

**INVESTIGATING OPPORTUNITIES TO LEARN IMPERFECT  
MARKET STRUCTURES IN A GRADE 12 CLASS**

**by**

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## **DECLARATION**

**Declaration: W.I Manzi (2017148541)**

**Handing in of M.Ed. (2 publishable articles)**

I, **Wellington Itai Manzi**, declare that the Master's Degree (publishable articles) that I herewith submit for the Master Degree qualification in Education at the University of the Free State is my independent work, and that I have not previously submitted it for a qualification at another institution of higher education.

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## **DEDICATION**

This work is dedicated to my lovely wife Alice and my two sons, Takunda and Takudzwa, for your patience, support, and understanding during my extended absence from home. I appreciate your words of encouragement and prayers every night. You always make me smile even in the worst moments of life.

I love you.

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## **LIST OF ACRONYMS**

CAPS: Curriculum and Assessment Policy Standards

DBE: Department of Basic Education

FIMS: First International Mathematics Survey

IEA: International Association for the Evaluation of Educational Achievement

OTL: Opportunities to Learn

## **LIST OF APPENDICES**

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## **ORIENTATION OF THE STUDY**

World over, there has been an increase in the relevance and importance of research into economics education over the past three decades (Lo, Sunny Wong, Mixon & Asarta, 2014: 120). In this era of globalisation and technological revolution, as argued by Battle and Lewis (2002), economics education is considered as the first step for every human activity – it plays a vital role in the development of human capital and is linked to individual well-being and opportunities to increase productivity and improve people's way of life. Battle and Lewis (2002) further postulate that, for the aims of economics to be realised, learners should possess an understanding of economics that goes beyond mere memorisation of concepts. It can reasonably be argued that the quality of teaching and learning become essential elements in the conceptual understanding and elimination of the abstractness of economic concepts.

Notwithstanding the above, the teaching and learning of economics has always been a complex and challenging endeavour in South Africa and elsewhere in the world. These challenges and complexities are posed by the nature of the subject. As Moosavian (2015: 2) would have us understand, economics is dominated by variables, diagrams, terminology, and models which are aimed at explaining relationships amongst variables. It is the submission of Gultepe (2016: 2) that, for learners to understand these relationships, there is a need for mathematical skills. It can therefore be reasonably inferred that learning economics is basically about the acquisition of conceptual and procedural skills and the relationships thereof. It is the view of this researcher that teaching economics is therefore about assisting learners to make significant connections between conceptual and procedural knowledge. This presents a double challenge – that of mastering concepts and procedures and that of identifying the relationship of the variables. It becomes prudent that economics teachers and researchers embark on a search for better techniques to simplify the abstractness of economics.

Corroborating with Moosavian (2015: 1), the researcher contends that the two essential elements in education are teaching and learning. If there is to be quality learning, then, the instructional strategies, resources, content exposure, and content emphasis implemented by the teacher must be second to none. In line with the above sentiments, this study sought to investigate what and how opportunities to learn imperfect market structures were created. In doing so, the study was divided into two articles. Article One focused on what opportunities to learn imperfect market structures teachers were creating and Article Two investigated the learners' experiences of opportunities to learn imperfect market structures.

## **PROBLEM STATEMENT**

The problem is that learners' academic performance in economics, and particularly in concepts that involve mathematical skills, has at best been mediocre. It is the contention of Lapp and Cyrus (2000: 504) that learners do not see the connection between economics and mathematics and therefore fail to apply their knowledge of mathematics and graphing skills they would have acquired in mathematics. Furthermore, Glazer (2011: 185) sights the inability to work with data, lack of interpretation, modelling, and conversion skills as stumbling blocks in the learning of mathematical and graphing skills. In addition, some scholars like Gultepe (2016: 3) reiterate that the other challenge which affects learners' graphical ability is failure to see the relationship between mathematical graphs and the data they represent. In fact, Zhang (2017: 75) views all of the above challenges as emanating from the lack of content knowledge, the lack of adequate resources, and inefficient use of available instructional resources. No South African study was conducted in teaching Economics at school level on FET learners applying their knowledge of mathematics and graphing skills to solve mathematical challenges in imperfect markets in Economics. Therefore, little research on this problem was done. The motivation for investigating the issue of "applying learners' knowledge of mathematics and graphing skills was prompted by the reason that there is a "knowledge gap" in the literature related to the problem, which necessitates this research through two articles.

## **AIM, RESEARCH QUESTIONS, AND OBJECTIVES**

The study aimed to investigate learning opportunities created by Economics teachers for grade 12 learners to learn imperfect market structures.

Based on the aim, the following questions were asked whilst simultaneously consulting the research objectives:

1. What opportunities to learn mathematical and graphing skills in imperfect market structures are created by economics teachers?
2. How are the opportunities to learn mathematical and graphing skills in imperfect market structures created by economics teachers?
3. What are the grade 12 learners' perceptions of opportunities to learn imperfect market structures created by economics teachers?

## RESEARCH OBJECTIVES

1. Identify what opportunities to learn imperfect market structures were created by economics teachers in a grade 12 class.
2. Establish how opportunities to learn imperfect market structures were created by economics teachers in a grade 12 class.
3. Establish the learners' perceptions of opportunities to learn imperfect market structures created by economics teachers in a grade 12 class.

## CONCEPTUAL FRAMEWORK

Opportunities to Learn (OTL) is the conceptual framework which couched this study. The researcher found OTL to be a relevant framework as it measures the conditions within a school or classroom that promote or hamper learning (Stols, 2013: 1). OTL has a number of variables which include content, resources, conditions of teaching and learning, and instructional strategies (Banicky, 2000; Stols, 2013). All these variables have a bearing on how learners comprehend imperfect market structures. The researcher, through OTL, sought to improve the academic achievement of grade 12 learners' performance in micro-economics. According to Chabongora and Jita (2013: 176), instructional dimension of OTL interrogates whether learners have been exposed to the appropriate instructional and teaching approaches and experiences that enable them to attain the desired educational outcomes.

OTL as a framework makes us aware that learners' achievement is related to opportunities to learn, especially opportunities created by the teacher. The importance of instructional strategies is asserted by König (2016) who argues that research on teacher knowledge has increased over the past decades as a result of the realisation of the importance of instructional strategies in the teaching and learning process. The framework makes it possible for the researcher to add knowledge from their experience as a practitioner. This suits the study as the researcher wishes to contribute to the body of knowledge on how opportunities to learn can be created in the teaching and learning of imperfect market structures in a grade 12 class. The researcher's effort is supported by Imenda(2014:5) who postulates that, in a conceptual framework, one can add one's own variables that may be relevant and then proceed to explore or test the relationship between the variables.

In trying to understand what transpires in imperfect market structure classrooms, the study employed the OTL model to identify four broad categories of OTL: content exposure, content emphasis, instructional strategies, and instructional resources as indicators of the quality of teaching and learning of imperfect market structures. The study sought to investigate

opportunities to learn imperfect market structures and the relationship amongst the variables. As such, this framework gave the researcher the tool to do so.

## **RESEARCH DESIGN AND RESEARCH METHODOLOGY**

Babbie and Mouton (2001: 55) defines research design as a “plan or blueprint on how one intends to conduct research”. Leedy and Ormrod (2005: 12) further refine this definition by stating that this blueprint to a certain extent prescribes the tools which the researcher employs in collecting data. The researcher conceptualises research design as the procedures used to collect, analyse, and interpret data in order to answer research questions. This study followed a mixed method approach. In Creswell’s (2003: 20) view, a mixed approach involves the “gathering of both numeric information (e.g. on instruments), as well as text information (e.g. on interviews), so that the final database represents both quantitative and qualitative information”.

Antwi and Hamza (2015: 220) posit that qualitative research is used when little is known about a topic or phenomenon and when one wants to discover or learn more about it. The latter further echoes that this approach is commonly used to understand people’s experiences and to express their perspectives. The researcher saw this approach more appropriate as it allowed the researcher to get rich and “thick” information from the teachers about opportunities to learn imperfect market structures. A quantitative approach, as Antwi and Hamza (2015: 220) would have us understand, attempts to study the phenomena that are of interest to them “from a distance”. Equally, the study sought to ascertain learners’ perceptions of opportunities to learn imperfect market structures without bias or influencing them. It therefore meant that unbiased numerical data would provide an insight into these perceptions, hence the choice of a quantitative approach. The teachers and learners provided their viewpoints and data was analysed from the answers provided by the questionnaires, interviews, observations, and document analysis. The researcher used data merging to integrate different data obtained from the data gathering instruments which were used in the study.

Validity and reliability are important in trying to assess any research tool instrument if one is to carry out a worthy study. Mohajan (2017) is of the opinion that validity is concerned with what the instrument measures and how accurately it achieves that purpose. In pursuit of validity, the questionnaires which were given to the learners had questions which were simple and straight forward by using language that is not ambiguous. The instruments were peer reviewed by the study promoter who was familiar with research. (Campos et al.,2017). Concerning reliability, Chakrabarrty postulates that it is concerned with the measure of consistency, precision, repeatability and trustworthiness of research. To ensure this, To

ensure reliability of the instrument, the researcher made use of the test-re-test method and consistency of the instrument was measured through the Croanbach's alpha which yielded  $r=0.86$ . Triangulation allowed the researcher to measure and observe the teaching and learning of imperfect market structures using various methods of data gathering.

This study is presented in the form of two articles. The research design and methodology implemented was thought to suit the objectives of the articles. More so, these objectives should contribute to answering the primary research question.

### **ARTICLE 1 TOPIC: Investigating opportunities to learn mathematical and graphing skills in imperfect market structures**

The literature study undertaken in this article was aimed at interrogating the importance of economics as a subject, imperfect market structures as a concept, the teacher's role in the delivery of the curriculum as well as the variables of Opportunities to Learn.

In addition to a literature study, interviews, observations, and document analysis were conducted with three grade 12 economics teachers. Three schools in the Francis Baard District were selected based on a similar socio-economic background of the learners. The intention was to investigate the nature of opportunities to learn the teachers presented to the grade 12 imperfect market structure class. The opportunities were evaluated against what literature says on the four broad categories of OTL, namely content exposure, content emphasis, instructional strategies, and instructional resources.

### **ARTICLE 2 TOPIC: Grade 12 learners' perceptions of opportunities to learn imperfect market structures**

The basis of Article Two emanates from Article One. Whilst the focus of Article One was on teachers' perspective of Opportunities to Learn imperfect market structures provided to the learners, Article Two provides the learners' perceptions on the Opportunities to Learn Imperfect market structures provided to them by their teachers. In pursuit of the aim of this article, data was generated by means of questionnaires completed by grade 12 economics learners. Homogeneity was established on a basis of schools that have almost similar numbers of learners and a similar socio-economic background from which learners came. The questionnaire was based on the four variables of OTL: content exposure, content coverage, instructional strategies, and instructional resources. The validity of the questionnaire was also tested and considered. Microsoft Excel spreadsheets were employed to rework data into presentable quantitative information and formulas were used to ensure accuracy of the data. The validity of the questionnaire was also tested and considered.

## VALUE OF RESEARCH

This study has the potential to make a contribution to the body of knowledge on economics. The study sought to help understand how imperfect market structures are taught. In so doing, it employed OTL as a framework to understand and explain how opportunities to learn are created in the learning of imperfect market structures.

## ETHICAL CONSIDERATIONS

The researcher obtained ethical clearance from the University of the Free State to conduct this research (UFS-HSD2018/0378). Permission was also granted by the Department of Education to conduct the study. Parental consent was sought as some participants were minors. Participants' confidentiality was always upheld throughout the research process and the participants were made aware that participation was voluntary and that they could withdraw from participating any time they deemed necessary (McMillan & Schumacher, 2010: 118).

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## ARTICLE 1

### **Investigating opportunities to learn mathematical and graphing skills in imperfect market structures**

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#### **Abstract**

The concept of imperfect market structures enables learners to develop mathematical and graphing skills needed to be critical thinkers and to be able to solve problems faced in their daily lives. It also provides opportunities for learners to acquire economic knowledge which enables them to make informed economic decisions on economic events and issues they will experience as they enter the world of business and work. In spite of the importance of imperfect market structures in cultivating these skills and knowledge, learner academic achievement in economics, particularly where mathematical and graphing skills are concerned, has been regrettably poor in most countries around the globe. Hence, this qualitative study investigated the opportunities to learn mathematical and graphical skills in imperfect market structures in three selected Grade 12 economics classes. The study intended to investigate what it is that teachers do in the name of teaching and learning of mathematical and graphing skills and the reasoning behind their actions. Opportunities to Learn (OTL) is the conceptual framework which was used to determine what teachers do in the classroom that enables learners to make meaning of imperfect market structures. Using the case study approach, the study was operationalised by three economics teachers in the Galashewe township. The researcher conducted interviews with each of the three teachers before they conducted their classes which the researcher observed. Thereafter, interviews were conducted again to reflect on what transpired during the lessons and document analysis was done to gain an insight into what kinds of activities learners were given in trying to create opportunities to learn mathematical and graphing skills in imperfect market structures.

Key words: imperfect market structures, economic events, academic achievement, opportunities to learn (OTL)

#### **1.1 Introduction and Background**

Given the increasing use of graphs and tables on television, the internet, newspapers, and other platforms, it has become necessary that learners are equipped with mathematical and

graphing skills that enable them to make sense of information conveyed on such platforms. One good example of an economics concept that creates an opportunity for learners to develop mathematical and graphing skills is imperfect market structures. Imperfect market structures are market structures where there is some degree of unfair competition. These markets include monopoly, monopolistic competition and oligopoly and each of them is distinguished according to its characteristics (Department of Basic Education, 2014:105). As learners try to understand how the participants in these market structures behave, Asaythamby and Julinamary (2014: 1) would have us understand that learners are engaged in the interpretation of numbers, graphs, tables, and equations as well as measuring the relationship between variables and expressing these variables as functions and curves for easy comprehension. In this process, as literature would suggest, learners find themselves being required to analyse information, apply their knowledge in different situations, communicate, solve problems, and make decisions using critical thinking skills (Asaythamby & Julinamary, 2014: 1; Hoag & Benedict, 2010: 2; Mearman, Berger & Guizer, 2016: 1; Stupple, *et al.*, 2017: 20).

The graphing and mathematical principles used in economics are borrowed from the discipline of mathematics. In fact, scholars such as Asaythamby and Julinamary (2014: 1) postulate that learners need a code breaker for them to be able to encode and decode graphs. This code breaker can be found in mathematical competence. Uttal, Scudder, and DeLoache (1997: 37) conjecture that mathematics provides learners with the skills to master symbols and the concepts they represent. This is the code breaker that is required for learners to be able to do calculations and draw graphs in economics. It should also be noted that graphs in economics are built on the mastery of mathematical concepts as postulated by Dawson (2014: 5) when he explicitly states the heavy reliance of economics on mathematics and statistics. It is reasonable to argue that, for learners to master graphs in economics, they should first master mathematical skills. Without mathematical competence, it becomes complex for learners to master economic graphs in imperfect market structures as they will be faced with two complex tasks: that of mathematics and linking mathematics to graphically model human behaviour on decisions they make. More so, interpretation of numbers, tables, and basic operations such as addition, subtraction, multiplication, and division owe their origins to mathematics. In economics, these concepts are used to calculate variables such as profits, losses, marginal costs, price, marginal revenue, and breakeven point, among others (Moosavian (2015: 2).

Based on the foregoing, it can be argued that mathematical and graphing skills are critical in the learning of economic concepts like imperfect market structures. Gultepe (2016: 2), for instance, notes that mathematical and graphing skills are important as they help learners to

see patterns and organise their learning. He further argues that graphs provide visualisation of concepts which makes it easy for learners to comprehend imperfect market structures. The interconnectedness of economics and mathematics is shown by a study by Khoo and Fitzgerald (2017: 2) on the relationship between mathematics and economics achievement. Their study found a positive correlation between performance in mathematics and economics classes as their findings suggested that learners with mathematical competence performed better in mastering economics concepts that involve mathematical skills and graphing elements than those who were not competent in mathematics.

It has furthermore been reiterated that learners of all ages face challenges in mathematical and graphing skills (Duijzer et al., 2019 :902). Literature shows a lack of basic mathematical operations, interpretation, modelling, conversion skills, an inability to work with data, and limited understanding of the usefulness of mathematical and graphing principles in economics as possible reasons (Gultepe, 2017: 3, Inan, Inan & Aydemir, 2014; Secken & Yoruk, 2012). In addition, Lapp and Cyrus (2000: 504) have stated that learners find it difficult to define variables and to connect graphs with variables. The above challenges means that learners will find the imperfect market structures abstract and difficult since the afore-mentioned skills are a requisite in the learning of imperfect markets.

It can be argued that developing mathematical and graphing skills is a complex activity and an ongoing process. The above challenges only focus on what learners cannot do. However, teaching and learning is a two-way process and, as such, teaching factors must also be considered. It is the position of Banicky (2000) that learners need to be given opportunities to learn if they are to succeed in their educational pursuits. Glazer (2011: 199) would also have us understand that “teachers’ expertise might be a barrier to the implementation of meaningful practice in graphing competence”. Chabongora and Jita (2013: 176) posit that opportunities to learn “are generated by how instruction is structured and delivered”.

Despite the increase in documented evidence of research on learners’ challenges of mathematics skills in economics, including the studies referred to above, little is known about the opportunities to learn created for learners to develop the requisite graphing and mathematical skills. Thus, an article of this nature may help to answer what and how opportunities to learn mathematical and graphing skills in imperfect market structures are created in a grade 12 economics class by answering the following questions:

1. What opportunities to learn mathematical and graphing skills in imperfect market structures are created by economics teachers?
2. How are the opportunities to learn mathematical and graphing skills in imperfect market structures created by economics teachers?

3. What are the challenges faced in creating opportunities to learn mathematical and graphing skills in imperfect market structures by teachers?

## **1.2 Literature Review and Conceptual Framework**

The review of literature in this section seeks to provide answers on what is already known about OTL in order to present a conceptual framework for examining the grade 12 economics learners' perceptions on opportunities to learn imperfect market structures.

This section focuses on the challenges which are faced by learners in trying to make sense of mathematical and graphing skills embedded in imperfect market structures.

### ***1.2.1 Inability to work with data, lack of interpretation, modelling, and conversion skills***

According to Glazer (2011), the inability to work with data and lack of interpretation, modelling, and conversion skills are stumbling blocks in the learning of mathematical and graphing skills. He argues that learners are unable to make inferences from given data. It is Glazer's (2011) contention that learners have difficulties in summarising, condensing, and displaying quantitative data. A study by Tairab and Khalaf Al-Naqbi (2004) revealed that learners in a 10<sup>th</sup> grade class had difficulties understanding the relationship of dependent and independent variables represented by the y- and x axis. This further posits that learners cannot give meaning, make sense, and come to conclusions on the numbers and tables they are given. A possible reason is that learners do not think and reflect about the data for them to be able to give meaning and see relationships. It can be implied that learners cannot find trends in the data provided and therefore cannot critique data and use it to support their claims or arguments. It can reasonably be argued that this could be the possible reason why learners are not able to observe trends in marginal costs, marginal revenue, and average revenue of a monopoly, oligopoly, and monopolistic competitor in the short and long run. This inability to work with data could explain why learners fail to distinguish between the differences of the average revenue of a monopoly and that of a monopolistic competitor.

Given the above challenge, literature suggests that learners are also bound to manifest deficiencies in interpretation, modelling, and conversion skills (Inan, Inan & Aydemir, 2014; Secken & Yoruk, 2012). As Gultepe (2016: 2) puts it, interpretation refers to the ability to express a graph in words, modelling is the ability to express an observed state through graphs, and conversion as being concerned with drawing a different graph to show the same state given in a graph. The above notion is supported by Corbett & Koedinger (2001) who state that learners fail to interpret graphs to mathematical statements (decoding) and

interpret mathematical statements to graphs (encoding). It is reasonable to argue that, if learners cannot make meaning of the data they are given, they will find it difficult to model the given data into graphs. Learners will not be able to express what they don't understand into another form. In fact, Berg and Smith (1994: 549) are of the contention that learners do not have mental tools to engage in a high construction and interpretation of graphs. These scholars argue that learners are not only unable to orally express what they see on a graph but also cannot convert words or numbers into graphs. This poses a difficulty in comprehending the concepts of monopoly, oligopoly, or monopolistic competition as learners are not be able to read and display visual data and explain whether the business is making a profit or not and the reasons behind the changes in behaviour as could be shown graphically or otherwise.

Roth (2004: 1) argues that the ability to be able to graphically model a concept relies heavily on how learners understand the concept as well as the mathematical transformations used to produce the graphs from raw data. The message is that if learners do not understand the operations of imperfect market structures, they will not be able to read the data given in the form of tables and numbers. Resultantly, these learners will find it difficult to produce graphs to represent what they cannot visualise. It can be argued that it is therefore important for learners to verbally master the operations of monopolies, oligopolies, and monopolistic competition for them to be able to relate the numbers and tables to the operations of these markets so that they can then convert these numbers into graphs, portraying their visual understanding of the phenomenon. Through his seven years of teaching imperfect market structures, the researcher has identified that learners struggle to distinguish graphs in this section. This difficulty, based on Roth's (2004: 3) argument, can be attributed to the fact that learners do not understand the basic operations of these market structures.

### ***1.2.2 Problems defining variables and connecting graphs with variables***

As is the contention of some scholars, another challenge which affects learners' graphical ability is that learners often struggle to see the relationship between mathematical graphs and the data they represent (Gultepe, 2016; Glazer, 2011; Lapp & Cyrus, 2000; Roth & Temple, 2014; Tairab & Khalaf Al-Naqbi, 2004). These scholars would have us understand that there is a misconception whereby learners view graphs as pictures and not as a relationship between variables. Learners fail to see the connection of variables on the graph and instead view the graph in totality. The approach of visualising a graph as a total picture makes graphs abstract and difficult to follow for the learners. It is reasonable to assume that this could be a reason why learners struggle in interpreting monopoly, oligopoly, and monopolistic competition graphs. This challenge carries over into other areas of study such

as imperfect market structures which require an understanding of the correlation between information and representation. Instead of looking at the variables such as marginal cost, average revenue, demand curve, average cost, marginal revenue, and quantity, Glazer (2011: 185) states that learners view these graphs as representing literal pictures of situations rather than quantitative information.

It is the contention of Angra and Gardner (2017: 2) that before learners can engage in the drawing of a graph, they must understand the data and decide how they want to transform it. This calls for the ability to define the variables and to be able to see how these variables are related. Once the above have been achieved, Angra and Gardner (2017: 2) posit that “a graph is constructed with appropriate elements of graph mechanics for clear communication (e.g. descriptive title, variable on axes, scales appropriate for data, key, etc.) and data are plotted. To be able to do this, there is a need for a great deal of mathematical skills as all the mentioned elements require mathematical competence. Scholars like Dawson (2014: 5) claim that economics relies heavily on mathematics and statistics because for learners to be able to communicate numerical data in visual format in imperfect market structures, there is a need for competence in mathematics.

### ***1.2.3 Limited understanding of the usefulness of mathematical principles in economics***

It is the contention of Lapp and Cyrus (2000: 504) that learners do not see the connection between economics and mathematics and therefore fail to apply the knowledge of mathematics and graphing skills they would have acquired in mathematics when dealing with economics. Learners fail to realise that mathematical concepts enable them to describe concepts in terms of equations, for instance. These mathematical concepts make it possible to predict the behaviour of economic actors in imperfect market structures as conditions change. It is the contention of Angra and Gardner (2017: 1) that mathematical principles and graphs make it easy to summarise large sets of data, however, learners view these as stumbling blocks in their learning of economic concepts. This then poses a huge challenge as the economics curriculum requires that emphasis is put on quantitative reasoning and the creation and interpretation of graphical representations.

Angra and Gardner (2017) posit that mathematics engages learners in data analysis and graphing. However, it can be argued that learners fail to transfer these skills to the study of imperfect market structures which requires the application of the same. It is reasonable to argue that, given the global trend of low learner competency in mathematics, learners will perform similar in imperfect market structures given their mathematical backlogs. According to Angra and Gardner (2017: 3), when it comes to mathematics learners are required to

“thoughtfully analyse a graph based on the type of data it is representing and its variables”. These same skills are required in understanding the operations of imperfect market structures but as the above scholars argue, learners fail because of their lack of knowledge on how to apply these mathematical skills. It can be assumed that learners view graphs as a complicated visual representation and not as a tool that can aid their understanding of how markets operate.

The above discussion only tells us what challenges learners are facing. However, little is known about what teachers are doing in order to make it easy for learners to comprehend mathematical and graphing skills. It is also unclear how learners are being taught the mathematical and graphing skills in their teaching of imperfect market structures. For this reason, the researcher settled for OTL as the conceptual framework couching this study because it gave the researcher the lens to investigate all that teachers are doing to promote or hamper the teaching and learning of mathematical and graphing skills in imperfect market structures.

The concept of OTL was initially introduced to ensure the validity and comparability of cross-national comparison in the First International Mathematics Survey (FIMS) in the early 1960s (McDonnell, 1995; Gau, 1997; Boscardin, *et al.*, 2005; Scherff & Piazza, 2005). It was used in studies of mathematics achievement conducted by the International Association for the Evaluation of Educational Achievement (IEA). OTL measured whether or not students had the opportunity to study the particular topic or learn how to solve a particular type of problem presented in the test (Husen, 1967). It is the contention of McDonnell (1995) that ideas and concepts like OTL can greatly contribute to defining policy problems and in framing solutions.

There are varying definitions of OTL given by different scholars, depending on the context of the study. However, most scholars view OTL as information about resources, school conditions, curriculum, and instruction to which students have access to (Banicky, 2000; Scheereens, 2016; Stols, 2013; Valverde, 2014). Stols (2013) goes further to argue that OTL measures the conditions within the school or classroom that promote or hamper learning.

From the above definitions, it can be argued that the main thrust behind OTL is that learning outcomes may be explained by the curriculum content, instructional strategies, and instructional resources. Thus, this paper will use these three constructs to investigate the opportunities learners have to learn mathematical and graphing skills in imperfect market structures.

### **1.2.4 Quality of instructional delivery**

Walkowiak, Pinter, and Berry (2017: 8) view quality of instructional delivery to include the teacher's pedagogical strategies and understanding of the subject matter in order to meet the learners' needs. Unfortunately, a study of 46 teachers in a high school conducted by Sirotic and Zazkis (2006) on mathematical understanding of numbers revealed that most teachers had misconceptions and consequently had challenges in applying numerical knowledge for solving mathematical problems that required more complex operations. This would imply that the teacher would find it difficult to explain mathematical and graphing skills to the learners which may result in learners being denied the opportunity to learn these mathematical and graphing skills. Suleman (2013:325) has argued that that effective and fruitful learning in economics is dependent upon the quality of teaching which demands academically competent individuals who know the content and how to deliver it. In Nilson's (2010: 29) view, these effective teachers can assign creative, inventive, and challenging tasks and give learners the opportunities to read, write, talk, see, draw, think, act, and feel material in the learning process. According to Handayani (2017: 192), for learners to be able to acquire mathematical and graphing skills, there is need for communicative interaction between learners and teachers. This can only be facilitated by effective teachers.

### **1.2.5 Instructional resources**

Gilles and Quijada (2008: 11) conceptualise instructional resources to incorporate a broad category of education-related resources such as textbooks, instructional guides, workbooks, practise exercises, activities, and tests. Although Chabongora and Jita (2013: 174) concur with the above conceptualisation, they go further to include professional development and attitudes as part of instructional resources. From the foregoing, the researcher finds it reasonable to conceptualise instructional resources as both human and physical aspects which affect teaching and learning. Snyder and Snyder (2008: 90) argue that a lack of training and limited resources conspire to negate learning environments that promote critical thinking and provide learners with the opportunity to internalise graphical and mathematical skills in imperfect market structures. Handayani (2017: 192) contends that, for the economics learning process to be done properly, teachers must be innovative. These learning resources should be adequately used as they affect the effectiveness of a teacher's lesson (Reche, *et al.*, 2012: 129). It should be noted that a well-planned and imaginative use of visual aids in the teaching of imperfect market structures should do much to prevent apathy, supplement the inadequacy of books, and arouse learners' interest by giving them something practical that help them to see and do, and at the same time be able to think

rationally and develop the requisite skills of problem solving and critical thinking as envisaged in the economics curriculum.

### **1.2.6 Curriculum content coverage**

Curriculum content refers to the extent to which learners have been exposed to specific subjects or topics that are essential to attaining particular standards and /or that are directly assessed (Chabongora & Jita, 2013: 174). This variable seeks to identify whether the learners were exposed to the content, whether the content was covered adequately, and whether important concepts in the curriculum were emphasised. This can be related to Scheerens' (2016: 15) view of OTL which he regards as matching taught content with tested content. Scheerens argues that it is unfair for learners to be held responsible for meeting high academic standards unless they have been assured the opportunities to learn. Desimore, Smith, and Phillips (2013) confirm the importance of time on task as their research findings suggested that there is a correlation between academic achievement and the time taken in covering the content. Thus, curriculum coverage is of interest to the researcher as it will provide valuable data in terms of OTL when it comes to mathematical and graphical skills in imperfect market structures.

### **1.3 Research Methodology**

The study made use of a case study design which is a qualitative research approach. Qualitative data collection techniques were employed to gather "rich description and / or meaning of lived experience" (Stanley & Nayar, 2015: 11). This suited this study as the researcher sought to investigate how opportunities to learn mathematical and graphing skills in imperfect market structures are created. The choice of a qualitative approach was based on the premise that the approach acknowledges that people give meaning to phenomena and that there are multiple realities of the phenomena which differ across space and time. Research participants were interviewed and observed in their natural settings, namely the schools and classrooms (Ivankova, Creswell & Plano Clark, 2011). The semi structured interviews allowed the researcher to have follow up questions to get clarity as the interviews progressed..

The use of different sources ensured that the issue was not explored using one lens but rather a variety of lenses. This allowed for multiple facets of the phenomenon to be revealed and understood (Baxter & Jack, 2008). A case study is "an empirical inquiry that: investigates a contemporary phenomenon in depth and within its real-life" (Yin, 2009: 18). The case study approach was adopted because it allowed the researcher to "systematically

inquire into an event or set of related events which aims to describe and explain the phenomenon of interest”, viz. opportunities to learn mathematical and graphing skills in imperfect market structures Nieuwenhuis (2011b:75). To understand what really transpires in the imperfect market classrooms, the researcher used semi structured interviews and teacher observation to understand the multiple facets of opportunities to learn mathematical and graphical skills in imperfect market structures.

#### **1.4 Description of Participants and Reasons for Their Inclusion**

The researcher made use of three teachers who are teaching grade 10-12 from two neighbouring suburban secondary schools in the Francis Baard district in the Northern Cape province of South Africa to investigate what opportunities to learn mathematical and graphing skills in imperfect market structures exist. Maxwell (2005) describes sampling as the decisions about where to conduct the study and who will participate. The researcher purposefully selected these two schools because of their proximity to the researcher and they have been deemed to be underperforming schools for the past three years yet two of the teachers teaching in both these schools are experienced teachers. A school is deemed by the Department of Basic Education to be underperforming in a subject if the pass rate is below 50%. The reason for the selection of the three teachers was that these teachers have varying number of years of experience. The selection of teachers with varying levels of experience would minimise questions to do with experience as a factor affecting the teaching of mathematical and graphing skills in imperfect market structures. Of the three teachers selected, one has 24 years of experience, the other has 18 years of experience, and the third teacher is a novice teacher. These two schools are not only located in the same township of Galeshewe but also enrol learners from diverse family backgrounds and levels of income.

#### **1.5 Data Generation**

The sources of data for this study were interviews, document analysis, and classroom observations. Before the participants were interviewed and observed in their schools, their informed consent was sought. One of the merits of one-on-one interviews is that they provide face to face interaction between the researcher and the respondent in order to promote access to their life experiences in their natural setting (Cohen, *et al.*, 2011; Flick, 2006). The researcher conducted interviews with each one of the three economics teachers before and after they presented their lessons. The purpose of the pre-interviews was to gain

a better sense on how the three teachers understand and interpret mathematical and graphing skills in imperfect market structures and the post-interviews which were held right after the observations were meant to allow teachers the opportunity to elaborate on their actions and thoughts during the lesson delivery. An observation protocol was used to guide the observations. During these observations, the researcher was able to hear, see, and experience real opportunities in learning mathematical and graphical skills in imperfect market structures which were presented to the learners Nieuwenhuis (2011b:75). As a guide to the observation, the researcher was interested to establish the extent to which the teacher exposed learners to calculations and graphs (curriculum content coverage), how the calculations and graphs were taught (quality of instruction) and the nature of instructional resources used learner in creating opportunities to learn imperfect market structures. The researcher kept a record of what was observed in the classrooms on the three variables on OTL. (Cohen, *et al.*, 2011). During the post-interviews questions were asked that emerged during the observations as well as pre-determined questions about the participants' experiences in teaching imperfect market structures.

## **1.6 Data Analysis**

Data for this article was analysed qualitatively through the use of the inductive method. This method, according to Cohen, *et al.* (2011), allows for the data collected to be categorised into themes, patterns, or categories and then interpreted. The data generated from interviews were audio recorded and themes were formed from the three sources of information according to the differences and similarities of the data obtained. Further data analysis was done so that data which related to the research questions, theoretical framework, and literature review could be identified. Confidentiality was assured at every stage of the data collection process and participants were informed that they were at liberty to withdraw any time they so wished.

## **1.7 Ethical Consideration**

The researcher obtained ethical clearance from the University of the Free State (UFS-HSD2018/0378) to conduct this research. Permission was sought from the participants and parental consent was obtained for those participants who were under the age of 18. Participants' confidentiality was always upheld throughout the research process and the participants were made aware that they could withdraw from participating any time they deemed necessary. *Note: In line with ethical requirements, the names of the teachers and schools were changed for anonymity*

## 1.8 Findings

The study sought to answer two questions on “What” and “How” opportunities to learn mathematical and graphing skills in imperfect market structures are created by economics teachers in a grade 12 class. The findings emanating from the data analysis suggest that economics teachers are not creating enough opportunities to learn mathematical and graphing skills in imperfect market structures. The data are presented in the following section under three basic constructs of OTL: curriculum content, instructional strategies, and instructional resources.

### 1.8.1 Curriculum content

In imperfect market structures, the relationship between variables, data analysis, modelling and interpretation of graphs, and calculation of profits and costs must be given priority if learners are to acquire the relevant knowledge and skills (Gultepe, 2016: 2). It was therefore necessary for the researcher to investigate how teachers create the opportunities for learners to learn mathematical and graphing skills in imperfect market structures.

It was interesting to see how different teachers had an almost similar approach in the teaching of mathematical and graphing skills. When asked in the pre-interview what depth and emphasis is placed on the teaching and learning of the actual calculations of costs and revenues, most teachers admitted that they do not give much attention to this aspect. This was evident from the responses from Mr T.T. who had this to say:

*Mmm not much depth, you know, the curriculum is packed and there is a lot of work to cover...*

Ms V.V. seemed to support the sentiments echoed by Mr T.T. that there is a lot of work to cover although she also goes further and confesses that her other reason for not spending much time on calculations and graph construction was premised on her not being confident in mathematical and graphing skills. She confessed experiencing difficulties with this concept from her days in high school, college, as well as in her teaching career. This is what she had to say about time spent on calculations and graphing skills:

*You see these calculations are not easy even for me. This section of the curriculum has been a challenge for me since my high school days and even at college. I just don't like calculations and graphs. Besides, there is a lot of work to be covered that I cannot spend time on things that are difficult for me and worse for the learners.*

On the question of what depth the relationship between variables in table forms such as costs, profits, and revenues were taught to learners, Mr T.T. had this to say:

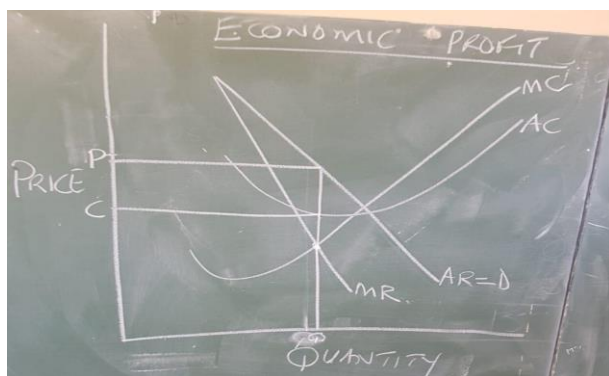
*Ok like I said earlier, there is no time to focus on a lot of things. And these learners should do extra. They should not just wait for teachers to do everything for them.*

It is clear from his responses that calculations are given less attention. The same sentiments were echoed by Ms V.V. who had this to say about the time spent and the depth of the teaching and learning of the actual of calculations of different costs and revenues:

*I must quickly rush through the calculations because the grade 12 year is very short – just six months of contact time – and there is a lot of work to be done. One must make sure they cover the work otherwise you will be in trouble with the departmental officials who come to monitor if we have taught everything in the syllabus.*

True to their pre-interview assertions, the researcher, through lesson observation, found that little time or no emphasis was given to the explanation of the relationship between variables in table forms such as costs, profits, and revenues. In Mr T.T.'s lesson, the teacher never went through the different variables such as marginal costs, marginal revenue, average costs, and the trends of those costs and revenues. The teacher just went straight on to draw the graph of a monopoly. The other observation was that there were no numbers used to help learners to interpret the concept and see the relationship between variables. This is evident from the graph below which was drawn in class:

**FIGURE 1.1:** Monopoly graph drawn in class by Mr T.T.



The above graph was drawn without providing the background information of the price, the cost, the marginal cost, and the average costs. Simply drawing a graph without reference to price and various costs does not allow learners to see the relationship between variables but rather to see the graph as a complete picture. This picture becomes abstract to learners as it does not provide them with an opportunity to proceed step by step and, in the process, acquire mathematical skills as they calculate the costs and graphing skills as they graphically represent the price and costs.

In Ms V.V.'s lesson, although she wrote the different costs on the board, learners were not given an opportunity to interact with the costs and revenues so that they could see the relationships between and trends in these costs and revenues. In her lesson, costs and revenues were used but the learners were not first shown how to draw each curve separately in order for them to be able to see the behaviour and relationship between different costs and revenues.

It was not surprising, therefore, that the document analysis on the activities given to learners by the three teachers showed that there were no meaningful activities given to learners that dealt with dealing with tables, costs, and revenues. This probably explains why learners could not calculate the different costs and revenues as evidenced by their poor performance on the common task (project) set by the Northern Cape department of education (refer to figure 1.2). Most learners performed poorly because the task required learners to make calculations of marginal cost, marginal revenue, and average revenue which the learners were not exposed to in the classroom.

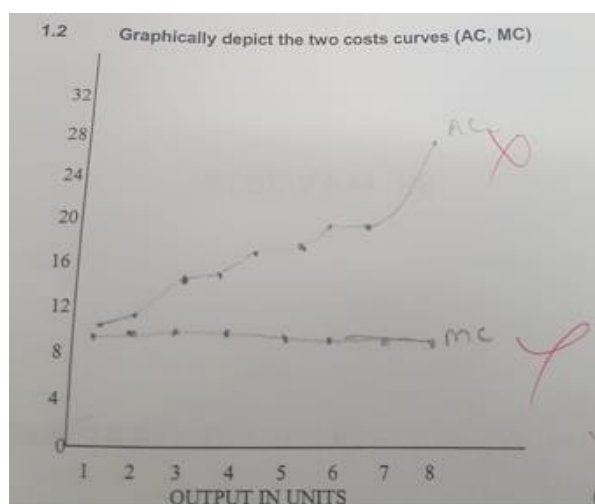
**FIGURE 1.2:** Learners' errors on calculating average and marginal cost

1.1 The following table indicate the relationship between the different cost items:

| Output | Fixed costs | Variable costs | Total costs | Increase in TC | Average costs               | Marginal costs              |
|--------|-------------|----------------|-------------|----------------|-----------------------------|-----------------------------|
| 1      | 10          | 40             | 50          | -              | -                           | -                           |
| 2      | 10          | 45             | 55          | 5              | (1) $\frac{55}{2} = 27,5$   | (5) $\frac{55}{2} = 27,5$   |
| 3      | 10          | 48,5           | 58,5        | 3,5            | (2) $\frac{58,5}{3} = 19,5$ | (6) $\frac{58,5}{3} = 19,5$ |
| 4      | 10          | 53             | 63          | 4,5            | (3) $\frac{63}{4} = 15,75$  | (7) $\frac{63}{4} = 15,75$  |
| 5      | 10          | 60             | 70          | 7              | (4) $\frac{70}{5} = 14$     | (8) $\frac{70}{5} = 14$     |
| 6      | 10          | 74             | 84          | 14             | 14                          | ?                           |
| 7      | 10          | 95             | 105         | 21             | ?                           | ?                           |
| 8      | 10          | 124            | 134         | 29             | ?                           | ?                           |

The project also required learners to draw marginal and average cost curves on a graph using the data which they had to calculate in figure 1.2. The document analysis showed that most learners could graphically depict the cost curves. The learners did not understand the behaviour of marginal cost as shown by figure 1.3 below.

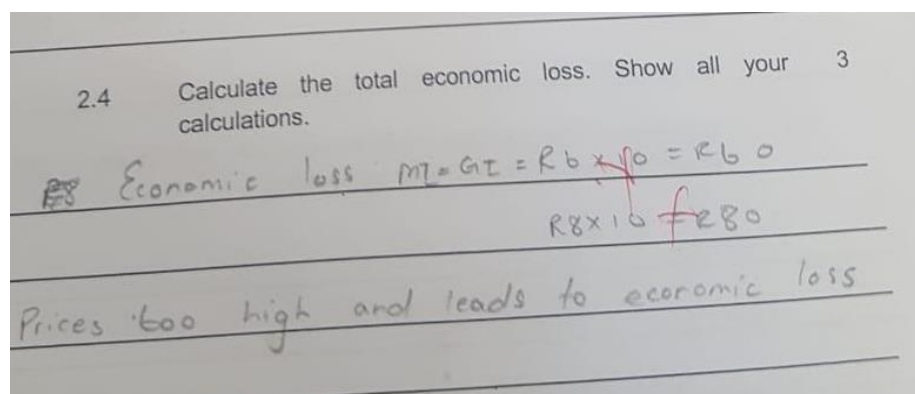
**FIGURE 1.3:** Learners' errors drawing cost curves



It is reasonable to attribute this challenge to their lack of understanding of the relationship between the costs and revenues. Morrison and MacDuffie (2009: 31) would have us understand that learners must be challenged with relevant tasks which include data analysis and interpretation if they are to be able to see these relationships. This was, however, not the case and learners were not given the opportunity to learn graphical and mathematical skills.

Document analysis also revealed that learners could not calculate profit or loss (see figure 1.4). The lack of meaningful class activities where learners practise these calculations could be a possible explanation. A review of literature reveals that learners can only be held accountable for their performance to the extent that they have been offered tools to master the content (MacDonnell, 1995). It can therefore be argued that the lack of opportunities to learn may be one of the contributors of poor performance by the learners.

**FIGURE 1.4:** Extract of learners' responses on calculation of loss



### **1.8.2 Quality of instruction**

Today, as Kriz, Eiselen, and Manahl (2016:16) would argue, the role of a teacher has been transformed from that of a transmitter of knowledge to that of a co-learner and a facilitator of learning. The researcher visited the identified schools to investigate whether teachers were creating these opportunities to learn mathematical and graphing skills in imperfect market structures through their instructional strategies. Sadly, the data gathered through interviews, observation, and document analysis seemed to prove otherwise. This was regardless of the fact that the researcher, through the interviews with teachers, had gathered that teachers seemed to have a general idea of the prescripts of the Curriculum and Assessment Policy Standards (CAPS) which dictates that learners be actively involved in the learning process. The quality of instruction seems to fall far below what is provided by literature as an enabler of meaningful learning. Such is the disjuncture between policy and practice that is often observed by researchers. The disjuncture between policy and the practice of teachers is evident from the interview conducted with Mr T.T. who had this to say on whether he varied his instructional strategies:

*I will draw the graphs on the board and then explain them.*

Upon further probing on whether he varied his teaching methods he had this to say”

*No, no – not with this group. They are noisy. I can't give them that chance to discuss in pairs or groups and you will see it's a big class of forty-two learners.*

The use of teacher-centred method (lecture) was also favoured by Mr G.K. For him, that was the most appropriate strategy to use in teaching calculations and graphs:

*The only way I can make these learners understand the calculations is when I explain it myself. If I leave them to figure out the calculations, we won't move yet there is limited time and a lot of work to be done.*

It becomes clear that the teachers do not vary their teaching strategies and learners are not given an active role in the learning process. This approach is in sharp contrast to the dictates of literature (Bonner, 2010: 187; Huali, 2011: 641; Van Wyk, 2011 125) which advocates for active learner involvement in the learning process. Interestingly and true to his assertions in the interview, Mr T.T. made sure that learners played a minimal role in the lesson

proceedings presumably for the fear of noise and disruptive behaviour that he had alluded to earlier in the interview. Similar trends were observed in Ms V.V.'s class where learners were not actively involved in the learning process. Graphs were drawn by the teacher and learners were asked to copy the graphs into their books quietly.

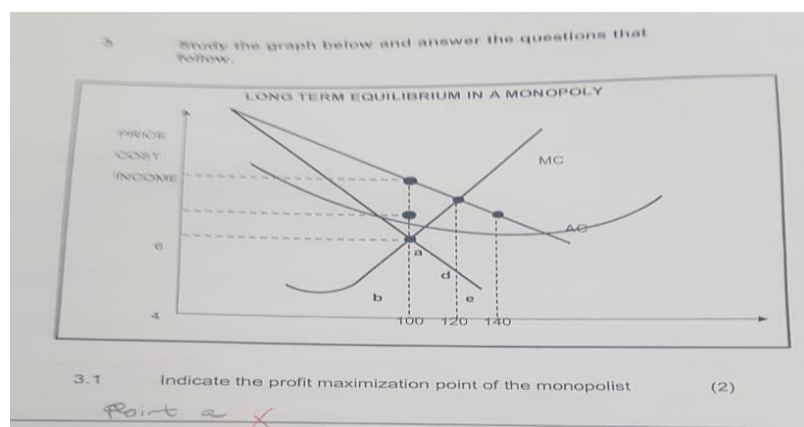
Similar trends were prevalent in Mr G.K.'s lessons where he drew the graph of an oligopoly without any explanations or exposure of marginal costs, marginal revenue, average revenue, and other related costs. The teacher then explained the graph to the learners. This approach to graphs is bemoaned by scholars such as Harsh and Schmitt-Harsh (2016: 2) who allege that this approach is one of the causes of poor mathematical and graphing skills as it results in learners failing to convey visual information and consequently see graphs as complicated visual representations. In his explanation of the complete graph, Mr G.K. would continuously ask learners "Do you understand?" to which some learners would shyly nod their heads, and some would just remain silent. These types of questions asked by Mr G.K. did not add any value, they did not probe learners to think critically and solve problems, nor did they promote deep learning. Interestingly, the document analysis of Ms V.V.'s learner portfolios revealed that the questions posed to learners as homework did not create opportunities for learners to acquire mathematical and graphing skills. Questions such as "How does a marginal curve look like?" have no value in assisting learners to acquire the requisite skills like critical thinking or problem solving. This is against new paradigm of learning which contends that learners acquire understanding when they take an active role and seek solutions to given problems on their own.

### **1.8.3 Instructional resources**

Nilson (2010: 30) view instructional resources as "enabling input" which makes discovered facts to be firmly etched into the memory of the learners. Data from this research, however, suggests that instructional resources were not being used adequately in trying to etch graphing and mathematical skills firmly into the learners' memories. From the interview with Mr T.T., it was apparent that the only resources which he was going to make use of were the chalkboard and past question papers which were used for learners to answer questions based on the monopoly graph. The use of past question papers which examined learners on all the aspects of graphing and mathematical skills at once is inappropriate as the final skills and knowledge are tested yet literature suggests that there should be a build-up of activities towards drawing and interpretation of the graphs (Angra and Gardner 2017: 2). Interestingly, a perusal of Ms V.V.'s teacher file showed a compilation of questions on imperfect market structures from past question papers from 2014-2017 which she termed "question bank". Learners had to do these activities, but sadly most of them seemed to perform badly. This

can be attributed to these learning resources not enabling learners to comprehend the requisite mathematical and graphing skills.

**FIGURE 1.5:** Part of the formal assessment on graphing skills given by Ms V.V.



A closer look at the graph also reveals that the points marked a, b, d, and e do not actually represent any meaningful points on the graph. The y axis values were also not properly positioned for learners to be able to calculate the profit or loss. It is therefore reasonable to argue that the activity did not create an opportunity for learners to learn the mathematical skills of calculating profit or loss.

## 1.9 Discussion

The main research question for this article was “what opportunities to learn mathematical and graphing skills in imperfect market structures are created by economics teachers?” Based on the analysis of learners’ responses, the researcher concludes that little opportunities to learn mathematical and graphing skills in imperfect market structures are being presented in an economics classroom. The work of Angra and Gardner (2017: 2) as earlier alluded to suggests that there should be a build-up of activities towards drawing and interpretation of the graphs. However, this was not the case from the data gathered. The study findings show that less emphasis is being placed on the calculations of different costs and revenues. This finding might be confirming what the teachers suggested when they were interviewed by the researcher that they were working under pressure and were in a hurry to complete the syllabus. There is also a possibility that maybe the lack of confidence in mathematics and graphing skills, as voiced by one of the teachers in the interviews conducted by the researcher could be the reason why the teachers rushed through the work and, in the process, they omitted fundamental aspects of mathematical and graphing skills.

From the data generated, it was also evident that teachers dominantly relied on the traditional lecture method which diminishes learners' interest in imperfect market structures. This conclusion was arrived at based on the responses by Mr GK and TT who admitted to their over-use of the lecture method. This is in direct contrast to what literature suggests in advocating for a collaborative, interactive learning environment as opposed to a passive learning environment (Chung-Kai Huang, *et.al.*, 2017: 11; Ruey, 2010: 706; Van Wyk, 2011 125). The quality of some of the activities given to the learners did not add value in terms of assisting learners to gain the requisite mathematical and graphing skills. This finding further supports the earlier assertions by scholars like Van Wyk (2011: 183) who posited that teachers do not present their subject in meaningful ways probably because they lack pedagogical content knowledge. The most used resource was the chalkboard and past question papers and these two resources alone cannot ignite learners' interest.

### **1.10 Conclusion and Recommendations**

The study shows that not enough opportunities to learn are being presented to the learners in an imperfect market structure class. This study was limited to three schools with almost similar socio-economic backgrounds. While results of this study may be extended to other teachers and learners in similar contexts, it is important to generalise with caution since it might not be a true representation of what is taking place in all economics classroom in the Northern Cape. The findings of this study suggest that economics teachers, who participated in this study, are not creating adequate opportunities to learn mathematical and graphing skills in imperfect market structures. This is based on the premise that mathematical and graphing skills were not emphasised in the cases studied. The quality of instructional strategies had limitations as the lecture method was dominant in both schools. It was also observed that teachers generally present learners with exercise that only require low cognitive demand, yet the concept requires learners to be critical thinkers and problem solvers.

This article recommends that departmental officials knowledgeable in Economics should regularly visit schools regularly to assist teachers on how and what to put more emphasis on in the teaching of imperfect market structures guided by OTL indicators. For instance, Subject Advisors who are well-trained could visit economics teachers and attend their classes, analyse samples of learners' work, and discuss with teachers how to increase learners' opportunities to learn. If teachers are provided with immediate feedback on their work, it may result in more inspiring imperfect market structures classes for all participants.

This calls for the development of valid and non-biased methods to quickly assess opportunities to learn during routine visits.

Furthermore, the article recommends a follow-up study with a larger sample from different schools with different socio-economic conditions to get a more representative picture of pedagogical strategies and knowledge for teaching mathematical and graphing skills in more diverse educational contexts.

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## ARTICLE 2

### **Grade 12 learners' perceptions of opportunities to learn imperfect market structures**

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#### **Abstract**

In many secondary school economics classrooms across the country, learners are passively engaged in imperfect market structures teaching and learning and academic performance can be described, at best, as mediocre. This study sought to investigate the grade 12 economics learners' perceptions of opportunities to learn imperfect market structures in selected schools in the Francis Baard District of Northern Cape. A quantitative research approach was employed where a questionnaire was administered to 253 grade 12 economics learners from three schools in Galeshewe. The questionnaire was based on four Opportunities to Learn (OTL) variables: content exposure, content emphasis, quality of instruction, and instructional resources. Overall, the findings of this paper showed that little or no opportunities to learn were being created for learners to master the concept imperfect market structures. This study is significant because it will make known to both the learners and teachers the factors influencing learners' learning outcomes related to imperfect market structures. Learners must also be encouraged to exhibit a commensurate and positive attitude towards the subject, while the economics teachers should put in the required effort to improve their learning outcomes in schools.

Key words: imperfect market structures, Opportunities to Learn (OTL), learning outcomes, academic achievement

#### **1.1 Introduction and Background**

Globally, there has been a growing realisation of the importance of education to actualise the growth and development objectives of countries (Moosavian, 2015: 2). It is increasingly becoming clear that education is one of the greatest investments a nation can make if it is to grow and develop its economy. The education system should present learners with opportunities to acquire knowledge and skills required in a global, knowledge-based economy. For the requisite knowledge and skills to be attained, the focus of the education system should not only be on "how much" content is taught, but also on "how well" the content is taught (Huber & Hutchings, 2005).

Economics is one of the subjects that can be used as a foundation to build towards achieving growth and development policies of countries. Morgan (2015: 21) notes that a successful economics education should produce citizens who are well informed, responsible, and critically aware of economic issues and are able to contribute more effectively to the deliberations regarding issues of social provisioning. Economics is unpacked by Arsaythamby and Julinamary (2014:240) as a subject that integrates theoretical skills, calculations, graphs, tables, and equations to answer economic questions. Imperfect market structures, as an economics concept, is one example of such curriculum content that exposes learners to the knowledge and skills postulated by scholars such as Arsaythamby and Julinamary (2014).

Imperfect market structures are market structures where there is some degree of unfair competition. These markets include monopoly, monopolistic competition and oligopoly and each of them is distinguished according to its characteristics (Department of Basic Education 2014:105) Imperfect market structures, as Hoag and Benedict (2010: 21) would suggest, presents learners with situations that are complex with no easy solutions and therefore stimulates learners' problem solving, critical thinking, and decision-making skills. In addition, the concept also requires that learners represent human behaviour graphically and make logical decisions which are based on calculations of costs, profits, loses, and the relationships thereof. It is the assertion of Arsaythamby and Julinamary (2014:324) that, for learners to be able to calculate the above variables, they need to develop the ability to remember concepts, manipulate numbers, and solve mental problems using the memory power of mathematics. Harsh and Schmitt-Harsh (2016: 49) go further and argue that proficiency in graphing is considered a central element of scientific literacy, given the importance of succinctly communicating complex information. In fact, Khoo and Fitzgerald (2017: 2) believe that economics consists mainly of mathematics, graphs, and working with formula. More so, prior research reveals a clear link between mathematics training and success in economics courses (Hoag & Benedict 2010: 37). It is therefore reasonable to argue that imperfect market structures require a great deal of mathematical and graphing skills.

Despite imperfect market structures being dominated by mathematical concepts, a study by Van Es and Conroy (2009) reveals that most learners across the world demonstrate limited ability in comprehending content which involves mathematical concepts. In trying to understand why most learners struggle with mathematical concepts, Khoo and Fitzgerald (2017: 2) posit that learners have a phobia for figures and therefore tend to generally struggle with mathematical and graphing skills embedded in imperfect market structures. In

fact, Gultepe (2016: 3) more specifically states that learners struggle in identifying relationships between variables, interpretation of graphs, converting tables into graphs, and identifying trends in the data given. Moosavian (2015: 2) summarises the problems when he argues that the variety and plurality of concepts, diagrams, and models in imperfect market structures present confusion to the learners. The above skills of interpretation, comparison, and decision making through graphical and mathematical skills demand learners to be critical thinkers. Regrettably, as scholars like Landsman and Gorski, (2007) and Rippen, *et al.* (2002) would suggest, learners are not taught to think as economists, let alone to learn independently, and they rarely pick up these complex skills on their own.

Whilst scholars argue and present evidence that learners seem to lack these critical skills developed in economics, the current paper argues that there is a gap in the literature which fails to account for learners' perceptions in the learning of these skills. The foregoing argument is foregrounded by scholars such as Cueto, *et al.* (2014: 3) who are of the opinion that it is relevant to get a deeper insight not only on the academic achievement outcomes of learners, but also the processes of learning that take place in the classrooms. These processes are summarised by Chabongora and Jita (2013: 176) when they echo that OTL are anchored on how "instruction is structured and delivered". In addition, scholars like Stols (2013: 5) reiterate that lack of opportunities to learn might be one of the contributors of poor academic achievement by learners. Thus, this paper seeks to investigate grade 12 learners' perceptions of opportunities to learn imperfect market structures by asking the following question: "What are the grade 12 learners' perceptions of opportunities to learn imperfect market structures?"

## **1.2 Literature Review and Conceptual Framework**

This review of literature sought to answer the question on what is currently known about the constructs of OTL and imperfect market structures. A study of literature (Chabongora & Jita; 2013: 174; Cueto, *et al.*, 2014: 3; Scheerens, 2016: 115) reveals that there is a positive relationship between opportunities to learn and the learners' academic performance. The concept OTL owes its origins to mathematics achievement research studies which were conducted by the International Association for the Evaluation of Educational Achievement (IEA). At the time, it was used to ensure comparability and validity of cross-national comparisons which were undertaken in the First International Mathematics Survey in the early 1960s (Gau, 1997; Boscardin, *et al.*, 2005) This OTL concept suggests that content exposure, content emphasis, instructional strategies, and instructional resources have a bearing on learners' academic achievement. The nature of learning opportunities provided for learners as posited by Chabongora and Jita (2013: 176) can either enhance or hinder the

learning experiences in an imperfect market structure classroom. It is because of this reason that the researcher settled for the OTL concept since he wanted to investigate learners' perceptions of opportunities to learn graphical and mathematical skills in an imperfect market structure class.

The OTL concept, as viewed by Scheerens (2016: 13), operationalises what takes place in schools and classrooms that support learners' learning and progress. This scholar is of the opinion that OTL helps to "reveal the impact of relevant input characteristics on output". The above scholars' argument is that OTL helps us answer questions on whether the curriculum and pedagogy which learners are engaged with is suitable and appropriate to the standards that have been established for the learners' performance. In trying to examine such opportunities, OTL researchers such as Bannicky (2000: 4) and Chabongora and Jita (2013: 174) ideally distinguished three overlapping categories of concern: curriculum content, instructional strategies, and instructional resources.

The facet of curriculum content, as Chabongora and Jita (2013: 174) suggest, is concerned with the extent to which learners are exposed to topics that are essential to attaining standards. It is their contention that content exposure, content coverage, and content emphasis all play a significant role in determining the opportunities for learning presented to the learners. Content exposure is determined by the time taken by the teacher in covering specific content. Desimore, Smith, and Phillips (2013) confirm the importance of time spent on tasks as their research findings suggest that there is a correlation between academic achievement and the time taken in covering the content. In line with the above, Stols (2013: 5) argues that time spent on a task is of immeasurable importance and conceptualises the time spent on a task as "the number of days that the learner actually spends on working on a topic(s)". Content emphasis, in the view of Cueto, *et al.* (2014: 4) is concerned with establishing how a topic or content area is treated: was it treated as a major topic, minor topic, or the topic or content was not taught at all. Scholars like Aguirre-Munoz and Boscardin (2008) and Boscardin, *et al.* (2005) are of the opinion that higher levels of content coverage have been positively associated with learners' academic performance.

Instructional strategies, according to Chabongora and Jita (2013: 174), are concerned with whether students have been exposed to the kinds of teaching and instructional experiences that would prepare them for success. Asikhia (2010: 230) writes that the poor academic achievement in economics is partly attributable to the ill-preparedness of teachers and Van Wyk (2011) attributes this ill preparedness to the lack of pedagogical content knowledge. As a result of inadequate preparation, teachers might heavily rely on the teacher chalk strategies where learners rarely take part in the learning process. The lack of pedagogical content knowledge, it can be argued, might manifest itself in teachers hurriedly going

through important concepts as the teacher is not confident to teach the concepts. Without adequately prepared and knowledgeable teachers, there is little chance that quality curriculum and instructional strategies will be implemented effectively.

Instructional resource variables are concerned with such issues as textbooks and teacher preparation, including levels of education, amount of experience, type of experience, participation in in-service professional development, and attitudes (Chabongora & Jita, 2013: 174). Teachers must make use of a variety of resources if meaningful learning is to take place. It is the contention of Chabongora (2011: 57) that schools' instructional resources continue to be an important OTL indicator because they can enable or constrain a schools' ability to provide a high-quality instructional programme. Affirming the importance of instructional resources were Reche, *et al.* (2012: 129) who would have us understand that the adequacy and use of teaching and learning material influence the effectiveness of a lesson. As part of the early work in this body of knowledge, Reche, *et al.* (2012: 129) held the belief that if teachers fail to use teaching and learning material adequately, the effectiveness of the teacher's lesson is compromised and learners are consequently denied the opportunity to learn in imperfect market structures. The impact of the availability of opportunities to learn are summarised by Confucius who said "I hear, and I forget. I see, and I believe. I do, and I understand".

The challenge with opportunities to learn with regards to the teaching and learning of imperfect market structures is not a uniquely South African problem. Zhang (2017: 75), for instance, reveals that there are many other countries where teachers face challenges in meaningfully engaging learners. A further review of literature by Minarni, Napitupulu, and Husein (2016: 44) shows that there is poor learner achievement in topics that include mathematical concepts in Public Junior High School in Indonesia. These scholars suspect that this might be so because of the teaching approaches employed by the teachers, the type of learning material, and the rare engagement of learners in solving mathematical problems in economics, as is the case with imperfect market structures. The lack of learner engagement goes against what and Stefan (2013: 8) advocate, that is, actively engaging learners through problem solving. Moreover, Minarni, Napitupulu, and Husein's (2016: 44) assertion is supported by Zhang (2017: 75) who also bemoans the lack of content knowledge, lack of adequate resources, and inefficient use of available instructional resources as the reasons for poor academic achievement in economics. The lack of appropriate teaching strategies was also found to be the reason for poor academic performance in economics in Kenya in an earlier study conducted by Muraya and Kimomo (2011: 728). Minarni, Napitupulu and Husein (2016: 44) suggest that the teacher should teach the learners in such a way that the learner has an opportunity to solve mathematical

problems as well as understand mathematical representation in the form of graphs and tables. This understanding is important because there seems to be a connection between mathematical understanding and conveying economics information through mathematical representation.

Given the above overview, it can be concluded that the most influential factors on learners' academic achievement correlate practically with the opportunities to learn in the classroom. The quality of the interaction of the two main actors – the “learner” and “teacher” – has a bearing on learners' academic achievement. In fact, Beniwal (2016: 259) argues that there is a need to differentiate instruction to meet individual learners' needs and to provide active learning opportunities for learners to master economics. He further argues that these strategies should motivate, engage, and prompt learners to learn and achieve. In the earlier years, in her book titled *Teaching at its Best*, Nilson (2010: 5) posited that learners should be taught in multiple ways. She further argued that learners should be given the opportunity to read, talk, hear see, act, draw, and feel their learning material. This, she argued, would bring fairness and equality in the learning process as different learners prefer to learn in different ways.

### **1.3 Research Methodology**

This paper sought to investigate grade 12 learners' perceptions of opportunities to learn imperfect market structures. To achieve this, the study employed a quantitative descriptive survey. Quantitative research is viewed by Bless and Higson-Smith (2000: 156) as “research which makes use of measurement to record and investigate aspects of social reality”. In addition, Leedy and Ormrod (2005: 94) state that, generally, quantitative research is concerned with providing answers to questions about relationships on variables being measured with the objective of explaining phenomena. Neuman (2003: 35) argues that a survey technique is relevant for descriptive or explanatory research. The researcher found this approach relevant to describe the learners' experiences of opportunities to learn imperfect market structures through presenting statistical results.

### **1.4 Participants**

Three Galeshewe schools with comparable characteristics in rural district of Francis Baard in the Northern Cape served as the context of this study after permission was sought from the Francis Baard District Department of Education and the principals of the respective schools. The study participants were between the age of 16 and 19 years of age and voluntarily

agreed to participate in this research study with parental permission being sought for those participants who were below the age of 18 years.

### **1.5 Sampling**

A convenience sample of learners (n=253) in grade 12 in the three schools in Galeshewe was used in this study. Convenience sampling is defined by Rahi (2017: 3) as “a process of data collection from a population that is close at hand and easily accessible to the researcher”. This study employed this type of sampling as the researcher found it cost effective since the participants were within proximity to the researcher. The classrooms chosen were believed to be homogeneous since all the participants came from the same rural community of Galeshewe in the Francis Baard district of the Northern Cape with similar socio-economic backgrounds. It was the researcher’s view that a larger sample of 253 participants would make the study more comprehensive and a holistic picture of the participants being researched can be obtained. However, some scholars like Etikan, Musa, and Alkassim (2016:2) criticise this sampling technique on its selection bias as this type of non-probability sampling does not give all participants an equal opportunity to be selected as is the case with probability sampling.

### **1.6 Instrumentation**

A questionnaire is defined by Bless and Higson-Smith (2000:156) as “an instrument of data collection consisting of a standardized series of questions relating to the research topic to be answered in writing by participants”. The selection of this instrument was based on Delport’s (2005:166) assertion that the prime objective of a questionnaire is to enable a researcher to gather informed facts and opinions about a phenomenon. Some of the benefits for using a questionnaire, as argued by McMillan and Schumacher (2010:211) is that it is economical, poses similar questions to the subjects, and can ensure that subjects remain anonymous. However, the questionnaire as an instrument has its own shortfalls which includes amongst others, not giving the respondents enough opportunities to explain their reasoning. The study made use of a structured questionnaire. The choice of a structured questionnaire was premised on Guest’s (2019) assertion that these types of questionnaires involves low level of thinking on the respondent and therefore high number of respondents. In pursuit of ensuring validity of the questionnaire, the draft questionnaire was presented to the experts in the Faculty of Education at Sol Plaatje University. The suggestions and corrections were made before the questionnaire was piloted to 30 learners from a local school of which the participants were not used as samples in this study. To ensure reliability of the instrument,

the researcher made use of the test-re-test method and consistency of the instrument was measured through the Croanbach alpha which yielded  $r=0.86$ . Thereafter, the researcher administered the questionnaire to 253 participants (190 girls and 63 boys) in the respective schools. All the participants were between the ages of 16-18 years. After two days the researcher personally went to collect the questionnaires and managed to get 95% of the questionnaires back. Four constructs of OTL which are content emphasis, content exposure, quality of instructional strategy and instructional resources formed the basis of the questionnaire. Data presentation was descriptive and a five-point interval Likert scale was used to measure the responses as Leedy and Ormrod (2005:185) posit that a five-point scale is easy to comprehend and enables participants to express their views in a better way. In order to get a deeper understanding of the survey, the percentages of participants choosing *strongly agree*, *agree*, *unsure*, *disagree* and *strongly disagree* was calculated using excel.

### **1.7 Ethical Considerations**

The researcher obtained ethical clearance from the University of the Free State to conduct this research. Permission was also sought from the Francis Baard District Department of Education and from the Principals of the respective schools. Learner consent and parental permission was also obtained. Participants' confidentiality was always upheld throughout the research process as measures were taken to ensure that learners' identities were anonymous, and no names and identities were related to data or findings. The participants were also made aware that they were free to withdraw from participating any time they deemed necessary.

### **1.8 Data Analysis**

The statistical analysis of the data obtained from the five-point Likert scale questionnaire was conducted using Microsoft Office Excel 365 and R software package. Each learner's average per construct was calculated for the four constructs on which the questions were based. Thereafter the averages per learner for the four constructs were calculated.

### **1.9 Findings**

This section presents findings in response to the question "What are the grade 12 learners' perceptions of opportunities to learn imperfect market structures?" In so doing, the paper based the learner's perceptions on the constructs of OTL, namely content emphasis, content exposure, quality of instructional strategies, and instructional resources.

### 1.9.1 Content emphasis

Using the conceptual framework of OTL, content emphasis relates to how a topic or content area was treated. It seeks to ascertain whether a topic was treated as a minor or major topic (Cueto, *et al.*, 2014: 14). Equally, in this study, the researcher wanted to find out whether teachers place emphasis on calculation of costs and revenues and drawing and interpretation of graphs as these are critical knowledge and skills in the study of imperfect market structures.

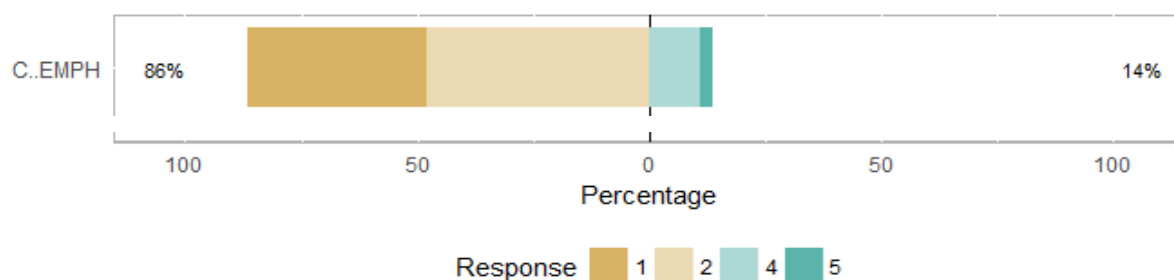
The table below shows the learners' responses on the three items based on content emphasis.

**TABLE 1:** Results from learners' survey (227 responses)

|                                                  | Percentages (%) |            |        |          |               |
|--------------------------------------------------|-----------------|------------|--------|----------|---------------|
|                                                  | Agree           | Str. Agree | Unsure | Disagree | Str. Disagree |
| 1. Emphasis on calculations of cost and revenues | 9               | 14         | 3      | 36       | 38            |
| 2. Detailed teaching on how to draw graphs       | 12              | 18         | 4      | 36       | 30            |
| 3. Emphasis on interpreting graphs               | 9               | 11         | 5      | 37       | 38            |

The results presented in Table 1 reveal that 74% of the learners' responses on emphasis of costs and revenues calculations were spread around strongly disagree and disagree. Of the respondents, only 24% responded in the affirmative that calculations of costs and revenues received much attention from the teachers and a further 1% being unsure. The findings also reveal that 76% of the participants either strongly disagreed or disagreed that there was detailed teaching on graph construction. A meagre 20% of the participants agreed and strongly agreed that there was detailed teaching on graph construction in imperfect market structures in their classrooms. Concerning emphasis placed on graph interpretation, the learners' responses show that there is less emphasis placed on this skill as shown by only 20% of the respondents who either strongly agreed or agreed that much emphasis is placed on graph interpretation. The bulk of the respondents – about 75% – were of the view that less emphasis was being placed on the interpretation of graphs. Learners' responses on the three items were combined and an average per content emphasis was calculated. The responses were classified from being: strongly disagree (1), disagree (2), unsure (3), agree (4), and strongly agree (5).

**GRAPH 1:** The average learners' responses on three items of content emphasis as a construct



Graph 1 above shows that, on average, learners' responses on content emphasis were concentrated around strongly disagree and disagree (86%). This finding suggests that learners generally feel that not enough emphasis is placed on the concept.

### 1.9.2 Content exposure

The construct of content exposure consisted of four items as shown in table 2.

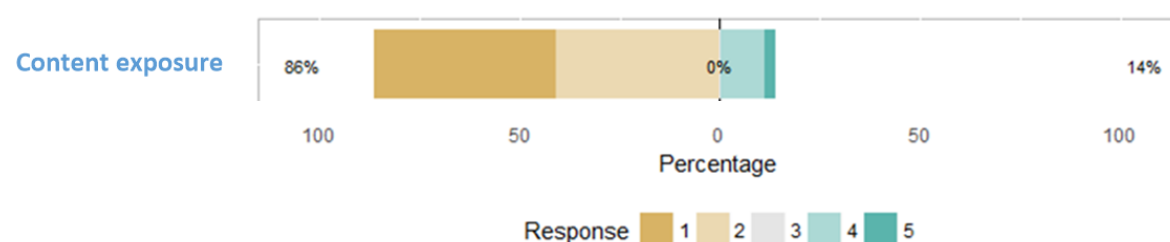
**TABLE 2:** Results of learners' survey (233 responses)

|                                                 | Percentages (%)   |              |               |                 |                      |
|-------------------------------------------------|-------------------|--------------|---------------|-----------------|----------------------|
|                                                 | <i>Str. Agree</i> | <i>Agree</i> | <i>Unsure</i> | <i>Disagree</i> | <i>Str. Disagree</i> |
| 1. Time spent on calculations cost and revenues | 15                | 13           | 6             | 34              | 32                   |
| 2. Time spent on how to draw graphs             | 16                | 28           | 7             | 28              | 20                   |
| 3. Frequency of assessment on graphs            | 12                | 26           | 4             | 36              | 12                   |
| 4. Time spent on graph interpretation           | 18                | 18           | 5             | 32              | 27                   |

The results in the table above suggest that there is not enough time spent on calculations of costs and revenues as 66% of the respondents did not agree that enough time is spend on the teaching of calculations. The results also point to a mixed reaction on time being spent on teaching learners graph construction as 48 % of the learners either strongly disagreed or disagreed that adequate time was dedicated to this skill and 44% of the respondents agreed and strongly agreed that adequate time is spend on drawing graphs. This result is inconclusive as shown by the learners' responses. On the frequency of assessment on graphs, the findings reveal that 48% of the respondents did not agree that they were being frequently tested on graphical skills. The participants' responses also reveal that less time is

dedicated to graph interpretation as only 36% responded positively on whether they were adequately exposed to graph interpretation and most of the respondents, about 59%, either strongly disagreed or disagreed that enough time was spent on graph interpretation.

**GRAPH 2:** Average learners' responses on the four items of content exposure as a construct



The averages of the four items of content exposure construct show that most learners did not agree that enough time is being spent on calculations of costs and revenues, graph construction, and interpretation. This is suggested by a huge percentage (86%) of learners who disagreed and strongly disagreed on the four items of content exposure.

### 1.9.3 Instructional strategies

The table below shows learners' responses on the four items of instructional strategies

**TABLE 3:** Result of learners' survey (228 responses)

|                                              | Percentages (%)   |              |               |                 |                      |
|----------------------------------------------|-------------------|--------------|---------------|-----------------|----------------------|
|                                              | <i>Str. Agree</i> | <i>Agree</i> | <i>Unsure</i> | <i>Disagree</i> | <i>Str. Disagree</i> |
| 1. Teaching methods are varied               | 15                | 13           | 6             | 34              | 32                   |
| 2. Teachers are always in command of content | 16                | 28           | 7             | 28              | 20                   |
| 3. Learners actively participate in class    | 12                | 26           | 4             | 39              | 19                   |
| 4. Teacher uses appropriate pace in teaching | 18                | 18           | 5             | 32              | 27                   |

On whether teachers vary teaching methods, only 28% of the respondents of the questionnaire responded in the affirmative. This means that the majority of the respondents (66%) either disagreed or strongly disagreed that teaching methods were varied. There was

a mixed reaction on whether teachers are in command of their content, with 48% of learners having either disagreed or strongly disagreed and 44% of the learners having agreed and strongly agreed that teachers are in command of the content. A further 7% were unsure. The result shows that learners do not actively participate in an imperfect market structure classroom as 58% of the respondents either disagreed or strongly disagreed that they take an active role in class. Furthermore, a total of 59% of the respondents did not agree that teachers were pacing their lessons appropriately.

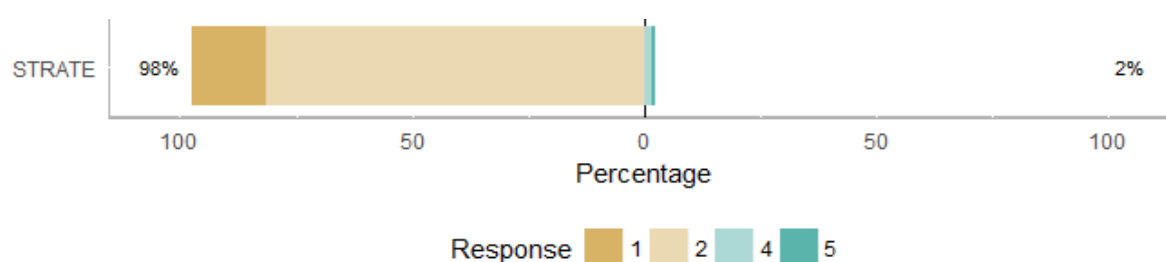
The table below shows learner's responses on the amount of time teachers spend lecturing.

**TABLE 4:** Result of learners' survey on time spent lecturing (236 responses)

|                                      | 10% | 25% | 50% | 75% | 75%+ |
|--------------------------------------|-----|-----|-----|-----|------|
| 5. The average time teachers lecture | 8   | 11  | 20  | 25  | 32   |

The findings reveal that teachers talk more in an imperfect market structure classroom as shown by the respondents. On average, teachers talk 75% or more of the allocated teaching and learning time.

**GRAPH 3:** Average learners' responses on the five items of instructional strategy as a construct



The mean scores of learner responses on instructional strategies suggest that teachers employ less variation on strategies in class. In addition, the findings also show that learners are not actively involved in the teaching and learning of graphs and calculations in an imperfect market structures classroom. This assertion is based on most of the learners' responses on the instructional strategies construct being spread around strongly disagree and disagree (98%).

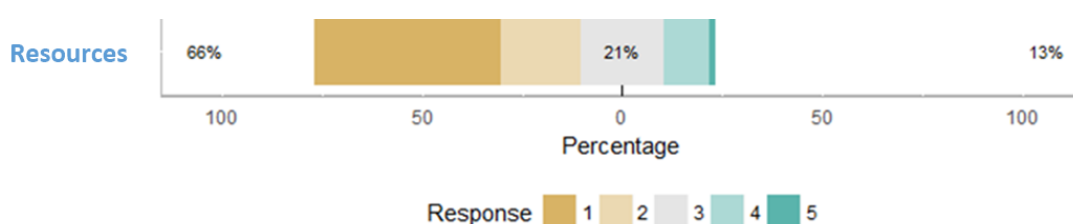
### 1.9.4 Instructional resources

**TABLE 5:** Result of learners' responses on the frequent use of resources (240 responses)

| Percentages                   | (%) |
|-------------------------------|-----|
| 1.1 Chalkboard                | 80  |
| 1.2 Textbooks and posters     | 85  |
| 1.3 Computers                 | 25  |
| 1.4 Worksheets                | 39  |
| 1.5 Overhead projector and TV | 29  |

The questionnaire on the use of instructional resources listed items to establish how often teachers used resources such as worksheets, textbooks, chalkboards, projectors, televisions, computers, and specialised equipment such as calculators. The chalkboard and textbook seem to be the most popular resources employed by teachers as shown by the high percentage of learner responses on their use with 80% and 85% respectively. Computers and projectors seem to be rarely used in imperfect market structure classrooms as evidenced by only 25% of the participants responding in the affirmative on their use

**GRAPH 4:** Average learners' responses on the five items of instructional resources as a construct



The above graph shows the learners' average responses on the instructional resources construct. A huge percentage of the learners' responses (66%) suggest that they strongly disagreed and disagreed that there was a variation of instructional resources in the teaching and learning of imperfect market structures.

## 1.10 Discussion and Implications

The findings show that learners do not agree that enough opportunities to learn imperfect market structures are being created by the teachers. The findings support the research by Asikhia (2010: 230) that documents poor academic achievement in economics in schools. The study seems to suggest the following factors as reasons for poor academic achievement in imperfect markets structures:

- The findings on content emphasis suggest that there seems to be less emphasis on calculation of costs and revenues and a lack of detailed teaching and interpretation of graphs. Glazer (2011: 195) states that reading graphs and making sense of them is difficult for many learners. The reason for the difficulty in understanding these concepts is probably because of the little emphasis being placed on calculations and graphs during teaching and learning of imperfect market structures.
- Although learners are exposed to calculations of costs and revenues, the extent of the exposure is minimal as less time is dedicated to developing these skills and knowledge. Exposure is far too inadequate compared to the desired outcomes. The researcher discovered that there is a conflict between literature and practice since it is well documented by Arsaythamby and Juliminary (2014:324) that learners need to be exposed to calculations and manipulation of numbers in their pursuit of trying to find solutions to problems encountered in the economy.
- The study also found that learners are exposed to graphs as total pictures and are not taught the process of graph construction step by step. This way of teaching makes it difficult for learners to interpret these graphs when called to do so. For teachers it could be the pressure to cover the syllabus playing itself out in the tension between the time allocated and the need to enhance meaningful learning. There is also a possibility that perhaps, as argued by Van Wyk (2011:183), teachers themselves have limited exposure to deeper mathematical and graphing knowledge and they do not want to be exposed by spending more time on concepts that they themselves are not comfortable with. This might negatively affect learners' graphing skills as scholars such as Glazer (2011: 193) argue that learners' familiarity with content influences how they interpret and use data.
- Whilst Beniwal (2015: 259) argues for differentiation in instructional strategies, the findings of this study show that classes are characterised by teacher talk most of the time. There is invariably no adoption of the learner-centred approach as a variation method to adequately cover the concept so that learners are

empowered. This beclouds the concept and learners are left in the dark. Despite Morgan's (2015: 21) assertion that economics and imperfect market structures should help develop learners' problem-solving skills, the practices by teachers in the classrooms do not seem to be tailored to develop such skills. This observation is based on the premise that learners are rarely given opportunities to illuminate their own understanding, make sense of abstract concepts, and articulate their emerging ideas.

- The study findings reveal that the most used resources in an imperfect market structure class are the chalkboard and textbooks. Whilst these can be effective resources in teaching calculations, inappropriate or over reliance on them might deny learners opportunities to learn calculations and graphs. This assertion is supported by Chabongora (2011: 57) who argues that schools' instructional resources continue to be an important OTL indicator because they can enable or constrain a school's ability to provide a high-quality instructional programme.

### **1.11 Recommendations and Conclusion**

The analysis of the study showed that participants are not presented with sufficient opportunities to learn mathematical and graphing skills. In order to achieve the knowledge and skills envisaged in the economics curriculum, it is imperative that teachers listen to the emerging and incomplete ideas from the learners and guide them. This can only be achieved if active learner participation is prioritised, as encouraged by Kumar (2003: 20). There is a need for teachers to place more emphasis on calculations as well as graph construction and interpretation. The Department of Basic Education (DBE) must continuously conduct teacher development(refresher) workshops where teachers are workshopped on the content itself (imperfect markets) as well as different pedagogy of delivering meaningful lesson in abstract concepts such as imperfect market structures. The researcher also noticed that there are pockets of good practices among schools that participated in the study. The study therefore recommends that schools must create platforms where teachers can share their good practices. Furthermore, the article recommends that a more comprehensive study be undertaken which considers the teachers' pedagogical content knowledge, especially in mathematical and graphing competence. Lastly, the researcher suggests that a further study be conducted where a broader population sample is used to allow the generalisation of the findings across a broad spectrum.

### **1.12 Conclusion and Synthesis**

The study sought to investigate opportunities to learn imperfect market structures in a grade 12 class. In doing so, the study was conducted in the form of two academic articles. Article One focused on how teachers create opportunities to learn mathematical and graphing skills in imperfect market structures and Article Two focused on learner's perceptions of opportunities to learn imperfect market structures. Based on the descriptive and quantitative data, both the teachers' and learners' perspectives of opportunities to learn imperfect market structures were disclosed. Data from the two articles confirm that the four constructs of OTL under study, that is content emphasis, content exposure, instructional strategies, and instructional resources, were not all successfully implemented to allow for meaningful learning of imperfect market structures to take place. Any doubts over whether enough opportunities to learn the concept were created were eliminated as both the teachers and learners acknowledged that there were challenges in the teaching and learning of imperfect market structures. This conclusion is based on the triangulation of data collection methods which ranged from interviews, class observations, document analysis, as well as questionnaires filled out by both teachers and learners. The findings from the different methods gave the researcher confidence in the findings of the research which point to inadequate opportunities to prepare learners to achieve the desired outcomes in economics and imperfect market structures in particular.

It is the researcher's humble submission that serious consideration be given to the challenges and recommendations for future curricula development for this very important school subject to ensure the demand for economists in South Africa, the backbone of the country's economy, is met.

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## APPENDICES

### APPENDIX A



Faculty of Education

16-Aug-2018

Dear Mr Wellington Manzi

Ethics Clearance: Investigating opportunities to learn imperfect market structures in a grade 12 class

Principal Investigator: Mr Wellington Manzi

Department: School of Education Studies (Bloemfontein Campus)

#### APPLICATION APPROVED

With reference to your application for ethical clearance with the Faculty of Education, I am pleased to inform you on behalf of the Ethics Board of the faculty that you have been granted ethical clearance for your research.

Your ethical clearance number, to be used in all correspondence is: UFS-HSD2018/0378

This ethical clearance number is valid for research conducted for one year from issuance. Should you require more time to complete this research, please apply for an extension.

We request that any changes that may take place during the course of your research project be submitted to the ethics office to ensure we are kept up to date with your progress and any ethical implications that may arise.

Thank you for submitting this proposal for ethical clearance and we wish you every success with your research.

Yours faithfully

## APPENDIX B

### Researcher

Manzi Wellington

953 Ottoskoppie

Galeshewe

Kimberley

Contacts: 0538614439/0726608647

E-mail: manziwellington95@gmail

The District Director Francis Baard District

Study Leader

Dr M.S Mosia

Dear Sir/Madam

### **RE: REQUEST FOR PERMISSION TO CONDUCT AT THE SCHOOLS IN FRANCIS BAARD DISTRICT**

Please accept my request to carry a research project in the schools in Francis Baard District:

***Investigating Opportunities to Learn Imperfect market structures in a grade 12 class.***

I am a registered student at the University of the Free State for Med Degree. This study is on investigating what opportunities to learn (OTL) are available for learners in the teaching of imperfect market structures in grade 12. This section of the syllabus has been a concern for some time as learners find the concept difficult. The researcher intends to find what takes place in the name of learning and teaching of this concept. It intends the answer whether learners are provided with adequate opportunities for them to master this concept.

All the participants will participate voluntarily, and I will make sure that their human rights are upheld. Confidentiality, non-disclosure of personal information and identity of participants will always be maintained. The processes in this research project will be explained to the participants and they can make contributions. Participants will not be coerced to comment on issues that make them uncomfortable and are free to withdraw from the research at any time if they are no longer comfortable without any repercussions. Participants will choose convenient times that will suit them. I therefore request your permission to undertake this research in Francis Baard District schools.

Yours faithfully

W. Manzi

## APPENDIX C

### **Research Consent Form: PARENT**

“Investigating opportunities to learn imperfect market structures in a selected grade 12 class”

I ....., parent of .....agree that my child can participate in the research study conducted by Wellington Manzi, a Med student from University of Free State with student number 2017148541.

The purpose and the nature of the study has been explained to me [in writing and] verbally.

My child’s participation is voluntary and I understand that he/she can withdraw at any time during the study without any repercussions.

I understand and give permission that extracts from the interview may be quoted and published in the research report.

I also understand that confidentiality will be ensured in the research report and that no identifying features will be attached.

Signed: ..... Date: .....

I give permission for the interview to be audio-recorded: YES/NO

Signed: ..... Date: .....

## APPENDIX D

### **Research Consent Form for PARTICIPANTS**

“Investigating opportunities to learn imperfect market structures in a selected grade 12 class”

I, ..... agree to participate in the research study conducted by Wellington Manzi, a Med student from University of Free State with student number 2017148541.

The purpose and the nature of the study has been explained to me [in writing and] verbally.

My participation is voluntary and I understand that I can withdraw at any time during the study without any repercussions.

I understand and give permission that extracts from the interview may be quoted and published in the research report.

I also understand that confidentiality will be ensured in the research report and that no identifying features will be attached.

Signed:..... Date:.....

I give permission for the interview to be audio-recorded: YES/NO

Signed:..... Date:.....

## APPENDIX E

### INTERVIEW PROTOCOL – LEARNERS

#### DATE

20 August 2018

#### TITLE OF THE RESEARCH PROJECT

*Investigating opportunities to learn imperfect market structures in a selected grade 12 class*

Before the interview proper, I will assure the student of the confidentiality that will be kept and give a brief background to the study.

#### GREETINGS AND BACKGROUND

Good morning/afternoon, my name is Wellington Manzi. I would like to thank you for accepting to take time to talk to me. Firstly, I would like to assure you of the confidentiality of the conversation and then go over a few details about the background of the conversation. You can ask any question for clarity as we proceed with the conversation.

This conversation will last for **about 30 minutes** and will also be audio recorded for purposes of transcribing the notes. I would also like to assure you that the recording will be kept safe and will only be used for my studies and not for any other purposes.

Components brought together for my studies on Opportunity to Learn (OTL) focussed on what teachers do in their classrooms when they are teaching learners. These components are: (1) content coverage; (2) content exposure; (3) content emphasis; and (4) quality of instructional delivery. I would like to learn from you about your experiences on imperfect market structures. The information that you will share with me will help me to have a better understanding of OTL imperfect market structures.

#### INTERVIEW QUESTIONS

##### **\*Content coverage**

1. To what extent do your teacher cover all the core curriculum content of imperfect market structures?

##### **\* Content exposure**

1. To what extent is *allocated time* for teaching and learning spent on the actual teaching and learning imperfect market structures studies?

2. Do you receive some Remedial/enrichment opportunities such as monitored homework, tutoring or computer assisted instruction? If yes, please mention them and how often?
3. To what depth do you get in learning mathematical and graphing skills in imperfect market structures?

**\* Content emphasis**

1. Which concepts and skills in imperfect market structures are selected by your teacher for emphasis?
2. Is there any noticeable differentiation between lower order (recall) and higher order cognitive skills?
3. Are you exposed to graphing and mathematical skill in your lessons? If yes, to what extent.
4. To what extent were textbooks and teaching and learning materials prepared by teachers most influential on the teaching and learning of the content in imperfect market structures?

**\* Quality of instructional delivery**

1. How are you taught (instructional strategies) – mention them (varying teaching strategies)?
2. To what extent is theory complemented with practical's and/or experiments in your classes?
3. To what extent do the teaching practices in your classroom impact your academic achievement?
4. To what extent are the presentations of imperfect market structures lessons coherent (clear) to you, in other words, are they organised with introduction, a conclusion, and a content theme? And are you able to make connections between different parts of a lesson to one another, to explain the interrelatedness of the various activities?
5. To what extent do you feel that your teachers are always in command of the subjects that they teach you?
6. In your own view, how can the teaching and learning practices of imperfect market structures be improved?
7. Evaluate the way your performance is monitored (assessed) in imperfect market structures with examples such as norm-referenced assessment, criterion-referenced, performance based, essay questions, multiple choice questions etc.
8. Are there any challenges that you face during the learning of imperfect market structures and how are they dealt with or you think should be dealt with? Such as

resources, language proficiency barrier, prior knowledge of the subject, general attitude and commitment towards learning (e.g. attendance rate)

***General closing questions***

1. Give me any connections between your prior knowledge, experiences, and interests to the concept imperfect market structures.
2. What support do you get from your teacher and other teachers in general at this school
3. Are there any additional thoughts or comments that you feel are relevant and we should have discussed them?

**THANK YOU SO MUCH FOR YOUR PARTICIPATION!**

## APPENDIX F

### DATE

20 August 2018

### TITLE OF THE RESEARCH PROJECT

*Investigating opportunities to learn imperfect market structures in a selected grade 12 class*

Before the interview proper, I will assure the teacher of the confidentiality that will be kept and also give a brief background to the study.

### GREETINGS AND BACKGROUND

Good morning/afternoon, my name is Wellington Manzi. I would like to thank you for accepting to take time to talk to me. Firstly, I would like to assure you of the confidentiality of the conversation and then go over a few details about the background of the conversation. You can ask any question for clarity as we proceed with the conversation.

This conversation will last for **about 30 minutes** and will also be audio recorded for purposes of transcribing the notes. I would also like to assure you that the recording will be kept safe and will only be used for my studies and not for any other purposes.

Components brought together from my studies on Opportunity to Learn (OTL) focussed on what teachers do in their classrooms when they are teaching learners. These components are: (1) content coverage; (2) content exposure; (3) content emphasis; and (4) quality of instructional delivery. I would like to learn from you about your experiences on teaching imperfect market structures in grade 12. The information that you will share with me will help me to have a better understanding of OTL.

### INTERVIEW QUESTIONS

#### **\*Content coverage**

1. To what extent do your learners cover all the core curriculum content for imperfect market structures?

#### **\* Content exposure**

1. To what extent do you spent the *allocated time* on the actual teaching and learning of imperfect market structures?
2. Do you give some Remedial/enrichment opportunities such as monitored homework, tutoring or computer assisted instruction to your students? If yes, please mention them and how often?
3. To what depth do you teach the relationship between the profits and losses and the graphical presentation of human behaviour?

**\* Content emphasis**

1. Are there any concepts or skills in imperfect market structures topics curriculum that you have selected for emphasis? If yes, which ones?
2. Is there any noticeable differentiation between lower order (recall) and higher order cognitive skills in the content of imperfect market structures?
3. To what extent were textbooks and teaching and learning materials prepared to be most influential on the teaching and learning of the content of imperfect market structures?

**\* Quality of instructional delivery**

1. Which teaching strategies (instructional strategies) do you use when teaching – mention them (varying teaching strategies)?
2. To what extent do you complement theory with practice and/or simulations in your classes?
3. To what extent do your teaching practices in your classroom impact your academic achievement?
4. To what extent do your students find your presentations of imperfect market structures lessons coherent (clear), in other words, are they organised with introduction, a conclusion, and a content theme? And are you able to make connections between different parts of a lesson to one another, to explain the interrelatedness of the various activities?
5. To what extent do you feel that you are always in command of the subject that you teach?
6. In your own view, how can your teaching and learning practices of imperfect market structures be improved?
7. Evaluate how you monitor (assess) your students' performance in imperfect market structure with examples such as norm-referenced assessment, criterion-referenced, performance based, essay questions, multiple choice questions, etc.
8. Are there any challenges that you face during the teaching of imperfect market structures and how are they dealt with or you think should be dealt with? Such as resources, class size, college support, language proficiency barrier, prior knowledge of the subject, general attitude, and commitment towards learning (e.g. attendance rate).
9. **General closing question**
10. Are there any additional thoughts or comments that you feel are relevant and we should have discussed them?

## APPENDIX G

### QUESTIONNAIRE FOR LEARNERS

*Dear Learner*

This survey is being carried out as part of my efforts to complete my Med study titled '*Investigating opportunities to learn imperfect market structures in a selected grade 12 class*'. Your participation is voluntary and there will be no mention of your name in the final article and any information given is treated confidentially. Please do not write your name anywhere on this questionnaire. Your cooperation and participation is greatly valued.

PLEASE JUST INDICATE BY TICKING IN THE BOX OF YOUR CHOICE.

#### CONTENT EMPHASIS

|                                                                             | Strongly agree | Agree | Unsure | Disagree | Strongly disagree |
|-----------------------------------------------------------------------------|----------------|-------|--------|----------|-------------------|
| 1.1 Does your teacher place emphasis on calculations of costs and revenues? |                |       |        |          |                   |

|                                                                                                                     | Strongly agree | Agree | Unsure | Disagree | Strongly disagree |
|---------------------------------------------------------------------------------------------------------------------|----------------|-------|--------|----------|-------------------|
| 1.2 Does your teacher go in detail in teaching you how to draw graphs from given tables showing costs and revenues? |                |       |        |          |                   |

|                                                                              | Strongly agree | Agree | Unsure | Disagree | Strongly disagree |
|------------------------------------------------------------------------------|----------------|-------|--------|----------|-------------------|
| 1.3 Does your teacher emphasis on interpreting data and interpreting graphs? |                |       |        |          |                   |

## CONTENT EXPOSURE

|                                                                                                                                                             | Strongly agree | Agree | Unsure | Disagree | Strongly disagree |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------|--------|----------|-------------------|
| 2.1 <i>Allocated time</i> for teaching and learning is spent on the actual teaching and learning of calculations and graphs in imperfect market structures. |                |       |        |          |                   |

|                                                             | All the times | Most of the times | Half the times | Very few times | Never |
|-------------------------------------------------------------|---------------|-------------------|----------------|----------------|-------|
| 2.2 How often are you taught about calculations and graphs? |               |                   |                |                |       |

|                                                                                                                            | All the times | Most of the times | Half the times | Very Few times | Never |
|----------------------------------------------------------------------------------------------------------------------------|---------------|-------------------|----------------|----------------|-------|
| 2.3 Do you receive some Remedial/enrichment opportunities such as monitored homework, on graphs, tables and calculations ? |               |                   |                |                |       |

|                                                         | Strongly agree | Agree | Unsure | Disagree | Strongly disagree |
|---------------------------------------------------------|----------------|-------|--------|----------|-------------------|
| 2.4 Does your teacher teach you how to interpret graphs |                |       |        |          |                   |

## QUALITY OF INSTRUCTION

|                                                             | Strongly agree | Agree | Unsure | Disagree | Strongly disagree |
|-------------------------------------------------------------|----------------|-------|--------|----------|-------------------|
| 3.1 Teaching methods are varied                             |                |       |        |          |                   |
| 3.2 Teachers are always in command of the subject           |                |       |        |          |                   |
| 3.3 Do you as learners actively participate during classes? |                |       |        |          |                   |
| 3.4 Teachers use appropriate place to cover the content.    |                |       |        |          |                   |

|                                                                          | 10% | 25% | 50% | 75% | 75% + |
|--------------------------------------------------------------------------|-----|-----|-----|-----|-------|
| 3.5 On average, the teachers talk for about what percentage of the time? |     |     |     |     |       |

## INSTRUCTIONAL RESOURCES

4. To what extent do you feel about the instructional resources?

4.1 Complete the table by selecting with a tick (☐) the resources that you have used the most in classroom.

|                               | (☐) |  | (☐) |
|-------------------------------|-----|--|-----|
| 4.1.1 Chalkboard              |     |  |     |
| 4.1.2 Textbooks & Posters     |     |  |     |
| 4.1.3 Computers               |     |  |     |
| 4.1.4 worksheets              |     |  |     |
| 4.1.5 Overhead & TV projector |     |  |     |

|                                                                                                                      | We do not have access at all | We have access At limited times | We have Access half the time | We have access at most times | We always have access |
|----------------------------------------------------------------------------------------------------------------------|------------------------------|---------------------------------|------------------------------|------------------------------|-----------------------|
| 4.2 How often do you access specialised equipment such as calculators' facilities and classrooms when you need them? |                              |                                 |                              |                              |                       |

Any comments about the support which you get from your teacher and other teachers in general?

|                                |
|--------------------------------|
|                                |
|                                |
|                                |
|                                |
| Any comments about this study? |
|                                |
|                                |
|                                |

THANK YOU FOR YOUR PARTICIPATION.



## DEPARTMENT OF EDUCATION

Enquiries: L. Monyera  
Contact No: 053 830 1602  
Ref No: L4.3.4  
Date: 17 September 2018

Wellington Manzi  
St. Boniface High School  
P.O. Box 615  
Corless Road  
KIMBERLEY  
8301

### SUBJECT: REQUESTING PERMISSION TO CONDUCT RESEARCH AT EMANG MMOGO COMPREHENSIVE SCHOOL

The Northern Cape Department of Education encourages research, which is in the best interest of education and will consider any meaningful research project in this regard. The Department therefore supports the conducting of high quality research that enables the Department to make evidence based policy decisions, and to enhance delivery of quality education to our learners.

When preparing your questionnaires, you must take the sensitivity of the contents, learners, since respondents such as the Northern Cape Department of Education, educators, learners, governing bodies and parents may not be offended or embarrassed by them.

You must obtain consent from participant categories, such as Principals, parents, teachers and learners. After approval has been granted by the Northern Cape Department of Education, the following conditions would be applicable.

1. There must not be any financial implications for the Northern Cape Department of Education.
2. Institutions and respondents must not be identifiable in any way from the result of the investigation.
3. The researcher must make all the arrangements concerning his/her investigation.
4. Prospective researchers must present a copy of the written approval of the Northern Cape Department of Education to the head of the institution concerned before any research may be undertaken.
5. In case of some research projects it will be necessary for the applicant to obtain the written permission of the parents or legal guardians concerned personally before learners/ learners are involved.
6. Research may not be conducted during official contact time, as educator programmes should not be interrupted.
7. The research may not be conducted during the fourth term.



Page 1 of 2

...will be limited to those schools or institutions for which approval has been granted.  
the completed report, dissertation or thesis, accompanied by a separate synopsis  
(maximum 2-3 typed pages) of the most important findings and recommendations if it does not  
already contain a synopsis, must be provided to the Frances Baard District Director.

This letter herewith provides you with permission for the research project to be conducted at Emang  
Mmogo Comprehensive School and Tshireleco High School within the Frances Baard District in the  
Northern Cape Province on condition the above are adhered to.

Yours sincerely



25/09/2018

**L. MONYERA**  
**ACTING DISTRICT DIRECTOR: FRANCES BAARD DISTRICT**

Sanet Oberholzer  
Editing Services

cell no: +27 81 273 9780

email: sanetoberholzer@gmail.com



This serves as confirmation that I, Sanet Oberholzer, have edited the following document:

Investigating Opportunities to Learn Imperfect Market Structures in a Grade 12 Class

by Manzi Wellington Itai

Submitted in fulfillment of the requirements for the subject DKT702 for the degree Magister  
Educationis at the University of the Free State

As per the editing agreement entered into by both parties, I have endeavoured to:

- Revise and change all grammar, spelling, and punctuation errors in the document provided by the client.
- Revise and change sentence and minor paragraph structure in the document provided by the client to ensure professional and coherent flow.
- Where applicable, offer comments but not change content or significant structure of the work.
- Apart from the editing services mentioned above, the editor will not add to or change the content of the document in a significant way so as to alter its meaning.

Signed: Sanet Oberholzer

Date: 2 February, 2020

A small, square, grayscale image of a handwritten signature, likely belonging to Sanet Oberholzer.

## APPENDIX J

### CLASSROOM OBSERVATION FORM

Teacher's Name .....

Date.....

Grade/Subject.....

Time.....

|                                                                                                                                                                                                                                                                                                                                                                                    |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <b>Curriculum content</b><br><br>1. To what extent where learners exposed to calculations<br><br>2. To what extent exposed to graphs<br><br>3. Did the teacher show the link between the calculations and the graphs?                                                                                                                                                              |  |
| <b>Quality of instruction</b><br><br><ul style="list-style-type: none"><li>• Which teaching strategies (instructional strategies) did the teacher use?</li><li>• Was the lesson organised with introduction, content theme a conclusion?</li><li>• Were learners actively involved in the lesson?</li><li>• Did the teacher probe learners to be involved in the lesson?</li></ul> |  |
| <b>Instructional resources</b><br><br><ul style="list-style-type: none"><li>• Which resources did the teacher make use of?</li><li>• Did the resources assist the learners to comprehend the concept?</li></ul>                                                                                                                                                                    |  |

## APPENDIX K



# Digital Receipt

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