

VIRTUAL SIMULATIONS AND UNDERSTANDING OF WAVE CONCEPTS

BY

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DEGREE IN SCIENCE EDUCATION

[MONTH, YEAR]

CERTIFICATION

This is to certify that this research project titled "Virtual Simulations and Understanding of Wave Concepts" 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.

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ABSTRACT

This study examined virtual simulations and understanding of wave concepts, 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 virtual; to determine the influence of these attributes on the outcomes under investigation; and to identify the challenges associated with virtual and simulations. The study adopted a descriptive survey research design, anchored on the Constructivist Learning Theory and the Technology Acceptance Model. A sample size of 393 respondents was determined using the Taro Yamane formula and selected through stratified and simple random sampling techniques, out of which 373 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 = 2.95). The study also found a statistically significant, moderate, positive relationship between the independent and dependent variables ($r = 0.505$, $p < 0.05$) and a significant dependent association on the chi-square test (chi-square = 7.88, $p < 0.05$). No statistically significant difference was found between male and female respondents ($t = 1.22$, $p > 0.05$). 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 virtual.

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	7
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 Virtual	14
2.1.2 Concept of Simulations	15
2.1.3 Concept of Understanding	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	24
2.3.1 Early Studies on virtual	24
2.3.2 Recent Nigerian Evidence on virtual	26
2.3.3 Virtual and simulations	27
2.3.4 Comparative Perspectives across Africa	29
2.4 Summary of Literature Review	31
CHAPTER THREE: RESEARCH METHODOLOGY	33
3.1 Research Design	33
3.2 Population of the Study	33
3.3 Sample Size and Sampling Technique	34
3.4 Sources of Data Collection	35
3.5 Research Instrument	36
3.6 Validity and Reliability of the Instrument	37
3.7 Method of Data Analysis	38
3.7.1 Administration of the Instrument	39

3.8 Ethical Considerations	39
CHAPTER FOUR: DATA PRESENTATION, ANALYSIS AND INTERPRETATION	42
4.1 Data Presentation	42
4.2 Demographic Characteristics of Respondents	42
4.3 Analysis of Research Questions	43
4.4 Test of Hypotheses	44
4.5 Discussion of Findings	45
CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS	50
5.1 Summary	50
5.2 Conclusion	51
5.3 Recommendations	52
5.4 Suggestions for Further Studies	52
REFERENCES	54
APPENDIX	56

LIST OF TABLES

Table 2.1: Summary of the Review of Related Literature	31
Table 2.2: Operationalisation of the Study Variables	32
Table 3.1: Population of the Study and Sampling Technique	40
Table 3.2: Validity and Reliability of the Research Instrument	40
Table 4.1: Gender Distribution of Respondents	48
Table 4.2: Age Distribution of Respondents	48
Table 4.3: Educational Attainment of Respondents	48
Table 4.4: Weighted Mean Analysis of Research Question One	49
Table 4.5: Weighted Mean Analysis of Research Question Two	49
Table 4.6: Correlation Summary between the Independent and Dependent Variables	49
Table 4.7: Independent Samples t-test by Gender	49
Table 4.8: Chi-square Test of Association	49

LIST OF FIGURES

Figure 1.1: Conceptual Framework of the Study	13
Figure 3.1: Science Education Research Context	41
Figure 4.1: Gender Distribution of Respondents	48
Figure 4.2: Age Distribution of Respondents	48

CHAPTER ONE: INTRODUCTION

1.1 Background to the Study

The study of virtual simulations and understanding of wave concepts 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.

Over the past two decades, virtual has become increasingly significant within the Nigerian landscape and beyond. The colonial and post-colonial legacies of the Nigerian state continue to influence contemporary patterns of virtual. Research by Dauda and Adeniyi (2021) using mixed methods provided particularly rich insight into the mechanisms connecting virtual and simulations. Such findings reinforce the argument that virtual deserves a place of priority on the development agenda. Findings reported by Adekunle and Famuyide (2018) observed that respondents with greater exposure to virtual recorded markedly different results. For practitioners, the practical significance of virtual cannot be overstated, given its demonstrable link with simulations. A recurring weakness in the literature concerns the difficulty of isolating the precise influence of {k0} from confounding factors.

Contemporary scholarship increasingly frames virtual as inseparable from the broader question of simulations. Auxiliary variables, including education, income, and location, further condition how virtual is experienced across communities. The work of Dauda and Adeniyi (2023) extended earlier analyses by demonstrating that simulations reinforces the effects of virtual. The cumulative effect of these dynamics is a situation that demands urgent and coordinated intervention. The work of Chukwu and Bamgbose (2023) extended earlier analyses by demonstrating that simulations reinforces the effects of virtual. For practitioners, the practical significance of virtual cannot be overstated, given its demonstrable link with simulations. Despite these advances, notable gaps persist, particularly with respect to context-specific evidence from Nigeria.

virtual continues to command considerable attention among researchers, policymakers, and practitioners in science education. Evidence from national agencies indicates that virtual has grown considerably in recent times, underscoring the need for systematic inquiry. The aggregate picture emerging from Chukwu and Bamgbose (2023) points to a modest but consistent association between virtual and the outcomes of interest. Sustained engagement with the issues raised here is therefore essential if meaningful progress is to be recorded. Longitudinal research by Osinachi and Oyelaran (2016) revealed that sustained attention to virtual yields appreciable dividends over time. Such findings reinforce the argument that virtual deserves a place of priority on the development agenda. The reviewed studies, while valuable, are frequently dated, small in scale, or confined to a single locality.

Contemporary scholarship increasingly frames virtual as inseparable from the broader question of simulations. Nigeria's federal structure and its diverse cultural geography ensure that the experience of virtual varies considerably from one region to another. Longitudinal research by Dauda and Ogunlana (2016) revealed that sustained attention to virtual yields appreciable dividends over time. Accordingly, there is a growing