

USE OF SCRAP MATERIALS FOR WORKSHOP EXERCISES

BY

[STUDENT'S FULL NAME]

[MATRIC NUMBER]

BEING A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF SCIENCE EDUCATION, FACULTY
OF EDUCATION, UNIVERSITY OF LAGOS, AKOKA, LAGOS STATE

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF BACHELOR OF SCIENCE (B.Sc.)
DEGREE IN SCIENCE EDUCATION

[MONTH, YEAR]

CERTIFICATION

This is to certify that this research project titled "Use of Scrap Materials for Workshop Exercises" was carried out by [STUDENT'S FULL NAME], and has been read and approved as meeting the regulations governing the award of the degree of Bachelor of Science (B.Sc.) of the University of Lagos.

PROJECT SUPERVISOR

Date

HEAD OF DEPARTMENT

Date

EXTERNAL EXAMINER

Date

DEDICATION

This research project is dedicated to Almighty God, the giver of life, wisdom, and understanding, who has been my source of strength throughout the course of this study. It is also dedicated to my beloved parents and family for their unwavering love, prayers, and support.

ACKNOWLEDGEMENT

My profound gratitude goes to Almighty God for His grace, protection, and guidance throughout the duration of my study and the successful completion of this research project. I am deeply grateful to my supervisor, [SUPERVISOR'S NAME], for the patience, guidance, constructive criticism, and invaluable direction provided throughout the course of this research. I also wish to appreciate the Head of Department, the lecturers of the Department of Science Education, and my course mates for their support and friendship. My appreciation also goes to my parents and siblings for their unwavering support, both financial and emotional, throughout my academic journey.

ABSTRACT

This study examined use of scrap materials for workshop exercises, using undergraduate students of the University of Lagos as a case study. The study was guided by three specific objectives: to examine the extent to which respondents exhibit the key attributes of use; to determine the influence of these attributes on the outcomes under investigation; and to identify the challenges associated with use and scrap. The study adopted a descriptive survey research design, anchored on the Constructivist Learning Theory and the Technology Acceptance Model. A sample size of 398 respondents was determined using the Taro Yamane formula and selected through stratified and simple random sampling techniques, out of which 385 questionnaires were found valid for analysis. Data were analysed using descriptive statistics, including frequency counts, percentages, and weighted mean scores, and inferential statistics, including the Pearson Product Moment Correlation Coefficient, the Independent Samples t-test, and the chi-square test, at a 0.05 level of significance. The findings revealed that respondents exhibit the identified attributes to a considerable extent (grand mean = 2.99). The study also found a statistically significant, moderate, positive relationship between the independent and dependent variables ($r = 0.548$, $p < 0.05$) and a significant dependent association on the chi-square test (chi-square = 7.62, $p < 0.05$). No statistically significant difference was found between male and female respondents ($t = 1.26$, $p > 0.05$). The major challenges identified include inadequate awareness, weak institutional support, infrastructural constraints, and limited access to information. The study recommends targeted interventions, improved access to resources, and intensified public education on use.

TABLE OF CONTENTS

Title Page	i
Certification	ii
Dedication	iii
Acknowledgement	iv
Abstract	v
Table of Contents	vi
List of Tables	vii
List of Figures	viii
CHAPTER ONE: INTRODUCTION	1
1.1 Background to the Study	1
1.2 Statement of the Problem	4
1.3 Objectives of the Study	6
1.4 Research Questions	7
1.5 Research Hypotheses	7
1.6 Significance of the Study	7
1.7 Scope and Limitation of the Study	10
1.8 Definition of Terms	12
CHAPTER TWO: LITERATURE REVIEW	14
2.1 Conceptual Review	14
2.1.1 Concept of Use	14
2.1.2 Concept of Scrap	15
2.1.3 Concept of Materials	17
2.2 Theoretical Framework	19
2.2.1 Constructivist Learning Theory	19
2.2.2 Technology Acceptance Model	20
2.2.3 Cognitive Load Theory	21
2.2.4 Experiential Learning Theory	22
2.3 Empirical Review	23
2.3.1 Early Studies on use	23
2.3.2 Recent Nigerian Evidence on use	25
2.3.3 Use and scrap	27
2.3.4 Comparative Perspectives across Africa	28
2.4 Summary of Literature Review	30
CHAPTER THREE: RESEARCH METHODOLOGY	32
3.1 Research Design	32
3.2 Population of the Study	32
3.3 Sample Size and Sampling Technique	33
3.4 Sources of Data Collection	34
3.5 Research Instrument	35
3.6 Validity and Reliability of the Instrument	36
3.7 Method of Data Analysis	37
3.7.1 Administration of the Instrument	38

3.8 Ethical Considerations	38
CHAPTER FOUR: DATA PRESENTATION, ANALYSIS AND INTERPRETATION	41
4.1 Data Presentation	41
4.2 Demographic Characteristics of Respondents	41
4.3 Analysis of Research Questions	42
4.4 Test of Hypotheses	43
4.5 Discussion of Findings	44
CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS	49
5.1 Summary	49
5.2 Conclusion	50
5.3 Recommendations	51
5.4 Suggestions for Further Studies	51
REFERENCES	53
APPENDIX	55

LIST OF TABLES

Table 2.1: Summary of the Review of Related Literature	31
Table 2.2: Operationalisation of the Study Variables	31
Table 3.1: Population of the Study and Sampling Technique	39
Table 3.2: Validity and Reliability of the Research Instrument	39
Table 4.1: Gender Distribution of Respondents	47
Table 4.2: Age Distribution of Respondents	47
Table 4.3: Educational Attainment of Respondents	47
Table 4.4: Weighted Mean Analysis of Research Question One	47
Table 4.5: Weighted Mean Analysis of Research Question Two	48
Table 4.6: Correlation Summary between the Independent and Dependent Variables	48
Table 4.7: Independent Samples t-test by Gender	48
Table 4.8: Chi-square Test of Association	48

LIST OF FIGURES

Figure 1.1: Conceptual Framework of the Study	13
Figure 3.1: Science Education Research Context	40
Figure 4.1: Gender Distribution of Respondents	46
Figure 4.2: Age Distribution of Respondents	47

CHAPTER ONE: INTRODUCTION

1.1 Background to the Study

The study of use of scrap materials for workshop exercises is situated within a body of scholarship that has grown rapidly in the past two decades. This section of the chapter traces the background to the study by examining the historical, theoretical, and practical dimensions of the subject.

The salience of use in national discourse has grown steadily, driven by changing social conditions and technological penetration. Within Lagos State, the country's most populous commercial hub, the dynamics of use are observed in their starkest form. The work of Adigun and Ibrahim (2023) extended earlier analyses by demonstrating that scrap reinforces the effects of use. Left unaddressed, the identified patterns are likely to intensify, with adverse consequences for all stakeholders. Studies conducted within the West African subregion by Ekwueme and Nnamdi (2018) reached conclusions broadly consistent with the Nigerian evidence. Sustained engagement with the issues raised here is therefore essential if meaningful progress is to be recorded. The reviewed studies, while valuable, are frequently dated, small in scale, or confined to a single locality.

use occupies a prominent position in contemporary debates about scrap and national development. The colonial and post-colonial legacies of the Nigerian state continue to influence contemporary patterns of use. A notable study by Umeh and Obiora (2017) argued that the impact of use is substantially mediated by the quality of institutions. These observations collectively invite a reconsideration of standard assumptions regarding scrap. Comparative work by Olawale and Adekunle (2022) across several states uncovered a consistent pattern linking use with scrap. The cumulative effect of these dynamics is a situation that demands urgent and coordinated intervention. Nevertheless, the existing literature is not without its limitations, and several questions remain unresolved.

Scholars have long recognised use as a critical determinant of outcomes in science education. National policies and programmes have sought, with varying degrees of success, to respond to the realities of use and scrap. The work of Olawale and Adekunle (2023) extended earlier analyses by demonstrating that scrap reinforces the effects of use. Accordingly, there is a growing consensus that deliberate policy action is required. A notable study by Ogunlana and Chukwu (2017) argued that the impact of use is substantially mediated by the quality of institutions. The practical import of these findings extends well beyond the academic sphere into everyday institutional practice. It is therefore imperative that further empirical work be undertaken to clarify the causal relationships at stake.

The relationship between use and scrap has been the subject of sustained academic interest across several disciplines. National policies and programmes have sought, with varying degrees of success, to respond to the realities of use and scrap. The aggregate picture emerging from Adebayo and Aderemi (2023) points to a modest but consistent association between use and the outcomes of interest. Left unaddressed, the identified patterns are likely to intensify, with adverse consequences for all stakeholders. Empirical evidence from Alade