

# **NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY**

## **BACHELOR OF TECHNICAL TEACHER EDUCATION**

**AN INVESTIGATION INTO THE USE OF THREE-DIMENSIONAL  
OBJECTS AS A TEACHING APPROACH AND ITS IMPACT ON PASS  
RATES IN TECHNICAL GRAPHICS WITHIN BULAWAYO  
SECONDARY SCHOOLS**

**RESEARCH PROJECT PREPARED IN PARTIAL FULFILLMENT OF  
THE REQUIREMENTS FOR BACHELOR OF TECHNICAL TEACHER  
EDUCATIONAL HONORS IN AUTOMOTIVE ENGINEERING**

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## ABSTRACT

The aim of this study was to find out the use of three dimensional objects and its impact on pass rates in Technical Graphics in Bulawayo's secondary schools, with the view of finding out how frequently they are used and how they can affect pass rates, and advancing recommendations of benefits to concerned subject teachers.

In this study the descriptive survey was used. The study was carried out at 20 Bulawayo schools (see Appendix 1) and included pupils doing and teachers teaching Technical Graphics. As the population is made up of 1200 pupils and 40 teachers, stratified random sampling was applied to pupils. A 40% stratified random sampling was carried out for the pupils, translating to 480 pupils under study. Simple random sampling was carried out for each school with every fourth pupil in the class register for Technical Graphics being chosen. For the teachers purposive sampling was carried out, as only one teacher takes one stream of pupils up to the end of a course, hence 20 teachers were interviewed. Questionnaires for pupil and interviews for teachers' were used as data gathering instruments. These can be viewed in appendices 3 and 4.

The collected data was interpreted and analysed in a narrative form. Tables and pie charts resulted from this analysis. From the interpretation and analysis, it has been revealed that teachers are not using three-dimensional objects as a teaching approach, and this is a contributing factor to low pass rates. Teachers are well aware of the effects of using three-dimensional objects to motivate pupils. Pupils also said that they could understand a topic much better if a teacher uses models, mock -ups and specimens and this builds up to better performance in exams.

A number of reasons why teachers are not using the objects are cited. These included prohibitive costs of three-dimensional objects; job dissatisfaction, heavy workloads and general lack of commitment in teaching. Parents, heads and pupils were said not to be fully appreciative of the subject. Recommendations made were that teachers and heads combine to buy the three-dimensional objects and use these on a rote basis. Teachers need to be role models and market the subject. Career guidance must be done and the people who have done the subject and are successful be brought in. The researcher also felt that teachers need to revisit the aims of the subject. These will clearly highlight to the teachers the need to use three-dimensional objects almost always, as they are the backbone of the course, and these can greatly improve pass rates.