenting the data and analyzing it to come up with conclusions. This chapter focuses on describing the method and design that the researcher used in conducting the study. The chapter also identifies and justifies the research instruments and data collection procedures that were employed within the study. Sampling techniques that were used by the researcher as well as justification of the data analysis and presentation procedures used in the study are presented.

#### **3.1 Research design**

In this study, the researcher used the descriptive survey research design. Chiromo (2009) defines descriptive survey as a method of research which describes what we see over and beyond the horizon and entails a study of a limited number of cases with the intention of drawing up conclusions that cover the generality of the whole population. Thus the design described the procedure for conducting the study including when, where, from whom and what conditions the data was to be obtained. Hence in this research, the design helped the researcher to explore into detail the perceptions by teachers on the use of models as media in the teaching and learning of Geography in high schools. The descriptive survey design also helped the researcher to yield valuable knowledge about different opinions, views, attitudes and practices pertaining to the use of models by teachers and students in schools.

Cohen, Manion and Morrison (2007) defines research design as, the practicalities of the research that is concerned with addressing issues of the research thereby providing answers to

the research questions. Descriptive survey gave the researcher a good general idea about the present research problem under study through the collection and analysis of data from the sample. Furthermore, descriptive survey enabled the researcher to communicate or interact with the respondents face to face when the respondents were providing information. Descriptive survey use therefore allowed attitudes, causes and effects to be identified and discussed on the use of models in the teaching and learning of Geography at “A” Level in schools.

### **3.2 Qualitative and Quantitative research**

This study used both techniques since they complement each other as the best research combines the features of qualitative and quantitative research. Qualitative research produced findings not by means of quantifications. Chiromo (2009) defines qualitative research as research whose findings are not arrived at by means of statistical procedures or other means of quantification. Understanding of social human problem based on a holistic picture, complex in nature, formed from words and reporting it in detail the views of the respondents was used. Qualitative data were obtained through the use of questionnaires, interviews and observation in describing teachers’ perceptions on the use of models as instructional media.

Quantitative research is associated with units of numerical values that are categorized into tables. Creswell (2003) said quantitative research has a component of analysis and reduces data to numerical scores. Human behavior like that of matter was therefore measured objectively through the construction of appropriate research instruments within the study.

### **3.3 Target population**

According to Creswell (2012), it is a group of people sharing common characteristics or properties that make a particular population. It can be a small or large group of individuals,

depending upon the characteristics. More so, (Chiromo, 2009: 16) postulates that population refers to all the individuals, units, objects or events that will be considered in a research project. This therefore means that it can be described as an element of the universe or the total elements under investigation. Thus there were twenty two “A” Level Geography teachers, one hundred and sixty Geography Advanced Level students as well as nine school administrators who were part of the population within this study. One Geography Inspector also participated in this study.

### **3.4 Sampling**

According to Chiromo(2009), a sample is a smaller group or subset of the population from which the population is selected from. The research conducted on this sample can be generalized to the whole population. The researcher used stratified random sampling technique in selecting schools and purposive/judgmental sampling as only “A” Level Geography students and teachers were going to be administered with questionnaires and interviews during the study. Participants with relevant information pertaining to the use of models were targeted within the research hence optimization of time was promoted.

In addition, Chiromo (2009) has it that stratified random sampling procedure involves dividing the population into homogeneous sub-groups meaning groups containing similar characteristics like Advanced Level Geography students as well as boarding and day schools, males and females amongst others. After dividing these populations into these homogeneous groups, a random selection of each group was carried out.

Purposive sampling method was also employed by the researcher in the study, as it is a feature of qualitative research. The researcher handpicked Advanced Level Geography teachers in the sample of selected schools involved in the study. The basis of their judgment of their typicality or possession of being the ones who could only use Geography models in

the teaching and learning at “A” Level made them to be of importance hence their involvement within the study. This, therefore, made and built up a sample that is satisfactory to their specific needs. Thus, as its name suggests, the sample was chosen for a specific purpose, in the study to be involved in the research on teachers’ perceptions on the use of models at “A” Level Geography in Gweru urban high schools.

More so, purposive sampling was used as a way to access ‘educated people’ that is those who have detailed knowledge about specific subjects, by virtue of their qualified part, control, access to linkages, proficiency or skill, Ball (1990) cited in Cohen, et. al.(2007). In this case “A” Level Geography teachers in Gweru Urban high schools who had the capacity to use and implement models in the teaching and learning of the subject were included in the research study. As there is little benefit in seeking a random sample when most of random sample may be ignorant of particular issues and unable to comment on matters of interest to the researcher, purposive sample was vital in this study as knowledgeable people were involved within the study. Though they may not be representative and their comments may not be generalizable thus, the primary concern of the research was to acquire in-depth information from those who were in the position to give it through the use of purposive sampling technique.

Furthermore, Gorard(2003: 71) comments on the need to use a boosted sample as another variant of purposive sampling. A boosted sample is able to include those who may otherwise be excluded from or under-represented in a sample because there are so few of them. For example, Geography teachers who can make use of the models might be excluded in the sample if other sampling techniques were used other than purposive sampling technique in the study. In this case the researcher was deliberately seeking to include a sufficient number of “A” Level Geography teachers to ensure appropriate representation in the sample, adjusting any results from them, through weighting, to ensure that they are not over-



represented in the final results. This is an endeavor to reach and meet the demands of the social inclusion of Geography “A” Level teachers only in the study, Cohen,et.al.(2007).

### 3.5 Sample Size

The researcher used a sampling frame within the study. Saunders, Lewis and Thornhill (2007) say that the sample size is determined based on a 95 confidence rate interval, an estimate of margin of error and total population which the sample was to be drawn. Chiromo (2009) postulates that the general rule of thumb is to always use the largest possible sample. The larger the sample the more representative it is going to be, smaller samples produce less accurate results because they are likely to be less representative of the population.

Through the sample, the researcher used Morgan and Krejcie’s model as it simplified the number of respondents the researcher dealt with some other sampling models.

**Table 3.1 Sampling frame**

<b>Table 1 Sample under study</b>		
<b>CATEGORY</b>	<b>POPULATION</b>	<b>SAMPLE</b>
Students	<b>160</b>	<b>48</b>
Teachers	<b>22</b>	<b>13</b>
School administrators	<b>9</b>	<b>6</b>
Geography Inspector	<b>1</b>	<b>1</b>

### 3.6 Research Instruments

Flor (2001) describes research instruments as tools that are used to obtain responses from respondents of the research. These are also means by which the researcher uses to solicit data

from respondents. The researcher used questionnaires, interviews and observations within the study.

### **3.6.1 Questionnaires**

According to Chiromo (2009: 35) questionnaires reach out to the respondents in a short space of time. This implies that questionnaires were the most flexible tool for collecting qualitative and quantitative data as information was to be obtained. Thus, a detailed nature about thoughts, attitudes, feelings, values, beliefs, perceptions, personality, behavioral intentions, and knowledge held on the interest of clients and teachers on the use of models in the teaching and learning of Geography would be an outcome.

Johnson and Christensen (2012) asserts that a questionnaire is a self-report-data-collection instrument that each research participant fills out as part of a research study. Respondents would be free to answer the questionnaires holding the claim that they do not have direct interaction with the researcher. Advantages of using questionnaires were that the researcher was able to collect data from a large group of population at the same time within a short space of time from fifty four participants. There was a greater assurance of anonymity since there was no interviewer present. The researcher used questionnaires for both teachers and students. The questions were structured in a way that both teachers and students managed to highlight their views. When answering the questionnaire, one was to choose the most appropriate answer from the given ones or indicate if none of the responses suits him/her.

In addition, Gillham (2008) defines a questionnaire as a research instrument consisting of a series of questions and other prompts for the purpose of gathering information from respondents. Therefore questionnaires were compiled and administered to school teachers, and students. Open and closed ended questionnaires were used in carrying out the research. Open questions allowed the researcher to gather more information on teachers' perceptions on

the use of models in the teaching and learning of Geography at “A” Level. Confidential information was asked through open and closed questions since names were not required.

However, questionnaires have some demerits which the researcher was aware of. For instance, the respondents may consult one another as an appropriate way of responding which may result in getting biased information. Questionnaires are difficult to probe where more information is required in detail for the study by the researcher. Thus the researcher used triangulation to encounter this challenge and the open-ended questions that would allow respondents to express their opinions. Hence interviews were also used by the researcher.

### **3.6.2 Interviews**

In this study, interviews were used because they partly explain the same questions on the questionnaires that were used in the interview with some slight modifications. Johnson and Christensen (2012) defines an interview as a data-collection method in which an interviewer ask questions to an interviewee. This therefore means that it’s a question and answer session which is carried on face to face between the interviewer and interviewee through verbal interaction (in-person interviews).

Interview guides comprising of both open-ended questions and closed ended questions were used by the researcher. Closed ended questions were used as they were easy to analyze and code. Open ended questions were used as they also provided respondents with an opportunity to express themselves freely and this therefore resulted in a greater variety of information to be gathered and obtained. The researcher made use of interview schedules for Advanced Level Geography teachers, Advanced Level students, school administrators and Geography Inspector in collecting information on teachers’ perceptions on the use of models in the teaching and learning process of Geography.

Focus group interviews were conducted by the researcher. They were used because it led to new thinking about the responses from those responses that they made in the questionnaires. All the respondents from the interviews (8 students per school) were involved in the interview. In addition, standardized analysis was brought about through structured interviews as questions set out in a precise manner were used in a fixed schedule hence little to no discretion by the interviewer to depart from the planned interview. Thus clarification of points by both the researcher and respondents were brought about as a result. Interviews were more appropriate to use as they increased the response rate as people were more willing to express their views and react verbally than to write hence they were of importance to use during the study.

However, (Johnson and Christensen 2012) pointed out that interviews have their own weaknesses. Thus the use of an interview guide approach may be inadvertently omitted if there are important and salient topics under discussion. There is also a reduced comparability of responses through the interviewers' flexibility through the sequencing and wording of questions. This can lead to substantially different responses from different perspectives to be an outcome.

### **3.6.3 OBSERVATIONS**

Johnson and Christensen (2012) defines observation as the watching of behavioral patterns of people in certain situations to obtain information about the phenomena of interest This therefore means that, observation is more than matching what is going on, as well as matching what is happening with a purpose.

Furthermore, through observations, the researcher further added participant observation which entails personal and intense contact with the subject under study as a way of achieving understanding of teachers' perceptions on the use of models as instructional media at "A"

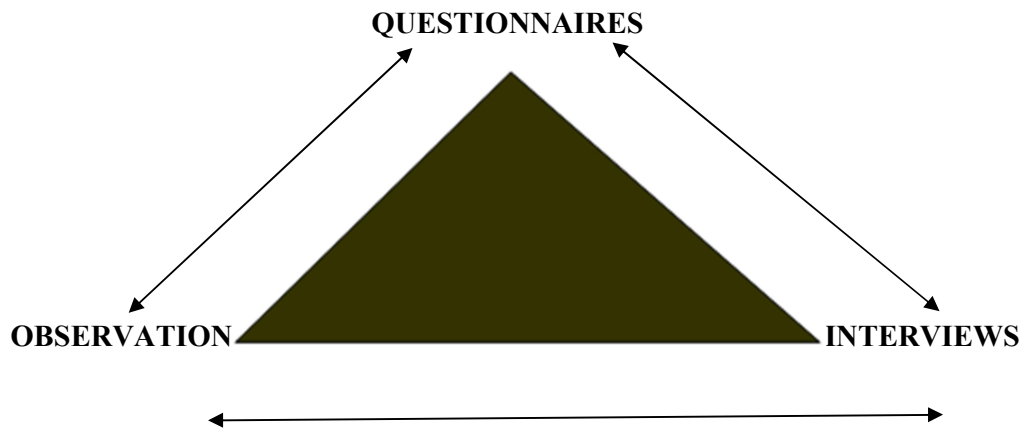
Level Geography teaching in schools. The researcher was able to observe Geography rooms as to whether models like Globes were available within the Geography rooms as well as if models were used. Observation of schemes of work was conducted by the researcher to check and see whether they were written under the instructional media to be used during the teaching and learning process. Marshall and Rossman (1989) cited in Kawulich(2005) define observation as "the systematic description of events, behaviors, and artifacts in the social setting chosen for study".

Observations offered the researcher with the opportunity to gather “live” data from naturally occurring situations, Cohen et.al. (2011). This therefore means that looking directly at what was taking place in different places rather than relying on second hand information in the study was brought about. Describing existing situations using the five senses through a written photograph of the situation under study was provided. An immediate awareness was an outcome hence yielding of valid and authentic data was brought about. It also provides the context for development of sampling guidelines and interview guides hence they were used by the researcher in gathering data on teachers’ perceptions on the use of models in the teaching and learning of Geography Advanced Level in Gweru urban high schools.

#### **3.6.4 Figure 3.1 the Three-Tier Method of Triangulation**

Gibbs (2002) views triangulation as an attempt to include multiple sources of data collection on a single research project to increase the reliability of the results and compensate for the limitations of each method within a study. O’Donoghue and Punch (2003) contends that, “triangulation is a method of cross-checking data from multiple sources to search for regularities in the research data.” Thus the study encompassed three methods in data collection as the situation under study would be more balanced and detailed. This therefore

was an accurate way of attaining information on teachers' perceptions on the use of models in the teaching and learning of Geography at Advanced Level in Gweru urban high schools.



Source: Widersheim-Paul and Erickson (1997)

In this study, the researcher used the following methods of data collection;

- i. Questionnaires
- ii. Interviews
- iii. Observations

Furthermore, the use of triangulation in education helps in qualitative research to increase on credibility and validity of results. Triangulation was therefore a useful and powerful method to use in the study as it facilitated validation to be an outcome through cross verification from two or more sources of data as it was obtained through an application and combination of several research methodologies in the study of models in the teaching and learning of Geography at Advanced Level with questionnaires, interviews and observation respectively being used within the study as a whole. Thus the use of triangulation within the study acted as a method appropriate hence a strategy of finding the credibility of qualitative analysis within the study as a whole.

Triangulation within the study was used as an alternative to traditional criteria like reliability and validity when used. Through combining multiple observers, theories, methods and empirical materials, researchers can hope to overcome the weakness or intrinsic biases and the problems that come from single method as well as single observer and a single theory of studies.

### **3.7 Pilot testing**

A pilot study was carried out in this study. Its purpose was to enable the researcher to check if there was need to refine the questions on the questionnaires copies so that respondents would have no problems in answering as well as recording data from them. Length of questions and clarification on the questioning was promoted thereby identifying flaws so as to correct and modify the research instruments to be employed in the study. The pilot study was also conducted to check if all the elements of ambiguity and offence only to mention a few. The pilot study was undertaken in one of the high schools that was not part of the study. The school was chosen by means of convenient sampling, consisting of six Advanced Level Geography teachers, one school administrator and ten Advanced Level Geography students.

### **3.8 Data Collection Procedures**

The researcher obtained an introductory letter from Midlands State University. The researcher used the introductory letter to get permission from the Provincial Education Director (PED) of Midlands Province to carry out the study in Gweru High Schools as well as clearance letter from the Regional Offices of Education in Harare. The letter from the PED was used by the researcher to seek permission from the District Education Officer (DEO) of Gweru District and School administrators of selected schools.

The researcher also made some interview appointments with the Geography Inspector and the school administrators in the sample. The interviews were conducted after the researcher had sought informed consent from the participants.

### **3.9 Data Analysis and Presentation Techniques**

Best and Khan (2006), comment that data analysis reduces the volume of information through breaking it down, identifying significant patterns and relationships which exist when being collected into component parts. Collected data through the use of questionnaires and interviews was presented, tabulated or graphically in the form of pie charts. The information was analysed and interpreted individually in a suitable representation.

The researcher organized the data as raw data needs to be analyzed in order to provide solutions and recommendations to a problem. Additionally, detailed analysis and description is important in the research as it makes people understand the findings of the research study on teachers' perceptions on the use of models in the teaching and learning of Geography at "A" Level. Thus qualitative and quantitative data were used to present the findings.

### **Tables**

It is a way of summarizing data for individual variables for specific values to be read through a set of figures/facts systematically displayed especially in columns. Data was arranged in rows and columns under various headings. Tabular forms were used in the analysis of data because they were easy to interpret, understand and to represent hence their adoption and use in the study.



## **Pie charts**

Some of the collected quantitative data was presented in the form of pie charts. Pie charts displayed percentages and proportions in relation to the whole. Thus, they provided the clearest way of comparing parts of the whole, Chitanana (2012).

### **3.10 Validity**

External validity is the degree to which conclusions can be generalized to the wider population (Chiromo, 2006). Qualitative data validity might be addressed through the honest, depth, richness and scope of the data achieved, the participants approached, the extent of triangulation and the disinterestedness or objectivity of the researcher.

Fraenkel and Wallen (2003) defines it as the unit to which results can be generalized to the entire population. If it is possible to generalize the results from the sample of the whole population, it therefore means that the instruments used were valid. Thus, in this research, questionnaires, interviews as well as observation were used to collect data in form of perceptions by teachers' on the use of models in the teaching and learning of Geography at Advanced Level. Content validity was also of concern to the researcher. The researcher used concurrent validity to ensure content validity. This was so because the researcher wanted to demonstrate correlation between data collected by using various sources of evidence to collect information. This assisted the researcher to achieve validity through triangulation of methods used for both instruments and respondents through comparing the results yield by these instruments.

### **3.11 Reliability**

According to The Free Dictionary, cited in the Explorable(2015) reliability refers to the yielding of the same or compatible results in different statistical trials. This means that two or

more instruments should yield similar results when applied to measure the same thing. The researcher ensured that reliability was brought about from both the instruments used. Thus the questionnaires and interviews administered to respondents managed to complement each other so that adequate and reliable results were drawn.

### **3.12 Summary**

This chapter focused on the research methodology. The descriptive survey design was used in this study. Also, sample and sampling procedures, research instruments, data collection instruments, data collection procedures and data analysis plan were included in this chapter. The next chapter focuses on data presentation and interpretation.

## **CHAPTER 4**

### **DATA PRESENTATION, ANALYSIS AND DISCUSSION**

#### **4.0 Introduction**

Raw data needs to be analyzed so as to provide answer or endorsements to a problem. The researcher organized the data, identified patterns which emerged and this allowed assessment to be significant as raw data on its own does not make any meaning. This chapter presents, analyses and discusses the results. The results are presented in themes generated from research questions. Before the thematic analysis is done, the demographic data are given.

#### **4.1 Research findings**

##### **Characteristics of respondents**

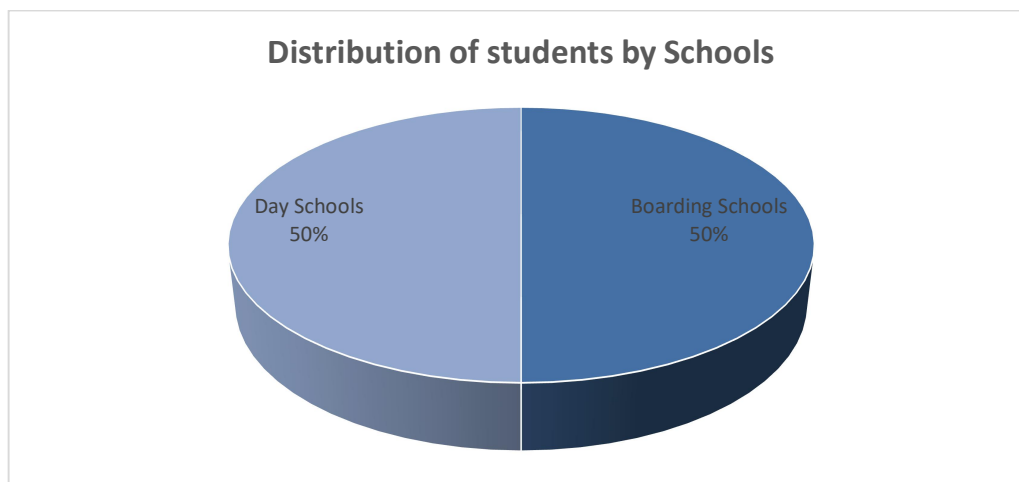
The sample represented two groups, that is, boarding and day schools so that at the end, the findings would be compared and generalized to the rest of the population. The researcher had to compare all the findings so as to outline teachers' perceptions on the use of models in different school settings.

## 4.2 Presentation and analysis

**Table 4.1: Demographic characteristics of respondents**

<b>CATEGORY</b>	<b>MALE</b>	<b>FEMALE</b>	<b>TOTAL</b>	<b>INSTRUMENT USED</b>
School administrators	4	2	6	<b>Interviews</b>
Advanced level Geography teachers	8	5	13	<b>Questionnaires</b> <b>Interviews and observation</b>
Advanced level Geography students	24	24	48	<b>Questionnaires</b> <b>Interviews</b>
Geography inspector	1		1	<b>Interviews</b>

The data were significant to the research with regards to teachers' perceptions on the use of models at Advanced Level Geography. The research involved both female and male teachers. As regards school administrators, there were 4 males and 2 females giving a total of 6 being drawn from the study. As for teachers, 61, 5% were males and 38, 5% were females. On students, there was gender balance as there were 24 female students and 24 male students giving a total of 48 students. Furthermore, one male Geography Inspector took part in the study.



**Fig4.1: Distribution of students by schools (day/boarding schools)**

Table 4.1 and figure 4.1 show that there were equal number of students from both boarding and day schools.

**Table 4.2: Teacher qualifications**

n=13

Teacher qualification	Number of teachers
PGDE	2
Bachelor of Education	3
BSc Education Geography	2
BSc Geography	2
Master's degree	4

As can be seen from Table 4.2, the highest level of teaching qualification for Advanced Level teachers in Gweru urban high schools was a master's degree. "A" Level teachers were employed on a permanent basis. Teachers who were teaching "A" Level Geography in schools were qualified to teach the subject.

**Table 4.3:Teaching experience of Advanced Level Geography teachers**

n=13

<b>Experience in years</b>	<b>Number of teachers</b>
<b>0-5</b>	2
<b>6-10</b>	1
<b>11-15</b>	4
<b>16-20</b>	3
<b>20+</b>	3

As can be seen inTable 4.3 the majority of the teachers have more than 11 years' experience in teaching the subject area of Geography. These ranged from 11-15 years with 3 teachers falling in this range. In addition, 6 teachers have the highest number of teaching experience in teaching Geography at "A" Level. There were 3 teachers with 16-20 years' experience and other 3 teachers in the category of 20+.

**Research question 1.3.1.**To what extent are models being used as instructional media inGeography Advanced Level schools?

**Table 4.4:**Findings from teachers

n=13

<b>Question</b>	<b>Responses</b>		
3. Have you ever made use of models during your teaching of Geography?	Yes	No	
	13	0	
4. a. If yes how often?	Once a week	Once a month	Once a term
	3	6	4
b. if no state reason why you do not use them	N/A		

As can be seen in Table 4.4 all Advanced Level Geography teachers' indicated that they all made use of models during their teaching and learning process in schools suggesting that they integrated models in the teaching and learning of Geography at Advanced Level. Of the thirteen teachers from the selected schools, three teachers used models once a week and this translates to 23% whilst those who used models once a month were six and this translates to 46%. Four (31%) of the teachers said they used models once a term. However, none of them said that they do not make use of models in the teaching and learning of Advanced Level Geography.

**Table 4.5: Findings from Advanced Level Geography students**

n=48

Question	Responses			
	Yes	%	No	%
1. Does your teacher integrate the core topics with the use of models in the teaching of Advanced Level Geography?	32	67	16	21
2. Does your performance improve after models have been used in the teaching and learning of Geography?	48	100	0	0
4. Do you like to be taught using models? Give reasons	48	100	0	0

The results in Table 4.5 show that thirty two students said that their teachers made use of models in the teaching and learning of core topics in Geography at "A" level. Sixteen students indicated that their teachers did not integrate models in core topics. In addition, all the students like to be taught using models within their learning process as they provide realia which enhances learning hence an improvement in performance of students.

Responding to a question that reads, “Why do you like to be taught using models?” the students said that, “*Clarification of abstract concepts is brought about, it motivates to see real things in the classroom, arouses our interest to learn, we feel part and parcel of the lesson, it makes it easy for us to recall and remember concepts or theories whenever we are asked about them*”. As a follow up to the questionnaire, ten students said that their teacher made use of models once a week, twenty students said once a month while eighteen said once a term. This suggests that models were not being used to the fullest extent at Advanced Level Geography in schools. This further, suggests that, teachers were making use of other teaching methods that do not require the use of models like the chalk and talk. Some teachers are relying more on teacher centered approach rather than engaging students in the teaching and learning process at Advanced Level Geography through the use of models.

#### **4.3 Findings from the Geography Inspector**

Responding to the question on assessment of teachers, the inspector replied:

*It depends with resource availability. As per the stipulation, he was supposed to meet with teachers once every twelve months but sometimes they would go for years without assessing them. (Inspector interview 09/02/15).*

This suggests that resource availability was a hindrance to the supervision of teachers in schools. More so, funding of the Geography department needs to be done as Geography is not necessarily classroom based but rather, its outside which can be accommodated through the use of models if fieldwork cannot be implemented.

Responding to the question on what instructional media are most used by Geography teachers when teaching Advanced Level Geography, the inspector said that:



*“It depends on schools and topics that teachers would be teaching. Some teachers make use of e-learning, models, charts, internet if they can, only to mention a few”. (Inspector interview 09/02/15).*

This shows that, models were being used in schools but it actually depends on the school’s status. If models are there, they would be used and if not, they would make use of other means of teaching strategies.

**Research question 1.3.2.** What do teachers think about the use of models as instructional media in schools?

When the researcher asked Advanced Level Geography teachers on whether they think models were necessary in their teaching, all the thirteen teachers’ said that; models were necessary in the teaching and learning of Geography at “A” Level. The reason being that;*they enable students to understand quickly as they are able to visualize the meaning being taught. They make teaching easier especially on illustrating abstract concepts and they represent the actual thing (realia). Models enhance pupil participation as well as saves time when making use of them. Models bring visual and touch sense into effect hence, they help in the comprehension of concepts.*

When the researcher asked teachers on the type of models they make use of, the indications were that; none of the teachers used Mathematical models in the teaching of Advanced Level Geography. Teachers also indicated that they made use of non-mathematical models during the teaching and learning process as instructional media. Thus, they pointed out that non-mathematical models were easy to understand especially when used in the learning process.

In addition, non-mathematical models motivate pupils to read in advance and they were easy to make use of when teaching.

#### **4.4 Views on models as instructional media at Advanced Level Geography Teaching**

##### **Advanced Level Students responses**

Responding to the views on the use of models as instructional media in the teaching and learning of Geography, “A” level students had this to say; *“models are very essential in the learning of Geography. Teachers must be present whenever models are being made use of in classes”*. Some even said that; *“at least one model should be made to represent one concept in the teaching and learning of Geography”*.

From the responses, students showed that they like to be taught using models in their day to day learning in schools. Teachers must therefore use discovery learning together with models but they have to explain these models to students so that concretization of concepts can be an outcome.

#### **4.5 Findings from teachers’ interviews on the use of models in the teaching and learning of Advanced Level Geography**

When teachers were asked their views on the importance of models as instructional media, 100 % of the teachers from the sample said that models were an important instructional media within the subject area.

Responding to the question on the view of the school administrators towards the use of models in the teaching and learning of Geography,

All the teachers (thirteen) said that, *“school administrators encouraged the use of models in schools. This might be a shift to the 21<sup>st</sup> Century learning of using technology to enhance learning in schools.”*

When the researcher asked teachers on their views and comments on the use of models as instructional media at Advanced level,

Advanced Level Geography teachers said that, *“models were a very good instructional media that must be used in the teaching and learning of Geography. They must be emphasized in the teaching and learning of Geography throughout all levels of learning.”*

The above observation suggests that Advanced Level Geography teachers perceive models as good instructional media for students learning in schools. They also indicated by the response that what was at the fore front was the students hence their use was to be encouraged.

### **School administrators’ responses**

Responding to the question on views and comments on models as instructional media by school administrators. They said that teachers said; *“They were good but limited resources render them ineffective”*.

School administrators showed that models are good instructional media that must be used in the teaching and learning process of Geography. Time was a factor that render models ineffective as teachers might fail to link them within the teaching and learning process. Educating school administrators and the SDC was suggested as a solution as this would help

in their effort to request for finance to purchase instructional media to be used within the department.

### **Geography inspector interview response on the views and comments on models**

Responding to the question on his views and comments on models use as instructional media, the Geography inspector had to say:

*“They are essential and useful in the teaching and learning process. Students would concretize whatever they are taught” (Inspector interview 09/02/15).*

The above observation suggests that Advanced Level Geography teachers should make use of models in their day to day teaching in schools as students are at the fore front for learning to be an outcome as concretization of concepts is an outcome.

Responding to the question on their views about models as instructional media in Geography,

All the thirteen teachers in the sample said that they were effective. Their reasons were that, *they help students to grasp abstract concepts as well as saves time when they use them to teach. They are also easy to demonstrate and illustrate concepts. Models should be used as much as possible, and every lesson must be accompanied by models.*

When teachers were asked about the reasons why they made use of models when teaching Geography at Advanced Level in schools, they had this to say;

*They bring visual and touch sense into effect, saves time, they enable students to understand, represent the actual thing (realia), enhance participation and help in the comprehension of concepts.*

Representation of reality is brought about within the classroom as well as enhancing students' participation hence students engagement within the taught topic is an outcome.

This, therefore, means that models should be used to the full as it is a constructivist way of teaching since it is a student centered approach to learning.

#### **4.6 Findings from School Administrators' interview responses**

Responding to what they thought were Geography teachers attitudes on the use of models as instructional media,

**School Head 1, 2 and 5** said that:

*“Their attitudes are mostly negative as they complain that models are time wasting”.*

**School Head 3, 4 and 6** said that;

*“Geography teachers in their schools appreciated the use of models as they help students in understanding abstract concepts within the subject”.*

From the responses above it suggests that some Geography teachers' perceived models as a waste of time hence their adoption of the chalk and talk method. However, some viewed model use as effective as what was at the fore front was the student rather than models use in the teaching and learning in schools.

**Research question 1.3.3.** What problems are faced by teachers when trying to use models in the teaching of Geography?

#### 4.7 Teachers' responses

**Table 4.6: Findings from questionnaires administered to teachers**

n=13

Question	Responses
8. What challenges do you encounter when using models in teaching Geography? Briefly explain	<i>Shortage of models in the school set up, shortage of base rooms and financial challenges to buy materials to make models. Some students misinterpret them. The classes are too large, with some models being too small to use. Some models were drafted in geographical locations that are different from ours, therefore might not be applicable in real life situations</i>

In addition, when asked to narrate the problems they encountered when using models in the teaching and learning of Advanced Level Geography, the teachers said that: *Shortage of time and it was time consuming to demonstrate to 4 or 5 groups were problems that they faced. Teachers also said that models are few in schools for example there was one in a class of 50 pupils. Financial challenges to buy materials to make models as well as too large classes also limit their use in schools. Limited base rooms on which to operate as well as limited resources are the other problems teachers face. Furthermore some students misinterpret them. There are also shortage of models in schools as they were once provided by the CDU*

*and this further reduce the use of models in schools. Some models are small to use in today's classes. In addition, some of these models were designed for geographical locations that are different from ours therefore might not be applicable in real life situation. In addition, failure to link the attributes of a model to reality or practical situation as they are sometimes too simplified are some of the problems teachers face.*

As can be seen in Table 4.6, and the above sentiments, it suggests that there are several problems faced by Advanced Level Geography teachers whenever they try to make use of models in their day to day teaching in schools. All these problems could be a result of financial constraints as well as large classes that they have nowadays hence, teachers now perceive models as ineffective and this hinders the teaching and learning process.

**Table 4.7: Findings from questionnaires from Advanced Level Geography Students**

<p>4. What problems do you encounter when models are used as instructional media? Explain your answer</p>	<p><i>They are difficult to understand because some of them are complicated. The use of different models on one aspect brings confusion and teachers become too reluctant thus more work will be based on researching on our own. Teachers don't have time to explain concepts to us as we would have researched on our own. More time is needed for models to be integrated within the teaching and learning process. They are not practical.</i></p>
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As can be seen on Table 4.7 it appears that there are several problems that Advanced Level Geography students are facing whenever models are made use of as instructional media in schools. They indicated that there are many models that are used to explain one concept be it from books or media used. Some even said that they are not practical in the day to day lives

that they live making it a point that they have to be revived as well as adjusting time allocation for Geography lessons.

### **School administrators' responses**

Responding to the question on problems faced by teachers when teaching Advanced Level Geography using models,

School administrators said that, *"resources were limited in most cases. Time constraints to integrate models to the prepared lessons were the major problem that teachers were facing. Lack of motivation as well as media used in classes were too small for today's classes. In addition, they alluded to electricity problems as another problem as softwares could not be used in the teaching and learning process in their schools"*.

### **Geography inspectors' responses**

Responding to the question on problems that are faced by Geography teachers when teaching Advanced Level Geography using models, the inspector had this to say:

*Time and resources are the major constraints that teachers face when using models in the teaching and learning of Geography. More so he could not explain further as he could only meet with teachers once every twelve months as it also depends with schools.(Inspector interview 09/02/15).*

## **4.8 Suggested solutions to the problems stated on the use of models**

### **Solutions by teachers**

On asking Advanced Level Geography teachers on the likely solutions to the problems of models use in the teaching and learning, teachers' responses were as follows: *There should be*



*small and manageable classes. The administration should work on establishing base rooms for “A” Level students. In addition, the CDU has to be revived and provision of resources be facilitated. There should be modification of models that suit the real situation with more models being brought in a lesson. Furthermore, more time should be allocated to the Geography lessons, fund raising activities as well as budget for media and training teachers to improvise media*

As can be seen from the responses by teachers, the use of models as instructional media is affected by resource availability as well as large classes that they have. Models are there in schools but the problem is that they are too small to be used in today’s classes. Schools with meagre budgets cannot make use of the 21<sup>st</sup> century modern technology in the teaching and learning so that learning can be an outcome. Some of these models that are used in today’s classes do not match the situation on the ground in our country which renders them ineffective as a result.

**Table 4.8: Findings from questionnaires administered to teachers’**

n=13

Question	Responses
9. What do you think should be done to overcome the problems you have stated above? Briefly explain	<i>Small and manageable classes. The CDU must be revived. Modification of models that suit the real situations should be developed. Clear presentation of a model with a lot of explanation as well as more fieldwork should be promoted in schools. The Admin should work on establishing base rooms for “A” Level students</i>

Furthermore, teachers’ responses to the likely solutions from the interviews to the problems they are facing, some of the teachers said that:

*“There should be small and manageable classes. The Administration should work on establishing base rooms for “A” Level students as well as reviving the CDU”.*

Whilst others said that,

*“There should be provision of resources in schools and modification of models that suit the real situation. Furthermore, they suggest that more models should be brought in a lesson with more time being allocated to the Geography lessons”.*

The above observation suggests that there are several problems that Advanced Level Geography teachers are facing whenever they try to make use of models in their day to day teaching in schools. All these problems could be a result of shortage of resources in the subject area in schools.

### **Solutions suggested by students**

When students were asked what they think should be done to overcome the problems that they had stated, they had to say that: *Teachers must prepare models with notes at the same time so as to make it easy to explain the models for easy understanding. Instructional media must be brought in each and every lesson so that we may understand abstract concepts and theories. Further explanation on models should be done in class with practical examples being carried out. In addition, teachers should make use of tangible models within the classroom and there must be use of e-learning for “A” Level Geography in schools. There must be use of software like Google maps so that we may be able to see places that are being taught by the teacher, Geography Advanced Level students must be given adequate time, that is, more periods during the week and more time to be taught in schools. Teachers must explain further to clarify on the models whenever they make use of them in the teaching and learning of Geography at Advanced Level. Teachers should be monitored at least once a*

*week so that they can be able to explain models whenever they make use of them, Schools must apply for donations to other organizations so that resources can be available in schools for use in lessons. We should buy our own models to use in the teaching and learning of Geography, Models must be used but at a slower pace so that we may be able to understand concepts and theories, teachers must be present whenever we make use of models in the learning of Geography, teachers must use clear models that can be seen by everyone within the classroom. Some even said that models should be displayed in the Geography room so that they can be able to make reference to them whenever they are learning.*

The above observation suggests that something needs to be done pertaining to the full implementation of models in the teaching and learning process of Geography. All the stakeholders should be involved if models implementation in the teaching and learning is to be fully implemented as a constructivism way of teaching in schools.

### **Suggested solutions by School administrators**

Responding to the question on solutions to the problems faced by Advanced level Geography teachers, school administrators suggested that;

*The administration should source more resources for the Advanced Level Geography teachers and fund raising activities to purchase media needs should be carried out. More time should be allocated to Geography lessons and the Head of Department (HOD) should have necessary knowledge and skills to guide other teachers. Levying parents for money to buy models in schools as well as educating school administrators and the School Development Committee Members on the value of instructional media in Geography as well as to buy generators for electricity were some of the responses.*

The above observation suggests that there is need to involve each and every stakeholder in education to produce a sounding decision making on how best models can be implemented in the teaching and learning in schools.

#### **4.9 Findings from the Geography inspectors' interview**

Responding to the question on the likely solutions to the problems, he suggested that: *“resources have to be funded to schools that had little budgets as this hindered teaching and learning to be an outcome. More so supervision of teachers have to be carried out more often so that teachers would be assisted in making use of models in the teaching and learning process as a whole”*. (Inspector interview 09/02/15).

This suggests that a double prolonged approach is needed in assisting teachers to implement models in the teaching and learning process in school. Both school administrators and H.O.D'S should assist their teachers through supervisions in school.

#### **4.9 Availability of Geography in-service training of teachers on how to implement models**

##### **4.4 Findings from the School administrators**

When asked by the researcher in an interview on assessment of teachers in their schools.

School administrator 1, 3 and 5 said that; *“Assessment is done on a monthly basis”*

School administrator 2 said that; *“assessment is randomly done”*

Whilst School administrator 4 and 6 had to say;” *assessment is done randomly and infrequently”*

From the interviews conducted with School Administrators, there was evidence that there was little that was done pertaining to the supervision of “A” Level Geography teachers in schools,

Asked whether they carried out workshops or seminars in their district or cluster to in-service teachers on how to use models as instructional media,

Most of the school administrators’ said that *“no seminars were being conducted in the district to in-service their teachers. The reason for this was due to shortage of funds in schools, other commitments by the administration as well as shortage of time to in-service teachers. Three school administrators’ said that they in-service their Geography teachers on how to implement models as instructional media in their schools.”* They gave these reasons: *“if time and resources permit but not always.”*

#### **Schooladministrators’ responses**

Two administrators said that:

*“Yes we in-service our teachers on how best to implement models in the teaching and learning of Geography at Advanced Level”.*

**School administrator 1 and 4**said:

*“If resources and time permit use, we in-service our teachers”.*

**School administrator 2, 3, 5 and 6** had this to say:

*“Limited to no resources is a hindrance to the process of in-servicing our Geography teachers”.*

Thus, four school administrators said that they do not in-service their Advanced Level Geography teachers.

**School administrator 3** had to say,

*“Time constraints are a hindering factor as the timetable is busy”.*

**School administrator 5 and 6** said that,

*“Other commitments needed in the school hinder the process of in-servicing of Advanced Level Geography teachers in their schools”.*

The above observation suggests that there are different problems that different schools experience in terms of in servicing their teachers for the full implementation of models in their day to day teaching in schools. However, some schools were in servicing their Geography Advanced Level teachers on how best they can implement models as instructional media in the teaching and learning process.

#### **4.10 Geography Inspector’s response on workshops and seminars**

Responding to the question on whether he organises workshops, seminars at Provincial Level to in-service Geography teachers on how to use models as instructional media.

The inspector had this to say: *“Sometimes they organise and if he had time he would attend to some as he is the Provincial inspector. Districts were asked to organise them but due to time and resource constraints, they do not permit workshops to be carried out”.* (Inspector interview 09/02/15).

This therefore shows that the issue of funding is the one that is hindering workshops and seminars to be carried out so that teachers can be in-serviced be it at district or provincial level.

#### **4.11 Observation check list in schools**

##### **4.11.1 Geography room**

All the schools under study in Gweru urban had Geography rooms. Of the six schools under study, only one school had a projector that was mounted within the Geography room. Three schools did not have secure rooms to store some of the models which made it difficult to store different models for future use.

##### **4.11.2 Schemes of work**

Teacher's schemes of work showed that supervision was done once a month or even twice a term by school administrators in schools. None of them indicated mathematical models as instructional media in the teaching and learning process. Some of the teachers were using scheme books that they once used in the year of 2010 as they did not have current scheme books.

All the teachers were mainly emphasizing lecture method as a teaching method. None of them was making reference to the use of fieldwork to some topics that required the use of models and practical work.

##### **4.11.3 The Globe being displayed within the Geography room**

From the observation made by the researcher, Globes which are essential models that can be used in the teaching and learning of Geography in schools were not displayed. No school had a Globe displayed in the Geography room as some of them were broken, torn and some had even punctures with some countries even missing on them.

#### **4.11.4 Different models within the Geography room**

Both boarding and day schools had identical models that are either two sets of models to four sets only. School 1, 2 and 5 had two types of models that is small Globes as well as charts samples only within their Geography room. School 3 had three types with rock samples being an addition from what other schools had. In addition, school 4 and 6 had four types of models with Maps being the other models they had within their Geography rooms.

#### **4.11.5 Departmental policy in schools**

There were only two schools that had a Departmental policy that encouraged the use of Models in the teaching of Geography. The other four schools left had no departmental policy which makes it a point that teachers would use models as instructional media whenever they thought they were necessary.

#### **4.11.6 School syllabus**

Only two schools had the school syllabus in their departmental file. Other schools did not produce them due to reasons best known to them. School syllabuses that were in schools were drafted some time long ago that they need to be revised with the inclusion of contemporary issues nowadays.

#### **4.11.7 The National syllabus**

The Zimbabwe Advanced Level Geography syllabus is a course guide for “A” Level Geography examinations. The document gives a guide as to what content should be covered during the two years of the course. It also recommends and suggests aims, skills and attitudes and requirements from different sections of the course only to mention a few.



This section 2.1 on the analysis, representation and interpretation of data state that there are calculations, use and significance of the mean, mode and median only to mention a few. Section A from both papers consists of practical.

More so, two to three questions are asked in the public examination and students are required to attempt only one question. The syllabus clearly states out that, ” **NB: SECTION A QUESTIONS WILL BE BASED ON CORE TOPICS IN BOTH PAPERS.**” Diagrams, maps and statistics should be regarded as an important way of representing data and should be used as it is regarded an important way of representing data. It should be used to illustrate basic principles and concepts particularly in core topics. Candidates should be able to interpret them with examples wherever possible be drawn from Zimbabwe and other African countries, (ZIMSEC, 2013-2016 syllabus). This therefore shows that mathematical models are essential instructional media in the teaching and learning of Advanced Level Geography that have too be made use of and utilised in schools by teachers’.

#### **4.12 Discussion**

The discussion was done in an effort to find if there were similarities and differences between findings of this study and existing literature as reviewed in Chapter Two.

##### **4.12.1 Research question a) To what extent are models being used as instructional media in Geography Advanced Level schools?**

There is no diversity of media used to teach Geography at Advanced Level. This was observed from the interviews administered to school administrators. The only models that are used in schools are maps and charts that were drawn many years ago. This shows that there is no concerted effort to solve the problem of non-availability of models as well as lack of diversity of models as instructional media in Geography. In addition, the researcher also

noted that teachers are not motivated to improvise instructional media in the teaching and learning as rocks are easy to make use of due to their availability outside the classroom in schools.

More so, teachers' and school administrators showed that teachers do not have adequate resources to make use of when teaching. This cause teachers to use traditional teaching methods like 'chalk and talk'. Somekh and Davies (1997) argues that the analogy with physical tools are very productive. Thus, tools empower the tool user. For effective teaching and learning to be an outcome in schools, different types of models should be made available. This also means that lack and shortage of adequate teaching resources in schools tends to demotivate teachers to shift to the 21<sup>st</sup> century teaching methods. According to Zvobgo (1986), insist that, material resources are hard to come by and are a constraint in the achievement of many planned activities. This implies that lack of adequate resources is a challenge which cause teachers to face difficulties in implementing models as instructional media in the teaching and learning process.

The findings from Geography students showed that some teachers are not making use of models in the teaching and learning process of Geography at Advanced Level. This is supported by Fisher and Binns (2000) and Osananya (2002) who points out that there is a tendency by teachers to rely more on the use of "teacher chalk and talk". This suggests that the exclusion of models as instructional media by teachers in the teaching and learning of Geography is depriving students of valuable learning experiences.

#### **4.12.2 Research question b) what do teachers think about the use of models as instructional media in schools?**

Findings from the study revealed that Advanced Level Geography teachers in Gweru urban high schools have mixed perceptions on the use of models as instructional media in the

discipline. Although all the participants were in support of models use as effective instructional media to enhance learning in schools to be an outcome. The majority of the participants indicated that the use of mathematical models was impossible. This is supported by Sayer, (1984: 179) as cited in Castlea, et.al. (eds) (2005) who allude to the fact that the use of mathematical models as an aid to causal explanation is inevitably problematic because, as a language, mathematics is acausal and astructural. It lacks the categories of producing, 'generating' or 'forcing' which we take to indicate causality. However, there were participants who indicated from questionnaires, interviews and observation done by the researcher indicates that there are a number of challenges that range from unavailability of resources to make use of, shortage of base rooms as well as too large classes. All these need to be addressed first for models to be implemented to the full at "A" level teaching.

Responses from Geography teachers' showed that teachers have large classes. Munowenyu (2000) asserts that the education policy states that at Advanced Level, teacher-pupil ratio should be 1 teacher as to 20. This entails that large classes were not easy to manage when making use of models in the teaching. Teachers had a burden as schools had shortage of resources to cater for the large numbers.

There is a positive correlation between models use in Geography and student attitudes towards the discipline. In other words, the use of models in Geography provided more positive attitude hence higher critical thinking were an outcome towards the discipline. As supported by Chitanana(2012), suggest that three days after an event, people retain 10% of what they heard from an oral presentation, 35% from a visual presentation and 65% from a visual and oral lesson presentation. This was seen from the responses that students said that their performance improved when models were used as instructional media.

Findings from the study revealed that Advanced Level Geography students in Gweru urban high schools like to be taught using models. Hacking (1983, p217) writes, “Models tend to be robust under theory change, that is you keep the model and dump the theory. There is more local truth in the inconsistent models than in the most high-brow theories.” This implies that models work hand in hand with theory, and may survive well even when associated theory is removed. The use of models as instructional media fosters learning to be an outcome hence teachers should adopt its use a constructivism learning method that is student centred.

#### **4.12.3 Research question c) What problems are faced by teachers when trying to use models in the teaching of Geography?**

Findings from the study revealed that School administrators and Geography H.ODs were not organising seminars to staff development their teachers to ensure that model use was implemented to the full in the teaching and learning process. Teachers showed that they were not able to make use of some of the models in the teaching and learning process and H.O.Ds were not doing anything to initiate effective solutions like staff development sessions/programs. This also shows lack of commitment on the part of H.O.Ds and school administrators to improve performance and pass rate of Geography in Gweru urban high schools. Pettes (1997) suggest that there is need for commitment by administrators in order for teachers to successfully utilise instructional media. This supports the fact that supervisors are important in the teaching and learning process as they stimulate, provide a conducive supervisory environment and an improvement to their teachers only to mention a few.

Findings form the study revealed that “A” Level Geography teachers in Gweru urban high schools have difficulties in using models as instructional media. Models in Geography have problems as models used in schools were designed for geographical locations that are different from ours. This is supported by Brunet (2001) who postulates that, “models used in

Geography come from elsewhere. Others may have worked better and earlier than we have.” This therefore implies that reviewing and localization of the curriculum must be carried out in Geography for effective use and implementation of models as instructional media in schools.

The inadequate supervision of Geography teachers in schools by Geography HOD’s and school administrators was reviewed from the information collected from the Geography Inspector of the Province (Midlands) and from school administrators’ responses. In addition, information collected from teachers and students highlights that there is low level of commitment by supervisors towards the use of models as instructional media at Advanced Level in schools. Pettes, (1997) and UNESCO (2009) also insists that there is need for commitment by administrators in order for teachers to successfully utilise instructional media. This means that the exclusion of models as instructional media within the classroom by Geography teachers might be as a result of lack of supervision and negative attitude towards the use of models by school administrators and HOD’s.

In addition, research findings noted that staff development sessions enables the unskilled teachers to gain experience, knowledge as well as skills on effective ways to use models when teaching Geography at Advanced Level. Schell et.al (2013) alludes to the fact that, “...INSET should allow teachers to observe, practise, inquire about and benefit from the most effective use of models and examples of Geography instruction during their field placements, students, teaching and internship teaching experiences...” This shows that INSET when conducted and carried out in schools enables mentorship training and enhances experience in the use of models in the teaching and learning in schools.

Furthermore, the results of the Geography Inspector revealed that there is need for teachers, supervisors and school administrators to have more positive attitude towards the use of

models use as instructional media in order to overcome the challenges encountered. Some of the challenges encountered are that the C.D.U that used to provide some of these models for use in schools is no longer producing them. In addition, large classes in today's classes are rendering models use ineffective thus a shift to the use of projectors can be an outcome to cater for all students a result.

Research findings noted that though teachers', students, school administrators and the Geography Inspector are in support of model use as effective instructional media in Gweru urban high schools. There are a number of problems that they come across which discourages the use of models in their schools. The challenges encountered by boarding schools are the same to those faced by day schools. Geography lessons should be allocated more time to ensure effective use of models in the learning process. Arancenta (2001) asserts that time allocation to a subject must be sufficient enough to provide students with enjoyable activities and worthwhile learning. Time therefore is an important factor for achievement to be an outcome in learning in schools. This entails that Geography lessons should not be minimised its time if models use are to be facilitated and implemented in the teaching and learning process in schools.

Findings from school administrators, teachers and the Geography Inspector reviewed that time were the major constraint that teachers face that rendered models use ineffective. More so, multiplicity in definitions and models were challenges that teachers were facing which made it impossible to make use of models as instructional media. Rana (2013) has it that the concept of models have considerable difficulties in its methodology, thus a multiplicity in the types of models performs a multiplicity of functions as well as in its definitions when they are about to be used. This therefore means that once there is more than one model to explain a concept be it in textbooks or any source of information, problems would start to emanate within the study.

#### **4.13 Summary**

The main findings of the research were that teachers are encountering challenges in using models in the teaching of Geography in high schools. Shortage of resources, lack of Geographical software as well as inadequate time within the subject area hinders the use of models to the full. Some solutions pointed out by respondents include in-service training, workshops, allocation of more periods within the subject area, installation of appropriate geographical software and the revision of the Geography syllabus in order to suit the local situations be carried out as well as to make use of fieldwork in schools. The following chapter, Chapter Five discusses the summary, conclusions and recommendations of the research study.

## CHAPTER FIVE

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### 5.0 Introduction

This chapter focuses on the summary of the research on teachers' perceptions on the use of models in the teaching and learning of Advanced Level Geography, conclusions arrived at and recommendations made to different and various groups involved in the teaching and learning of Geography at Advanced Level.

#### 5.1 Summary

The research examined teachers' perceptions on the use of models in the teaching and learning of Geography at Advanced Level. The study was conducted in Gweru urban high schools only. The researcher used a cross-sectional descriptive survey design. The population comprised all the teachers in Gweru Urban District. The sample was selected using stratified random sampling and purposive sampling techniques. The sample comprised of thirteen "A" Level Geography teachers, six school administrators, forty-eight "A" Level Geography students and one Geography Inspector. A sub-set of fifty four respondents responded to questionnaires while a subset of thirteen responded to interviews and six focus groups answered interviews. Another sub set of six schools were observed from schemes of work and the Geography room to check on different types of models in schools. The research made use of questionnaires, interviews and observation to triangulate data collection. Interviews were administered after preliminary analysis of questionnaires. Through the purposive sampling technique that was used during the study, time was a hindering factor which limited cycles of data collection and analysis. The research findings were that teachers' perceptions on the use of models were negative. It was also discovered that educators lacked adequate



training pertaining the use of models in the teaching and learning process. Lack of adequate teaching and learning resources be it hardware or software models in the teaching of Advanced Level Geography was a problem. However, educators also had certain attitudes, views and beliefs that hindered implementation of models in the teaching and learning of “A” Level Geography in schools as they saw models as a waste of time to use within the teaching and learning of the subject.

## **5.2 Conclusions**

From the research findings, the researcher made the following conclusions:

- Most teachers rarely use models when teaching Advanced Level Geography mainly as a result of lack of adequate time and resources to use during the teaching and learning.
- More time should be given and allocated to the teaching and learning of Advanced Level Geography through allocating more double lessons per week.
- The researcher also concluded that there is need for schools to allocate funds for the procurement of reference materials and other resources needed during the teaching and learning process of Geography.
- Teachers, students, school administrators and the Geography Inspector perceive model use as vital instructional media that must be used regularly during the teaching and learning process of Geography at Advanced Level.

## **5.3 Recommendations**

In the light of the findings, the study recommends the following to the government, Ministry of Primary and Secondary Education, and educators.

## **Government**

- ✓ Formal and informal educators need to build partnership in order to conduct within the range of learning contexts and to share research findings among the community of Geography education researchers on the use of models.
- ✓ There is also need to develop and study exemplary programmes on the use of models, curricula, tasks measures and assessment to build upon the body of knowledge about effective Geography teaching and learning.
- ✓ There is need to carry out scientific research in education and collection of data from large samples of students in schools, other learning environments and laboratory settings.
- ✓ The Government of Zimbabwe (GoZ) should resuscitate the Curriculum Development Unit (CDU) so that they can prepare the Models for use at different learning stages in schools.
- ✓ Funding of the Ministry of Primary and Secondary education should be improved so that a greater analysis of test results can be an outcome as well as monitoring and supervision on different instructional media that are being used in schools across the country can be carried out.
- ✓ Localization of the curriculum should be promoted so that model implementation can be an outcome as resources can be locally available.
- ✓ Government schools should be electrified as well as connected to be internet with affordable charges.

## **Ministry of Primary and Secondary Education**

- ✓ All Geography educators should be given model training to ensure that they are being used to the full as a shift to constructivism teaching method.
- ✓ Close supervision must be made by Geography inspectors in schools a must and be done so that models can be used to foster learning to be an outcome
- ✓ Teacher in-service training should be promoted so that the full implementation of models can be an outcome in schools across the nation.
- ✓ It must be mandatory that each school must display the globe within the Geography room in the country.
- ✓ Schools with meagre budgets should be provided models like the Globe by the Ministry.
- ✓ Schools should build Geography rooms where models can be kept safely for reference by students.
- ✓ Research by the Ministry of Primary and Secondary education must be promoted for the full implementation of models to be an outcome within the sector.
- ✓ There is also need to set up provisions and improve the quality of resource methods in schools so that teachers can have somewhere to refer to regarding the use and application of models in the teaching and learning process.
- ✓ A publication and development of online tools and examples that suggests areas in need of additional research should be developed for the use of models in the teaching and learning of Geography.

## **Educators**

- ✓ The school head must ensure that the school has adequate resources to cater for individual differences as more schools nowadays have adopted inclusive education.
- ✓ Pupils should be exposed to the teaching and learning through the use of models and other instructional media that are pupil centered as this promotes the development of problem solving ability and understanding of geographical concepts and theories. This alone would instill interest and zeal in pupils.
- ✓ Workshops should be organized at zonal, circuit, district and national level to enlighten school administrators, teachers and students in the teaching and learning process in schools.
- ✓ Professional staff development should be promoted by teachers so that they can be able to cope up.

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## Appendix 1 Questionnaires for Teachers

### INTRODUCTION

I am a student at Midlands State University studying for a Bachelor of Education Honours Degree in Geography. I am carrying out a research on teachers perceptions on the use of models in the teaching and learning of Geography at “A” Level in Gweru Urban high schools. May you kindly assist by filling in the questionnaires by use of a tick and writing on the spaces provided? The information you provide will be tied confidentially.

### RESPONDENTS: GEOGRAPHY TEACHERS

1. What is your highest professional qualification?

Untrained  Grad CE  Certificate

Diploma  PGDE  Bachelor of Education

BSc Education  BSc Geography  Master's Degree

2. How long have you been teaching Geography?

0-5 years  6-10  11-15  16-20  Over 20

3. Have you ever made use of models during your teaching of Geography?

YES  NO

4. a) If yes how often?

Daily       Once a week  once a month  once a term

b. if no state reasons why you do not use them

.....  
.....  
.....  
.....

5. Which type of model do you make use of most?

Mathematical Models  Non- Mathematical Models

State reason for your choice

.....  
.....  
.....  
.....

6. Do you think that models are necessary in your teaching? Give reasons

.....  
.....  
.....

7. What are your views about models as instructional media in Geography?

.....

.....

.....

.....

8. What challenges do you encounter when using models in teaching Geography? Briefly explain

.....

.....

.....

9. What do you think should be done to overcome the problems you have stated above?

Briefly explain

.....

.....

.....

**Thank you for your co-operation!!!!**

## **Appendix 2 Interview schedule for Geography Teachers**

1. Are models an important instructional media in the subject area?
2. Have you ever made use of models in the teaching and learning of Advanced Level Geography?
3. In which topics have you made use of models?
4. What are the perceptions of the administration towards the use of models in the teaching and learning of Geography?
5. What challenges do you encounter when using models?
6. Do you carry workshops or seminars in your district or cluster to in-service teachers on how to use models as instructional media? Give your answer
7. What do you think are the solutions to the challenges of models use in Geography?

**Appendix 3 Questionnaires for Students**

INTRODUCTION

I am a student at Midlands State University studying for a Bachelor of Education Honours Degree in Geography. I am carrying out a research on teachers' perceptions on the use of models in the teaching and learning of Geography at "A" Level in Gweru Urban high schools. May you kindly assist by filling in the questionnaires by use of a tick and writing on the spaces provided? The information you provide will be tied confidentially.

1. Does your teacher integrate the core topics with the use of models in the teaching of Advanced Level Geography?

Yes  No

2. If so, how often

Daily  Once a week  once a month  once a term

Other specify.....

3. Does your performance improve after models have been used in the teaching and learning of Geography?

YES  NO

4. What problems do you encounter when models are used as instructional media? Explain your answer

.....  
.....

5. What do you think should be done to overcome the problems you have stated? Explain your answer

.....  
.....  
.....

6. Do you like to be taught using models?

Yes  No

Give reasons

.....  
.....  
.....  
.....

7. What are your views on the use of models as instructional media?

.....  
.....  
.....

**Thank you for your maximum co-operation!!!!**

**Appendix 4 Interview guide for students**

1. Does your teacher integrate the core topics with the use of models when teaching Advanced Level Geography?

2. Does your performance improve after models have been used in the teaching and learning process?

3. What problems do you face when taught using models?

4. What do you suggest should be done to overcome these problems?

5. Do you think models should be used when learning Geography at Advanced Level? Give reasons.

## **Appendix 5 Interview guide for school administrators**

1. How often do you assess your teachers?
2. What instructional media is used mostly by Geography Advanced Level teachers at your school?
3. What is the view of Geography teachers on the use of models as instructional media? What do you think influence their views?
4. Do you in-service your teachers on how to implement models in the teaching and learning process? Give reasons for your answer.
5. What problems are faced by teachers when teaching Advanced Level Geography using Models?
6. What are the solutions to the problems you suggested?
7. What are your views and comments on models as instructional media?



## **Appendix 6 Interview guide for the Geography Inspector**

1. How often do you assess your teachers?
2. What instructional media is most used by Geography teachers when teaching Advanced Level Geography?
3. Do you organise workshops, seminars at Provincial level to in-service Geography teachers on how to use models as instructional media? Give reasons.
4. What problems are faced by Geography teachers when teaching Advanced Level Geography using models?
5. What are the likely solutions to the problems you suggested?
6. What are your views and comments on models use as instructional media?

## **Appendix 7Observation checklist**

1. Geography Room available at schools
2. Schemes of work indicating Model use used as instructional media
3. The Globe being displayed within the Geography room
4. Different models within the Geography room
5. Availability of a Departmental policy that encourages the use of Models in the teaching of Geography
6. School syllabus available
7. The National syllabus

**Appendix 9 Clearance letter from the Provincial Education Director Midlands Province**

All communications should be addressed to "The Provincial Education Director"  
 Telephone: 054- 222460



Ministry of Primary and Secondary Education  
 P.O Box 737  
 GWERU

Fax: 054- 226482

Mr/Mrs/Miss: *Mangati Lazmos Tshandaru*  
*St Margarets Primary School*  
*P. Bag 2115*  
*wedra*

**Fletcher High School**  
 30 JAN 2015  
 Private Bag 9054  
 GWERU, ZIMBABWE

MIN. OF PRY. & SEC. EDUCATION  
 HUMAN RESOURCES (DISCIPLINE)  
 MIDLANDS  
 23 JAN 2015  
 P.O. BOX 737, GWERU  
 ZIMBABWE

DEPUTY HEAD  
 CHAPIAN HIGH SCHOOL  
 26 JAN 2015  
 P.O. BOX 140 GWERU  
 TEL: 054-222050 / 222053

Dear Sir/Madam

**APPLICATION FOR PERMISSION TO CARRY OUT AN EDUCATIONAL RESEARCH IN SELECTED SCHOOLS IN MIDLANDS PROVINCE**

Permission to carry out a Research on:-

*Teacher's perceptions on the use of models in the Teaching and Learning of Advanced Level Geography in Gweru Urban High School.*

29 JAN 2015  
 P. O. BOX MK 80  
 GWERU  
 TEL: 054 - 255191

**HEADMASTER  
 MAMBO SECONDARY SCHOOL**  
 26 JAN 2015  
 P.O. BOX 162, GWERU  
 TEL 23549

In the Midlands Province has been granted on these conditions.

1. That in carrying out this you do not disturb the learning and teaching programmes in schools.
2. That you avail the Ministry of Primary and Secondary Education with a copy of your research findings.
3. That this permission can be withdrawn at anytime by the Provincial Education Director or by any higher officer.

THE DEPUTY HEAD  
 CHAPIAN HIGH SCHOOL  
 22 JAN 2015  
 P.O. Box 556  
 GWERU, ZIMBABWE

The Education Director wishes you success in your research work and in your University College studies.

*[Signature]*  
**Education Officer (Professional Administration And Legal Services)**  
**FOR PROVINCIAL EDUCATION DIRECTOR: MIDLANDS**

**THE HEADMASTER  
 CHAPIAN HIGH SCHOOL**  
 22 JAN 2015  
 P.O. BOX 140 GWERU  
 TEL: 054-222050 / 222053  
 FAX: 054-224394

## Clearance letter from the Regional Office Ministry of Primary and Second Education

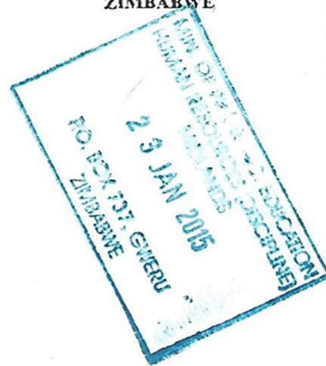
All communications should be addressed to  
"The Secretary for Primary and Secondary  
Education"  
Telephone: 734051/59 and 734071  
Telegraphic address : "EDUCATION"  
Fax: 734075



**Reference:** C/426/3 Midlands  
Ministry of Primary and  
Secondary Education  
P.O Box CY 121  
Causeway  
Harare

19 January 2015

Mr Takudzwa Lazmos Manyati  
St Margarets Primary School  
Private Bag 2115  
Wedza



**RE: PERMISSION TO CARRY OUT RESEARCH IN MIDLANDS PROVINCE:  
GWERU URBAN DISTRICT: FLETCHER; THORNHILL; CHAPLIN; MKOBA  
1; MKOBA 3 AND MAMBO HIGH SCHOOLS**

Reference is made to your application to carry out a research in the above mentioned schools in Midlands Province on the research title:

**"TEACHERS' PERCEPTIONS ON THE USE OF MODELS IN THE TEACHING AND  
LEARNING OF GEOGRAPHY AT ADVANCED LEVEL IN GWERU URBAN  
SCHOOLS"**

Permission is hereby granted. However, you are required to liaise with the Provincial Education Director Midlands, who is responsible for the schools which you want to involve in your research.

You are required to provide a copy of your final report to the Secretary for Primary and Secondary Education by May 2015.

A handwritten signature in black ink, appearing to read 'M. T. Madzinga'.

M. T Madzinga (Mrs)

**Acting Director:** Policy Planning, Research and Development

For: **SECRETARY FOR PRIMARY AND SECONDARY EDUCATION**

cc: PED – Midlands Province