# BINDURA UNIVERSITY OF SCIENCE EDUCATION

## FACULTY OF AGRICULTURE AND ENVIROMENTAL SCIENCE

## DEPARTMENT OF ENVIROMENTAL SCIENCE




**FROM SEMESTERIZATION TO MODULAR LEARNING: STAFF AND STUDENT PERCERPTIONS OF THE TRANSITION AT BINDURA UNIVERSITY OF SCIENCE EDUCATION**

**By**

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# DECLARATION

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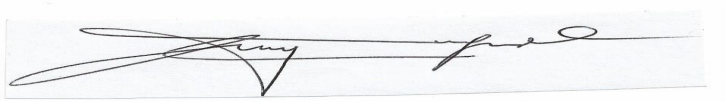
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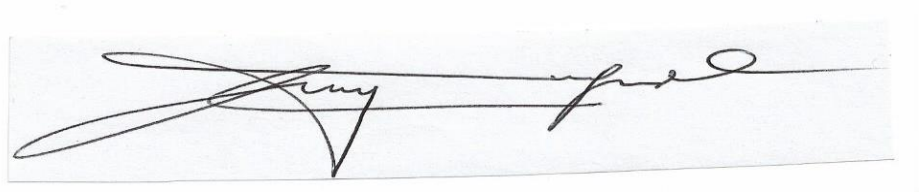
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This dissertation is suitable for submission to the faculty and has been checked for conformity with the faculty guidelines.

Signature of the supervisor……

……Date…13 July 2026…….

**Chairperson:** Mr Nyamugure **Signature**



**…… Date 13 July 2026……..**

# DEDICATION

This research project is dedicated to my family and friends, whose unwavering support made it possible.

# ACKNOWLEDGEMENTS

I extend my sincere gratitude to my supervisor for their guidance, intellectual support, and patience from the inception to completion of this research project. I am also grateful to the Registrar of Bindura University of Science Education for granting me the permission to conduct this study at the university. Special appreciation to my family for the emotional support and the love. Above all, I thank the Lord Almighty for His direction and the strength to see this through.

# ABSTRACT

**Background:** Higher education systems in Zimbabwe have undergone significant structural reform under the government's Education 5.0 philosophy, which mandates that universities advance five pillars: research, teaching, innovation, community service, and industrialization. As part of the reform agenda, Bindura University of Science Education (BUSE) adopted modular learning in February 2022, replacing a semesterised delivery model with a block system in which students focus on two to three subjects within six-week blocks before sitting examinations and progressing to the next module.

**Objectives:** This study investigated staff and student perceptions of the transition from semesterisation to modular learning at BUSE's Faculty of Agriculture and Environmental Science. It examined how both groups perceive the modular system in terms of teaching and learning quality, assessment and workload, and the extent to which modular delivery supports Zimbabwe's Education 5.0 goals. The study also identified key challenges and opportunities arising from the transition and proposed evidence-based recommendations for improvement.

**Methods: A mixed methods convergent parallel research design was adopted. Structured questionnaires comprising Likert-scale items and open-ended questions were administered via Google Forms to 54 student respondents using proportionate stratified random sampling and to 6 academic staff selected from a total population of 28 staff using the Yamane (1967) formula at a 35% margin of error, yielding a sample of 6. Quantitative data were analyzed using descriptive statistics and qualitative data were analyzed using Braun and Clarke's (2006) six-step thematic analysis framework.**

**Key Findings:** Students valued focused, concentrated study as the primary benefit of modular delivery, with 67.9% agreeing that the system allows deeper focus on each subject. However, 52.8% reported excessive examination pressure, and significant concerns were raised about inadequate laboratory resources, surface-level learning, and administrative failures in results processing linked to late registration and student portal limitations. Staff perceptions were considerably more critical: all five staff who responded to the preference item preferred a return to semesterisation, 83.3% agreed the modular system creates an unsustainable workload rhythm, and the majority rated Education 5.0 alignment negatively. Both groups identified the

per-block payment of part-time lecturers as the primary institutional driver of modular adoption.

**Conclusion:** The modular system at BUSE delivers genuine focusing benefits for students but generates serious challenges in workload management, practical teaching adequacy, administrative infrastructure, and Education 5.0 alignment. The study recommends an urgent consultative institutional review of the modular system, upgrading of the results management portal, reinvestment of financial savings into laboratory resources, and a national evidence-based review of modular learning implementation across Zimbabwean state universities.

Keywords: modular learning, semesterisation, block scheduling, Education 5.0, stakeholder perceptions, BUSE, Zimbabwe, higher education reform

# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| **A** | Agree |
| **BUSE** | Bindura University of Science Education |
| **BSc** | Bachelor of Science |
| **D** | Disagree |
| **FAES** | Faculty of Agriculture and Environmental Science |
| **GZU** | Great Zimbabwe University |
| **MoHTEISTD** | Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development |
| **MSU** | Midlands State University |
| **N** | Neutral |
| **NUST** | National University of Science and Technology |
| **SA** | Strongly Agree |
| **SD** | Strongly Disagree |
| **SHEM** | Safety, Health and Environmental Management |
| **UZ** | University of Zimbabwe |

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# CHAPTER ONE

# INTRODUCTION

## 1.1 Background to the Study

Higher education systems around the world have been reshaped by structural reforms driven by national development priorities and changing expectations of what universities should deliver (Tight, 2019). Among these changes are shifts in how academic programs are organized and delivered. The move from semesterisation to modular learning is a big change for universities. It affects how we organize what we learn, how teachers teach and how students are assessed. (Chikwature & Oyedele, 2017).

Modularization generally involves breaking academic programs into smaller, self-contained units that are taught and assessed within short blocks rather than spread across an entire semester. While institutional administrators have often championed this approach because it can help more students graduate faster, make things more flexible and save resources, research consistently shows that staff and students hold a range of views and of these some positive whilst others are skeptical as to what modular learning actually means for their day-to-day academic lives.

In Zimbabwe, higher education reform has been strongly shaped by the government's Education 5.0 philosophy, which repositions universities as engines of innovation and national development. Education 5.0 identifies five core pillars that institutions must advance: teaching, innovation, community service, research, and industrialization (Zimbabwe Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development [MoHTEISTD], 2020). Officially expressed between 2017 and 2019, this thinking represents a clear departure from purely academic models of university education toward systems that are practically oriented and responsive to Zimbabwe's socio-economic challenges, particularly the national goals captured in Vision 2030. The policy has driven wide-ranging curriculum reforms, including the development of credit-based learning systems and new delivery modes intended to align university activities more directly with industrialization goals.

Within this broader reform agenda, modular learning has emerged as one of the key delivery strategies adopted across Zimbabwean state universities. The University of Zimbabwe pioneered the approach, after which several institutions like Great Zimbabwe University, Chinhoyi University of Technology, Midlands State University, the National University of Science and Technology, and Bindura University of Science Education adopted plus adapted it to their specific institutional contexts. In the Zimbabwean model, each semester is divided into two short blocks, during which students focus on two or three subjects before sitting examinations and moving on to the next set of modules.

Bindura University of Science Education (BUSE), situated in Mashonaland Province formally adopted this modular system in February 2022 as part of its institutional response to the Education 5.0 agenda and it was also incorporated to help lower pressure and stress which were as a result of having seven to eight modules per semester during Covid 19 era in which face to face lectures were carried for about two weeks then exams. Under the previous semesterised system, students studied multiple subjects concurrently across two extended semesters each academic year. The move to modular delivery changed this, requiring students to concentrate on fewer subjects at a time within compressed teaching windows. The transition was presented by management as a way to maximize learning, reduce unnecessary contact hours, and respond to pressures on physical infrastructure and large student enrolments. However, early indicators suggest that not everyone welcomed the change with equal enthusiasm. Some lecturers raised concerns about its effects on teaching quality, workload, and the depth of learning possible within such compressed timeframes — concerns that echo findings from international studies on the challenges of highly modular systems (Hlalele & Khumalo, 2019).

Given that BUSE is specifically mandated to advance science education and contribute to national development through Education 5.0, it is important to understand how the key people living through this transition (staff and students) are actually experiencing it. Their perceptions shape how they implement the curriculum, engage with teaching and learning, and ultimately whether the institution can deliver on its five-pillar mandate. Since modular learning at BUSE commenced in 2022, there is a clear need for empirical evidence on how these stakeholders

make sense of the change, what they see as working, and where they feel the system is falling short.

## 1.2 Statement of the Problem

Since the introduction of modular learning at BUSE in 2022, the system has been implemented without a formal, evidence-based assessment of how it is perceived by the people it most directly affects. Academic staff have had to adapt their pedagogy, restructure their content delivery, and redesign assessments to fit compressed teaching blocks. Students, in turn, have had to rethink how they manage their time, approach their studies, and prepare for examinations under a system quite different from what many previously experienced. Yet the experiences and perceptions of both groups remain largely undocumented.

The problem is compounded by the fact that the transition was justified primarily as an administrative and structural reform aligned to Education 5.0, without sufficient evidence that staff and students actually perceive it as advancing that philosophy in practice. Cummings et al. (2016) argue that institutional reforms that are not accompanied by meaningful stakeholder orientation and a shared sense of purpose tend to produce resistance and underperformance. Without data on how BUSE's stakeholders are experiencing this transition, management cannot make informed, targeted improvements to the system.

Preliminary commentary from the institution indicates that some lecturers are skeptical or openly resistant to the modular system, raising questions about its effects on teaching practice and student learning outcomes. Common concerns in the literature such as fragmented assessment loads, surface-level learning, reduced opportunities for deep engagement, and increased workload have also been raised in the Zimbabwean context. Yet there is still no systematic study focused on BUSE that addresses these issues empirically.

The problem this study addresses is therefore the absence of stakeholder perception data on BUSE's transition from semesterisation to modular learning, and the resulting inability to assess whether this transition is genuinely supporting or undermining the attainment of Education 5.0 goals within the Faculty of Agriculture and Environmental Science.

## 1.3 Purpose of the Study

The intent behind this project is to investigate how academic students and staff in BUSE's Faculty of Agriculture and Environmental Science perceive the transition from semesterisation to modular learning since its introduction in 2022. The study seeks to explore how these key stakeholders understand, experience, and respond to the modular system in relation to teaching, learning, assessment, and workload. Equally, it aims to examine the extent to which staff and student perceptions suggest that modular learning is facilitating or constraining the implementation of Education 5.0 mandates, particularly those concerning innovation and industrialization, within a science-focused institutional setting.

### 1.4 Research Objectives

The objectives of the study are as follows:

1. To assess the perceptions of academic staff in BUSE's Faculty of Agriculture and Environmental Science regarding the transition from semesterisation to modular learning since 2022.
2. To explore student perceptions of the modular learning system in comparison to the semesterised system previously in use.
3. To assess the extent to which staff and students perceive modular learning as supporting the goals of Zimbabwe's Education 5.0 philosophy.
4. To identify the key challenges and opportunities that have emerged from the transition for both staff and students.
5. To provide evidence-based ways to enhance the implementation practice of modular learning at BUSE in alignment with Education 5.0.

### 1.5 Research Questions

The following research questions guide the study:

1. How do academic staff in BUSE's Faculty of Agriculture and Environmental Science perceive the transition from semesterisation to modular learning introduced in 2022?
2. What are the perceptions of students regarding the modular learning system relative to the semesterised system previously in use?

3. To what extent do staff and students perceive modular learning as effectively advancing the goals of Zimbabwe's Education 5.0 philosophy?
4. What challenges and opportunities have staff and students identified as a result of the transition to modular learning?
5. What recommendations can be made to improve the implementation of modular learning at BUSE in alignment with Education 5.0?

## 1.6 Significance of the Study

The study holds significance at a number of levels. At the institutional level, the findings will give BUSE's management and faculty leadership direct, evidence-based feedback from the people at the center of the reform (staff and students) and can inform decisions about how to refine and strengthen modular learning going forward.

At the national policy level, the study contributes to a wider evaluation of Zimbabwe's Education 5.0 agenda by providing ground-level evidence of how the philosophy is being experienced within environmental science faculty context. Policymakers and curriculum designers may draw on these findings when reviewing the alignment between modular delivery structures and Education 5.0 outcomes (MoHTEISTD, 2020).

This study looks at how universities in Zimbabwe are changing to modular systems, which has not been studied much before. It’s one of the few ways to examine this change, especially considering the country’s education policies (Muzvidziwa & Muzvidziwa, 2018). It therefore adds original data to an underrepresented area of African higher education research. Its findings may also be useful to other Zimbabwean universities undertaking similar transitions, by surfacing lessons and highlighting practices that appear to be working at BUSE since 2022. More broadly, it also contributes to international scholarship on modularization and semesterisation by presenting lessons from a developing-country context where curriculum transformation is closely tied to state-driven industrialization and heritage-based innovation goals.

## 1.7 Delimitations of the Study

This research is delimited to the Faculty of Environmental Science at BUSE and focuses specifically on academic staff and registered students within that faculty. It does not extend to other faculties at BUSE or to other Zimbabwean universities, though the findings may carry broader relevance for institutions handling similar transitions. It examines perceptions of the transition instead of measuring objective academic performance. It does not seek to verify a causal relationship between the modular system and student results. It only looks from 2022, when modular learning was introduced at BUSE, up to the point of data collection implying that the study captures perceptions following at least one complete cycle of modular blocks.

### 1.8 Limitations of the Study

As with all perception-based research, the findings will reflect participants' subjective experiences and may not be fully generalizable to other faculties or institutions. Some participants might give answers they think are expected of them and this may influence some responses, particularly in staff interviews. These risks will be mitigated through the use of anonymous questionnaires for students and confidentiality will be assured for all participants. The use of mixed methods will make results more reliable and trustworthy (Creswell & Creswell, 2018).

Modular learning is still relatively new at BUSE and due to this, some participants' views may still be evolving as they adjust to the system. Therefore, the study may fail to capture long-term impacts on learning outcomes or Education 5.0 indicators such as innovation outputs or industrialization projects. In addition, data gathered from one institution will be shaped by its specific situation that is its institutional culture, resource environment, and management approach therefore caution should be exercised in applying the findings more broadly.

### 1.9 Definition of Key Terms

Semesterisation: Teaching approach that organizes the academic year into two main semesters, typically lasting between 15 and 18 weeks each, during which students study multiple subjects at the same time (Ogundele & Akinsanya, 2019).

Modular learning: Is a teaching approach in which students dive deeply into one or a small number of subjects within a defined block of time before progressing to the next module, emphasizing depth over breadth of study (Hlalele & Khumalo, 2019).

Education 5.0: Zimbabwe's national higher education philosophy, identifies innovation, teaching, community service, research, and industrialization as the five pillars that universities must advance in order to contribute to national development (MoHTEISTD, 2020).

Perceptions: The interpretations, attitudes, beliefs, and personal opinions that staff and students hold regarding the modular learning system and its implementation at BUSE (Vongalis-Macrow, 2016).

Stakeholders: In this study, stakeholders refer specifically to academic staff and registered undergraduate students within BUSE's Faculty of Agriculture and Environmental Science, as the individuals most directly affected by the transition from semesterisation to modular learning.

Bindura University of Science Education (BUSE): A university in Zimbabwe providing courses in the field of technology, mathematics, science, engineering, commerce, social sciences and science education, located in Mashonaland Province, Bindura, which formally adopted modular learning in February 2022 as part of its alignment to Education 5.0.

### 1.10 Overview of the Study

Six chapters are organized into this dissertation. First chapter introduces the study, presents the background, problem statement, research objectives and questions, significance, delimitations, limitations, and key terms. Chapter Two presents a critical review of existing literature on semesterisation, modular learning, stakeholder perceptions of academic transitions, and Education 5.0, resulting in a conceptual framework for the study. The third chapter describes research methodology, inclusive of the research design, population and sampling strategy, data collection instruments, and data analysis procedures. Fourth chapter presents the findings from both the student questionnaires and staff interviews. Chapter Five discusses the findings in line with the existing literature and the study's research questions.

Chapter Six presents the study's conclusions, recommendations, limitations, and suggestions for future research.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.1 Introduction

This chapter examines existing literature that is applicable to the study's central concern: understanding how academic staff and students at Bindura University of Science Education (BUSE) perceive the transition from semesterisation to modular learning within the framework of Zimbabwe's Education 5.0 agenda. The review is organised into four specific sections. Firstly, it examines literature on semesterisation as an academic delivery model, before exploring in depth what the available evidence says about modular learning, including its origins, intended benefits, and documented challenges. The chapter then turns to research on stakeholder perceptions of curriculum reform, drawing on both international and African studies to evaluate how staff and students typically deal with and react to major changes in academic delivery. It concludes with a focused review of Zimbabwe's Education 5.0 philosophy, exploring its policy foundations, its implications for curriculum design and delivery, and the critical questions it raises for institutions like BUSE's Faculty of Agriculture and Environmental Science.

## 2.2 Semesterisation as an Academic Delivery Model

The semesterisation system is a well-recognized method for organizing university education, dividing the academic year into two main teaching periods, each generally lasting from 15 to 18 weeks. During these periods, students study multiple subjects at the same time and are assessed at or near the end of each semester (Ogundele & Akinsanya, 2019). This model has been the primary mode of program delivery in sub-Saharan African universities for many years, mainly because it was inherited from colonial university systems and aligns well with the annual academic calendar (Tight, 2019). In Zimbabwe, semesterisation has been the standard practice in both the natural and social sciences, influencing how educators plan their teaching and how students structure their learning throughout the academic year.

Those in favor of semesterisation argue that its extended timeframe allows students to interact with lessons at a deeper, more sustained level. The extended teaching window provides

educators with the time to build progressively on foundational concepts, to incorporate practical and laboratory-based work, and to provide ongoing formative feedback before students undergo summative assessments (Ogundele & Akinsanya, 2019). In departments such as environmental science, where field investigations, laboratory analysis, and the integration of complex ecological concepts all require iterative practice and reflection, the semesterised format has been regarded as particularly suitable. The time available in a full semester allows students to move through stages of conceptual understanding that cannot easily be compressed without risking superficiality.

Although semesterisation has a lengthy history, it has faced considerable criticism. A common issue raised is that studying five or more subjects simultaneously during a lengthy semester can divide student focus and diminish their engagement with any one subject (Chikwature & Oyedele, 2017). When students must spread their mental energy on multiple subjects, the time and focus available for any one course is significantly lessened. Chikwature and Oyedele (2017) found that according to Zimbabwean context, students in semesterised programmes frequently resorted to surface learning techniques, particularly rote memorization and last-minute exam preparation rather than the deep, integrative engagement that science disciplines demand. Researchers have also noticed that assessment bunching at the end of semesters placed too much pressure on both students and lecturers within a very short final period, thereby undermining the quality of both student preparation and academic marking. These critisms have been among the many reasons offered by Zimbabwean university administrators for the shift toward modular learning, even though the evidence of modularization as a better option remains debated.

### 2.3 Modular Learning: Concepts, Evidence, and Challenges

Academic programmes are reorganized into discrete, self-contained units that are delivered in concentrated brief periods of time through modular learning, also referred to as block scheduling or intensive block teaching, (Hlalele & Khumalo, 2019). In modular system, students focus on one or a small number of subjects intensively over a block of approximately four to eight weeks before moving on to the next module as opposed to studying multiple subjects simultaneously across an extended semester. Each semester is split into two blocks of approximately six weeks under the Zimbabwean model, as adopted by BUSE and several other

state universities. Formal examinations are held at the end of each block (Chikwature & Oyedele, 2017). This approach's pedagogical justification is based on cognitive load theory, which holds that by focusing on fewer subjects at a time, students can devote more mental energy to each module, potentially leading to deeper comprehension and more targeted skill development.

International evidence on the effectiveness of modular and block teaching presents a mixed picture. Scott (2016), reviewing block scheduling in higher education settings in North America, found that students in intensive formats demonstrated higher rates of content mastery per unit, attributing this to reduced cognitive fragmentation and a heightened sense of focus and urgency. Similarly, Henebry (2017) reported improved attendance and student engagement in block-scheduled courses, noting that the finite duration of each module created a motivating momentum that sustained student effort. These findings suggest that, under the right conditions, modular delivery can be a genuinely effective pedagogical strategy.

Nonetheless, a significant amount of research highlights issues that are specifically pertinent to the BUSE Environmental Science setting. Assessment overload is arguably the most frequently mentioned issue. The cumulative assessment burden over the course of an academic year increases significantly when students are required to finish formal exams at the conclusion of each six-week block (Hlalele & Khumalo, 2019). Because passing each block becomes more important than integrating knowledge across the larger curriculum, this high frequency of assessment can paradoxically push students toward surface strategies rather than deep engagement. According to Kember (2016), subjects that call for the gradual development of technical skill like environmental science, where laboratory proficiency, field methodology, and data analysis all build cumulatively are especially susceptible to this limitation because true depth of learning is intrinsically limited by compressed timeframes.

The challenge is especially acute for science-based disciplines where practical and laboratory work depends on iterative experience and gradual skill accumulation. Hlalele and Khumalo (2019) found in their study of block scheduling in a South African higher education context that science staff expressed particular concern about the adequacy of time available for laboratory sequences, fieldwork, and the supervised development of practical competencies within compressed blocks. Students, meanwhile, reported that the pace of modular delivery

often left them feeling rushed and underprepared for practical assessments. These findings resonate strongly with the Environmental Science context at BUSE, where practical field investigations, environmental monitoring, and laboratory analysis are central to the academic programme and difficult to restructure around six-week teaching windows without compromising depth and rigour.

In the Zimbabwean higher education context specifically, studies on modular learning remain limited because the widespread adoption of the model across state universities is relatively recent. Muzvidziwa and Muzvidziwa (2018) offer a useful broader analysis of curriculum transformation in Zimbabwe, noting that reform efforts have historically been characterised by top-down policy implementation without sufficient attention to institutional readiness, staff capacity, or evidence-based planning. Their observations apply directly to the modular transition: in many institutions, including BUSE, the shift from semesterisation to modular learning was implemented as a policy directive rather than as the outcome of a careful, evidence-grounded institutional review. This has implications for how the reform is experienced by those it most directly affects.

### 2.4 Stakeholder Perceptions of Academic Reform

The success or failure of curriculum reform in higher education increasingly depends not only on its structural design but on how it is perceived and experienced by the people it most directly affects (Vongalis-Macrow, 2016). Perceptions matter because they shape behavior: the way lecturers design their teaching, how students approach their learning, and the degree of institutional commitment to a reform are all influenced by whether staff and students regard the change as legitimate, well-conceived, and genuinely beneficial. Reforms that are perceived as imposed, poorly communicated, or misaligned with professional values tend to produce compliance without genuine engagement which is a form of surface-level adoption that does not translate into the deeper transformations that curriculum reform seeks to achieve (Cummings et al., 2016).

Academic staff perceptions of curriculum reform are shaped by a cluster of recurring concerns that appear consistently across international studies. Workload is perhaps the most persistently reported challenge. Transitioning to a new delivery model requires lecturers to redesign course

materials, restructure assessments, and develop new pedagogical approaches, all of which involve significant additional effort that is rarely formally recognized or compensated (Hlalele & Khumalo, 2019). In modular systems specifically, the compressed nature of each teaching block means that assessment design, marking, and feedback are conducted in continuous and rapid cycles, creating a workload rhythm that many staff describe as relentless and professionally unsustainable. Staff in science disciplines also express concern that compressed teaching schedules reduce opportunities for the formative feedback, student consultation, and supervised practical development that characterize high-quality science education (Kember, 2016).

The manner in which reform is introduced also shapes staff perceptions significantly. Studies consistently show that reforms perceived as top-down or introduced without meaningful consultation, adequate explanation, or genuine opportunities for staff input generate stronger resistance and lower implementation fidelity than those accompanied by transparent communication and participatory planning (Cummings et al., 2016). Vongalis-Macrow (2016) makes the important observation that academic staff are not passive recipients of change: they bring professional identities, disciplinary knowledge, and accumulated pedagogical experience to every reform process, and when those are perceived to be overridden or ignored, resistance is not simply stubbornness but a reasoned professional response. Understanding the basis of staff resistance is therefore essential to improving the design and communication of institutional reforms.

Student perceptions of academic reform are equally important and frequently complex. Research on student experiences of modular learning shows a consistent pattern of mixed responses. On the positive side, many students appreciate the focused nature of modular study, reporting that concentrating on fewer subjects at a time reduces the sense of cognitive fragmentation that semesterisation can produce and creates a clearer sense of forward momentum as they progress through discrete units of study (Scott, 2016). The shorter duration of each module also provides a motivating structure for students who struggle to sustain engagement over long semesters.

However, many students also report significant difficulties. Assessment overload is a frequently cited concern: the requirement to prepare for and sit formal examinations at the end

of every six-week block creates intense and recurring pressure, leaving little room for consolidation, deep reflection, or academic recovery for students who fall behind (Hlalele & Khumalo, 2019). Students in resource-constrained institutional contexts also face practical challenges that compound these difficulties. Where library resources, laboratory equipment, and digital learning materials are limited — as is the case in many Zimbabwean universities — the demands of intensive block teaching can outpace students' ability to access what they need to engage meaningfully with the content (Muzvidziwa & Muzvidziwa, 2018). In the Environmental Science context at BUSE, where access to fieldwork sites, specialized laboratory equipment, and current environmental data is central to effective learning, these resource constraints may be particularly acute.

### 2.5 Education 5.0 and Curriculum Reform in Zimbabwe

Zimbabwe's Education 5.0 philosophy was formally articulated between 2017 and 2019 under the direction of the Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development (MoHTEISTD, 2020). It represents an ambitious attempt to reposition Zimbabwean universities as active contributors to national economic transformation, moving beyond the traditional academic mandate of teaching and research to embrace innovation and industrialization as core institutional missions. The framework identifies five pillars that all higher education institutions must advance: teaching, research, community service, innovation, and industrialization. This five-pillar structure signals a fundamental shift in what universities are expected to produce not only graduates with academic qualifications, but individuals with the entrepreneurial competencies, practical skills, and problem-solving orientation needed to drive Zimbabwe's Vision 2030 development agenda.

For Environmental Science programmes, Education 5.0 carries particularly significant implications. The philosophy's emphasis on heritage-based innovation with the idea that Zimbabwe's development should be grounded in local knowledge, natural resources, and cultural context aligns naturally with environmental science's focus on understanding and managing the natural world. An Education 5.0-compliant environmental science programme would be expected not only to teach ecological principles and environmental management frameworks but to produce graduates capable of applying those frameworks to real

Zimbabwean environmental challenges: land degradation, water resource management, biodiversity conservation, and the environmental dimensions of industrialization (MoHTEISTD, 2020). The shift to modular learning has been positioned within this agenda as a delivery mechanism capable of creating more frequent opportunities for innovation-linked project work, field-based community engagement, and the practical application of learning within compressed but focused teaching windows.

However, critical perspectives on Education 5.0 raise important questions about whether institutional conditions in Zimbabwe are adequate to realize these ambitions in practice. Muzvidziwa and Muzvidziwa (2018) argue that curriculum transformation in Zimbabwe has historically been shaped more by political priorities than by evidence-based pedagogical planning, and that Education 5.0 risks perpetuating this pattern. They point to persistent underfunding, staff shortages, and inadequate laboratory and digital infrastructure across many state universities as conditions that are fundamentally at odds with the innovation-driven, practically oriented learning that Education 5.0 envisions. For a Faculty of Environmental Science, these material constraints are not abstract: they affect the availability of field equipment, the quality of laboratory facilities, access to current environmental monitoring data, and the capacity of staff to develop and supervise meaningful innovation and community engagement projects alongside their teaching responsibilities.

Teferra and Altbacker (2016), writing about African higher education reform more broadly, observe that policy frameworks that mandate ambitious pedagogical transformation without commensurate investment in staff development, infrastructure, and institutional support tend to produce uneven and superficial implementation. Applied to the BUSE context, this suggests that the extent to which modular learning genuinely advances the five pillars of Education 5.0 in the Faculty of Agriculture and Environmental Science rather than simply reorganizing the scheduling of existing teaching depends heavily on whether the conditions exist for lecturers and students to bring the philosophy to life within the new delivery structure. Without empirical evidence on how staff and students are actually experiencing this transition, it is impossible to assess whether the reform is achieving its stated aims or merely adding structural complexity to an already pressured academic environment.

## 2.6 Summary

This chapter has reviewed literature significance to key themes of this study. The review of semesterisation highlighted both its well-established strengths, particularly for science disciplines requiring progressive, deep engagement and the documented weaknesses that have motivated reform, including fragmented student attention and assessment bottlenecks. The critical examination of modular learning revealed a complex and contested evidence base: while some international studies report improved focus and engagement, a consistent body of research points to assessment overload, constrained depth of learning, and particular difficulties in science-based and resource-limited contexts. The review of stakeholder perceptions showed that staff and student views are central to the success of any curriculum reform, and that reforms introduced without meaningful consultation and support tend to generate resistance rather than genuine transformation. Finally, the review of Education 5.0 demonstrated that while Zimbabwe's higher education philosophy is ambitious and coherent in its goals, its implementation raises critical questions about institutional readiness, resource adequacy, and the gap between policy aspiration and pedagogical reality.

Together, literature that is reviewed in this chapter supports that the transition from semesterisation to modular learning at BUSE's Faculty of Agriculture and Environmental Science occurs within a landscape shaped by competing pressures: the demands of a nationally mandated reform philosophy, the distinctive requirements of environmental science education, resource constraints, and the varied perceptions of the staff and students who must make the system work in practice. The gaps in the literature, particularly absence of systematic empirical research on how BUSE stakeholders perceive this specific transition and its alignment with Education 5.0 provide the justification for the present study. Chapter next describes the research methodology through which this empirical investigation is carried out.

# CHAPTER THREE

# RESEARCH METHODOLOGY

## 3.1 Introduction

The chapter explains the research methodology adopted for the study. It outlines the research design, the study area, the target population, the sampling strategy, sample size determination, the data collection instruments, the procedures followed in administering those instruments, plus the methods used to analyze the data. The chapter also addresses the ethical considerations observed during research process. Methodological choices made here are aligned with the study's aim of investigating staff and student perceptions of the transition from semesterisation to modular learning at BUSE's Faculty of Agriculture and Environmental Science, within the framework of Zimbabwe's Education 5.0 philosophy.

## 3.2 Research Design

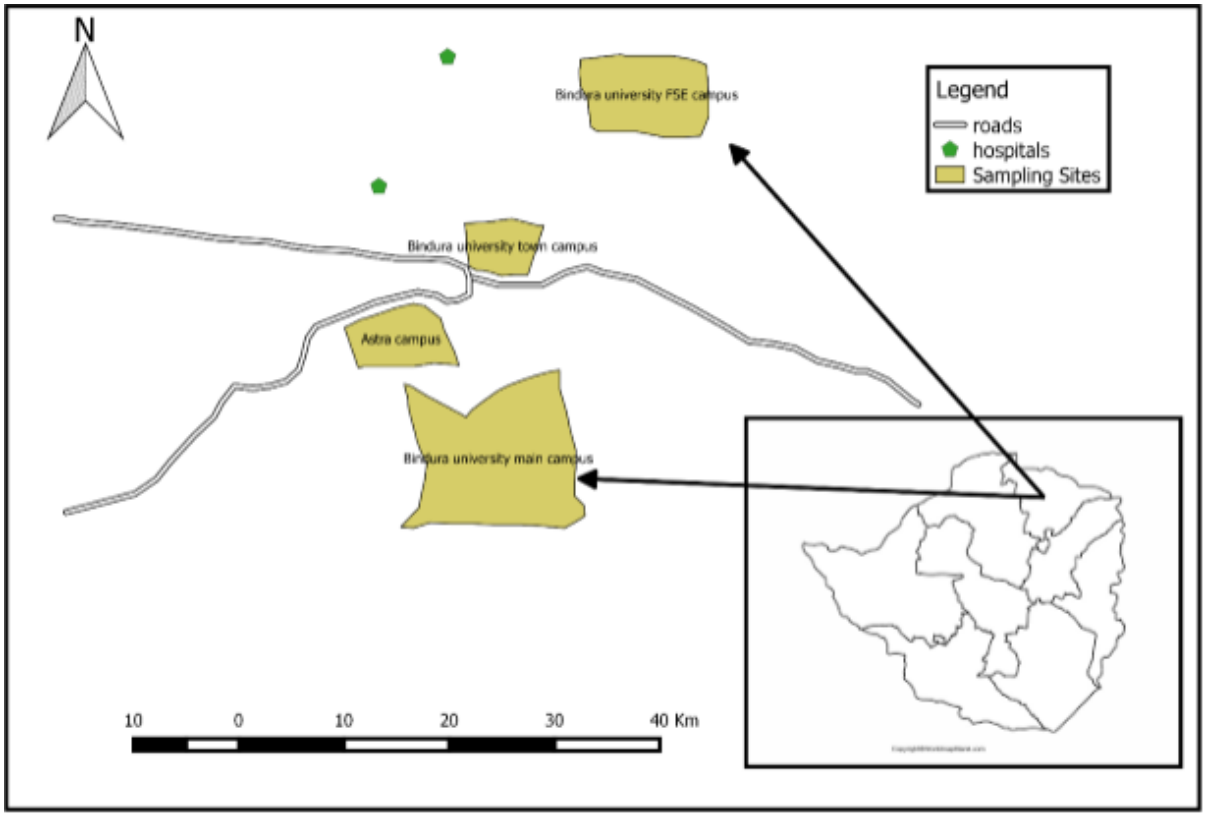
A mixed methods research design, combining qualitative and quantitative approaches to develop a complete understanding of how staff and students perceive the modular learning transition at BUSE was adopted by the study. Creswell and Creswell (2018) argue that mixed methods designs are particularly well suited to perception-based studies in educational settings because they allow numerical data to reveal patterns across a group while qualitative responses provide the depth and nuance needed to interpret those patterns meaningfully. The quantitative strand was implemented through structured questionnaires with Likert-scale items, while the qualitative strand drew on open-ended questions appended to the same instruments. This convergent parallel design allowed both data types to be collected simultaneously and triangulated at analysis stage, strengthening the credibility and trustworthiness of the findings (Creswell & Creswell, 2018).

## 3.3 Study Area

The study was done at Bindura University of Science Education (BUSE), located in Bindura, Mashonaland Central Province, Zimbabwe. Specifically, it was delimited to the Faculty of Agriculture and Environmental Science, which houses the Department of Environmental Science and its associated undergraduate programmes. BUSE formally adopted modular

learning in February 2022, making its Faculty of Agriculture and Environmental Science an appropriate and timely site for examining stakeholder perceptions of the transition, particularly in a science-based context where practical and laboratory work plays a central role in programme delivery.

*Figure 1: Map showing BUSE and its campuses*




### 3.4 Target Population

Target population in study comprised two groups. First was the student population enrolled in the Faculty of Agriculture and Environmental Science across graduating classes of 2023 to 2026. The class of 2023 comprised 1,202 students; the class of 2024 comprised 1,253 students; the class of 2025 comprised 916 students; and the class of 2026 comprised 1,389 students, giving a total student population of 4,760. These cohorts were selected because they collectively span the period before, during, and after the introduction of modular learning at BUSE in 2022, thereby capturing a range of experiences of both systems. The second group was the academic staff in the Faculty of Agriculture and Environmental Science, which at time of study comprised twenty eight lecturers. For study purposes, only those staff members who

had direct experience of teaching under both the semesterised and the modular systems were considered eligible participants, as comparative experience was essential for the study's objectives.

### 3.5 Sampling Strategy and Sample Size

#### 3.5.1 Student Sample

A proportionate stratified random sampling technique was employed to choose student participants. Total student population of 4,760 was stratified by graduating class (2023, 2024, 2025, and 2026), and participants were sampled per stratum in proportion to share of total population. Required sample size was determined using the Cochran (1977) formula for an infinite population, subsequently corrected for the finite population size:

$$n_0 = (Z^2 \times p \times q) / e^2 = (1.96^2 \times 0.5 \times 0.5) / 0.13^2 \approx 56.8$$

$$n = n_0 / (1 + n_0/N) = 56.8 / (1 + 56.8/4760) \approx 56.1$$

Where Z = 1.96 (95% confidence level), p = 0.5 (maximum variability), q = 0.5, e = 0.13 (13% margin of error, appropriate for a perception-based study in a single institution), and N = 4,760. The corrected sample size of approximately 56 yielded a practical target of 54 usable responses, which fell within the computed range and was accepted as sufficient for the purposes of this study. The proportionate allocation across strata is presented in Table 3.1 below.

**Table 3.1: Proportionate Stratified Student Sample by Class**

| | | | |
|---|---|---|---|
| 2023 | 1,202 | 25.3 | 14 |
| 2024 | 1,253 | 26.3 | 14 |
| 2025 | 916 | 19.2 | 10 |
| 2026 | 1,389 | 29.2 | 16 |
| | | | |

#### 3.5.2 Staff Sample

For the academic staff component, the Yamane (1967) formula was applied to determine the required sample size from the total staff population of 28. Using a margin of error of 35%, which is academically appropriate for a small, homogeneous population within a single faculty, the formula yielded a sample size of 6: $n = N / (1 + Ne^2) = 28 / (1 + 28 \times 0.35^2) = 28 / (1 + 3.43) = 28 / 4.43 \approx 6$ Six staff members were therefore sampled. Of these, all six responded to the questionnaire. For the comparative dimension of the study, which required experience of both the semesterised and modular systems, three of the six respondents confirmed in Section A6 of the staff questionnaire that they had taught under both systems. These three constitute the purposive sub-sample whose comparative perceptions are central to the cross-system analysis. The remaining three respondents joined BUSE after the 2022 transition and had no prior teaching experience under semesterisation. Their responses are nonetheless reported in full as they contribute to the overall staff picture of the modular system.

### 3.6 Data Collection Instruments

Two structured questionnaires were developed as primary data collection instruments: one for students and one for academic staff. Both were administered electronically via Google Forms to facilitate wider and more convenient access, and because the university context is one in which digital access is available to both staff and registered students. Questionnaires were divided into five sections: Section A collected demographic information; Sections B, C, and D contained Likert-scale items covering perceptions of the modular system, assessment and workload, and Education 5.0 alignment respectively; and Section E contained open-ended questions designed to capture qualitative insights that the structured scales could not fully elicit.

The student questionnaire comprised 26 Likert-scale items and five open-ended questions. The Likert scale used a five-point response format ranging from Strongly Agree (5) to Strongly Disagree (1).Staff questionnaire was similarly structured but included 26 Likert-scale items and six open-ended questions, with an additional item in Section E inviting general observations on the transition. Both instruments were piloted informally with a small number of colleagues and students prior to full distribution to check for clarity, length, and relevance. Minor wording adjustments were made following the pilot review.

### 3.7 Data Collection Procedure

Google Form links were shared with student participants through WhatsApp groups and email networks accessible within the Faculty of Agriculture and Environmental Science at BUSE. The staff questionnaire link was distributed to the six sampled staff members via institutional email. Participants were provided with a brief covering statement at the start of each form elaborating study purpose, voluntary nature of participation, anonymity of responses, and academic use to which the data would be put. No names or identifying information were collected. A total of 54 completed student responses and 6 staff responses were received. For the purposes of the comparative analysis, only the 3 staff respondents who confirmed in Section A6 that they had taught under both systems were included in the cross-system comparison, while all 6 responses contributed to the overall staff findings.

### 3.8 Data Analysis

Quantitative data from the Likert-scale items was interpreted using descriptive statistics, specifically frequency counts and percentages for each response option, reported as totals for each item across the Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree categories. These were presented in summary tables to allow clear comparison of patterns across items within each section. Open-ended questions qualitative data was interpreted through thematic analysis, subsequent the six-step process described by Braun and Clarke (2006): familiarization with data, generation of initial codes, themes searching, themes reviewing, naming and defining themes, and producing final analysis. Responses were grouped into recurring themes and sub-themes, with representative quotations selected to illustrate each theme. Quantitative and qualitative findings integration followed a convergent approach, whereby patterns identified in the Likert data were corroborated or expanded upon by thematic findings from the open-ended responses.

### 3.9 Ethical Considerations

All research ethical principles involving human participants were observed throughout this study. Participation was voluntary; all participants were told about research purpose and were free to discontinue participation at any time without penalty. Confidentiality was preserved by ensuring that no identifying information was collected through the questionnaire instruments.

Data were stored securely and utilized exclusively for academic research purposes of this dissertation. Staff participants were assured of confidentiality, and no individual responses are attributable to any named person in the reporting of findings. The research was conducted within the ethical guidelines of BUSE's Faculty of Agriculture and Environmental Science and in accordance with standard academic research ethics for undergraduate dissertations.

### 3.10 Summary

This chapter has outlined the mixed methods research design adopted in this study, the rationale for selecting the Faculty of Agriculture and Environmental Science as study site, and the target population of 4,760 students and 28 academic staff. It explained the use of proportionate stratified random sampling for students (yielding a sample of 54), and Yamane (1967) formula sampling for staff (n=6 from a population of 28, at 35% margin of error), with purposive sub-sampling identifying the three staff with experience of both systems. The chapter also described the development and administration of the two structured questionnaires, the procedures for data collection, the analytical approach combining descriptive statistics and thematic analysis, and the ethical protocols followed. Chapter Four presents the findings generated from this methodological framework.

# CHAPTER FOUR

# RESULTS AND FINDINGS

## 4.1 Introduction

The findings of this study are presented in this chapter in two main parts: student findings and staff findings. Each part reports results of the Likert-scale questionnaire items using frequency counts and percentages in tables, followed by interpretive paragraphs and a thematic summary of qualitative responses from the open-ended questions. The chapter is organised to address each of the study's research objectives, covering perceptions of the modular system, assessment and workload experiences, and the perceived alignment of modular learning with Zimbabwe's Education 5.0 philosophy. A total of 54 student responses and 6 staff responses were received via the Google Forms questionnaire, drawn from a staff population of 28 using the Yamane (1967) formula.

## 4.2 Student Findings

### 4.2.1 Section A: Student Demographic Profile

A sum of 54 students answered the questionnaire, to which 53 responded to the demographic questions. Table 4.1 below summarizes the demographic profile of the student respondents.

**Table 4.1: Student Demographic Profile (n=53)**

| | | | |
|---|---|---|---|
| Gender | Male | 19 | 35.8 |
| | Female | 34 | 64.2 |
| Age Group | 18–21 years | 7 | 13.2 |
| | 22–25 years | 26 | 49.1 |
| | 26–29 years | 14 | 26.4 |
| | 30 years and above | 6 | 11.3 |
| Class of | 2023 | 5 | 9.4 |
| | 2024 | 11 | 20.8 |

| | | | |
|---|---|---|---|
| | 2025 | 4 | 7.5 |
| | 2026 | 35 | 66.0 |
| Experienced semesterisation | Yes | — | — |
| | No / Not sure | — | — |

The majority of respondents were female (64.2%), consistent with the gender distribution of BSc Safety, Health and Environmental Management programme. The dominant age group was 22–25 years (49.1%), reflecting a typical undergraduate population. The class of 2026 represented the largest cohort (66.0%), as they constitute the largest currently enrolled group in the Faculty of Agriculture and Environmental Science. The class of 2023 (9.4%), 2024 (20.8%) and 2025 (7.5%) are alumni cohorts who had already graduated or were near graduation. The spread across all four classes is significant as it captures students who experienced semesterisation before 2022 as well as those who entered directly into the modular system, enabling a comparative perspective on both delivery modes.

### 4.2.2 Section B: Perceptions of the Modular Learning System

Respondents were required to rate their level of agreement with ten statements on the modular learning system. The results are presented in Table 4.2.

**Table 4.2: Student Perceptions of the Modular Learning System (n=53–54)**

| | | | | | |
|---|---|---|---|---|---|
| Modular learning allows me to focus more deeply on each subject. | 30 (56.6%) | 6 (11.3%) | 12 (22.6%) | 0 (0.0%) | 5 (9.4%) |
| Studying fewer subjects at a time in each block is beneficial to my learning. | 24 (43.6%) | 14 (25.5%) | 5 (9.1%) | 6 (10.9%) | 6 (10.9%) |
| The six-week block format gives me enough time to understand course content. | 15 (28.8%) | 11 (21.2%) | 12 (23.1%) | 6 (11.5%) | 8 (15.4%) |
| I feel more prepared for examinations under the modular system than under semesterisation. | 16 (30.2%) | 11 (20.8%) | 11 (20.8%) | 7 (13.2%) | 8 (15.1%) |

| | | | | | |
|---|---|---|---|---|---|
| The modular system has improved my overall academic performance. | 17 (32.1%) | 12 (22.6%) | 11 (20.8%) | 6 (11.3%) | 7 (13.2%) |
| The pace of teaching within each block is manageable. | 11 (20.4%) | 14 (25.9%) | 13 (24.1%) | 10 (18.5%) | 6 (11.1%) |
| Modular learning reduces the stress of studying many subjects at the same time. | 20 (38.5%) | 12 (23.1%) | 10 (19.2%) | 5 (9.6%) | 5 (9.6%) |
| I prefer the modular system to the semesterised system I previously experienced. | 20 (35.1%) | 12 (21.1%) | 14 (24.6%) | 5 (8.8%) | 6 (10.5%) |
| The modular system makes it easier to balance my studies with other commitments. | 17 (30.9%) | 14 (25.5%) | 14 (25.5%) | 5 (9.1%) | 5 (9.1%) |
| I feel that modular learning prepares me well for professional practice. | 15 (28.3%) | 14 (26.4%) | 11 (20.8%) | 7 (13.2%) | 6 (11.3%) |

Table 4.2 reveals that the strongest positive response was recorded for the statement that modular learning allows deeper focus on each subject, with 30 respondents (56.6%) strongly agreeing and a further 6 (11.3%) agreeing, giving a combined agreement rate of 67.9%. Similarly, 69.1% (SA+A) agreed that studying fewer subjects at a time is beneficial to their learning. These two items reflect the most clearly valued aspect of modular delivery: the reduction of cognitive fragmentation compared to semesterisation. Perceptions of examination preparedness were moderately positive, with 50.9% (SA+A) agreeing they feel more prepared under the modular system, though 28.3% were neutral or uncertain. The statement that the modular system has improved overall academic performance also drew majority agreement (54.7% SA+A), though 24.5% remained neutral. Perceptions of pace manageability were more divided: only 46.3% (SA+A) agreed the pace is manageable, with 29.6% disagreeing or strongly disagreeing. The preference for modular over semesterisation received 59.6% (SA+A) agreement, though 14 respondents (24.6%) remained neutral, suggesting that a significant portion had not directly experienced the previous system. Balancing studies with other commitments under the modular system was rated positively by 56.4% (SA+A), though part-time and working students expressed particular difficulty in qualitative responses.

### 4.2.3 Section C: Assessment and Workload

The following table presents student responses regarding assessment frequency, workload, pressure, and the adequacy of time for practical work.

**Table 4.3: Student Perceptions of Assessment and Workload (n=50–54)**

| | | | | | |
|---|---|---|---|---|---|
| The frequency of examinations at the end of each six-week block is manageable. | 11 (20.8%) | 17 (32.1%) | 10 (18.9%) | 14 (26.4%) | 1 (1.9%) |
| The assessment load under the modular system is heavier than under semesterisation. | 9 (17.3%) | 9 (17.3%) | 19 (36.5%) | 12 (23.1%) | 3 (5.8%) |
| I have sufficient time to revise adequately before block examinations. | 13 (24.5%) | 11 (20.8%) | 14 (26.4%) | 10 (18.9%) | 5 (9.4%) |
| Modular assessments encourage deep learning rather than surface memorization. | 13 (24.5%) | 11 (20.8%) | 15 (28.3%) | 8 (15.1%) | 6 (11.3%) |
| I feel under excessive pressure during the examination period of each block. | 17 (32.1%) | 11 (20.8%) | 16 (30.2%) | 8 (15.1%) | 1 (1.9%) |
| The short blocks leave enough time for practical and laboratory work in environmental science. | 8 (15.4%) | 13 (25.0%) | 17 (32.7%) | 11 (21.2%) | 3 (5.8%) |
| The volume of coursework within each block is appropriate. | 7 (14.0%) | 17 (34.0%) | 13 (26.0%) | 8 (16.0%) | 5 (10.0%) |
| I am able to recover academically if I perform poorly in one block. | 14 (26.4%) | 18 (34.0%) | 11 (20.8%) | 5 (9.4%) | 5 (9.4%) |

Table 4.3 reveals a complex picture of assessment and workload experiences. The manageability of examination frequency received 52.8% combined agreement (SA+A), though a notable 28.3% disagreed or strongly disagreed, indicating that a significant minority find the pace of examinations excessive. The statement that the assessment load is heavier under modular than semesterisation produced the highest neutral response of any item (36.5%), suggesting uncertainty among students who may not have experienced semesterisation directly; however, among those who took a position, disagreement (28.8%) slightly outweighed agreement (34.6%). The statement that students feel under excessive pressure during block examination periods attracted 52.8% agreement (SA+A), confirming that

pressure is a dominant experience for the majority. Notably, only 39.6% (SA+A) agreed that the short blocks leave enough time for practical and laboratory work, with 17 respondents (32.7%) remaining neutral and 14 (26.9%) disagreeing — a finding that directly reflects the environmental science context where hands-on learning is essential. The ability to recover academically from poor block performance received the most positive response in this section, with 60.4% (SA+A) expressing confidence in their ability to recover, which may reflect the structured nature of modular progression.

### 4.2.4 Section D: Modular Learning and Education 5.0

The following table presents student perceptions of the extent to which modular learning supports the goals of Zimbabwe's Education 5.0 philosophy.

**Table 4.4: Student Perceptions of Modular Learning and Education 5.0 (n=51–53)**

| | | | | | |
|---|---|---|---|---|---|
| Modular learning supports innovation and practical problem-solving in my studies. | 11 (20.8%) | 21 (39.6%) | 12 (22.6%) | 6 (11.3%) | 3 (5.7%) |
| The modular system creates opportunities for community engagement and service. | 10 (19.6%) | 21 (41.2%) | 10 (19.6%) | 6 (11.8%) | 4 (7.8%) |
| I am able to apply what I learn in each module to real Zimbabwean environmental challenges. | 12 (23.1%) | 20 (38.5%) | 14 (26.9%) | 5 (9.6%) | 1 (1.9%) |
| Modular learning aligns with Zimbabwe's Education 5.0 goals of industrialization and innovation. | 11 (21.2%) | 18 (34.6%) | 14 (26.9%) | 5 (9.6%) | 4 (7.7%) |
| My lecturers link modular content to practical, industry-relevant projects. | 11 (21.6%) | 20 (39.2%) | 14 (27.5%) | 2 (3.9%) | 4 (7.8%) |
| The university provides adequate resources (library, laboratory, field equipment) to support modular learning. | 10 (18.9%) | 18 (34.0%) | 11 (20.8%) | 10 (18.9%) | 4 (7.5%) |
| Modular learning encourages me to develop entrepreneurial and innovative skills. | 13 (25.0%) | 16 (30.8%) | 12 (23.1%) | 7 (13.5%) | 4 (7.7%) |

| | | | | | |
|---|---|---|---|---|---|
| I feel that modular learning at BUSE contributes to Zimbabwe's national development goals. | 15 (28.8%) | 16 (30.8%) | 12 (23.1%) | 6 (11.5%) | 3 (5.8%) |

The Education 5.0 alignment section produced the most consistently positive Likert responses among students. Support for innovation and practical problem-solving received 60.4% (SA+A) agreement. Community engagement opportunities were perceived positively by 60.8% (SA+A). The application of modular content to real Zimbabwean environmental challenges was affirmed by 61.5% (SA+A) of respondents, the highest agreement rate in this section. Education 5.0 alignment overall was affirmed by 55.8% (SA+A), with 26.9% neutral. Resource adequacy received a more cautious response, with 52.8% agreeing that resources are adequate, though 26.4% disagreeing or strongly disagreeing — consistent with qualitative reports of laboratory reagent shortages and limited field equipment. Overall, student perceptions of Education 5.0 alignment were more positive than staff perceptions, possibly reflecting limited exposure to what full alignment would require in practice, or genuine appreciation for the focused nature of modular delivery as a form of applied learning.

### 4.2.5 Section E: Student Qualitative Findings

Thematic analysis of student open-ended responses identified four dominant themes.

#### *Theme 1: Focused Learning as the Primary Advantage*

The most consistently cited advantage was the ability to study fewer subjects at a time, enabling deeper concentration. Students described modular delivery as reducing the cognitive fragmentation of semesterisation. One student noted: you study 2–3 modules at a time instead of 5–7 courses simultaneously — it is easier to concentrate, retain information, and go deep into the subject. Another observed that modules ending with assessment within a short period allow students to identify and fix gaps before moving to the next module. Students in environmental science and agriculture appreciated the potential of block scheduling to accommodate field trips and laboratory work without conflicting coursework deadlines.

#### *Theme 2: Examination Pressure and Insufficient Study Time*

The dominant challenge reported was examination pressure within compressed blocks. Students described a surface-learning pattern captured in one response as: pressure leads to cram, pass and forget — nothing remains in our heads. Part-time and working students were

particularly affected, with one noting that the modular system does not give you time to hustle money since it needs you at school constantly, unlike semesterisation. The tight examination timetable with no breathing space between heavy modules was frequently criticized, as was the challenge of missing even one class given how consequential each session is in a six-week block.

***Theme 3: Inadequate Laboratory Resources and Practical Constraints***

Students in science programmes repeatedly identified resource inadequacy as a compounding problem. One respondent noted that some reagents will not be available by the time we need them, causing lost practical sessions because the university takes too long to purchase them. Others described practical assessments being reduced to report-writing exercises rather than genuine hands-on work, due to insufficient time and materials. One graduate observed: I did not do any lab work at BUSE — the lab has no materials such as reagents. These findings point to a structural misalignment between the pace of modular delivery and the procurement and resourcing systems of the institution.

***Theme 4: System Administration and Results Management Challenges***

Students raised significant concerns about the management of results under the modular system. Because results are uploaded multiple times per year across numerous short blocks, errors in marks processing were frequently reported. A key contributing factor was late registration: students who registered late could not have marks uploaded because new courses could not be added to their accounts after the registration deadline. The high frequency of block uploads created simultaneous demands on administrators that were difficult to process accurately. Students described the resulting uncertainty and anxiety about their results as one of the most stressful aspects of the modular system.

## 4.3 Staff Findings

### 4.3.1 Section A: Staff Demographic Profile

Six staff members responded to the questionnaire, representing the full Yamane (1967) sample drawn from a population of 28 staff in the Faculty of Agriculture and Environmental Science. Table 4.5 presents their demographic profile. For the comparative analysis of perceptions of

both systems, only the three respondents who confirmed in Section A6 that they had taught under both semesterisation and modular learning are considered.

**Table 4.5: Staff Demographic Profile (n=6)**

| | | | |
|---|---|---|---|
| Gender | Male | 3 | 50.0 |
| | Female | 3 | 50.0 |
| Age Group | 25–34 years | 1 | 16.7 |
| | 35–44 years | 4 | 66.7 |
| | 45–54 years | 1 | 16.7 |
| Qualification | Master's Degree | 4 | 66.7 |
| | Doctoral Degree (PhD) | 2 | 33.3 |
| Teaching experience at BUSE | Less than 2 years | 2 | 33.3 |
| | 2–5 years | 2 | 33.3 |
| | More than 10 years | 2 | 33.3 |
| Academic Rank | Lecturer | 5 | 83.3 |
| | Professor | 1 | 16.7 |
| Taught under semesterisation | Yes | 3 | 50.0 |
| | No | 3 | 50.0 |

All six respondents held either a Master's degree or a PhD, reflecting the high qualification profile of the department. The majority were in the 35–44 age group. Teaching experience was evenly distributed, with two staff each having less than 2 years, 2–5 years, and more than 10 years at BUSE respectively. Critically, exactly three respondents (50%) confirmed they had taught under both the semesterised and modular systems. These three constitute the purposive sub-sample whose comparative perceptions are central to the cross-system analysis of this study. The six respondents as a whole represent the full Yamane sample of 6 drawn from the 28-member staff population of the faculty.

### 4.3.2 Section B: Staff Perceptions of Modular Learning and Teaching Practice

Table 4.6 presents staff perceptions of modular learning in relation to their teaching practice.

**Table 4.6: Staff Perceptions of Modular Learning and Teaching Practice (n=6)**

| | | | | | |
|---|---|---|---|---|---|
| The modular system allows me to teach course content with sufficient depth. | 0 (0.0%) | 3 (50.0%) | 1 (16.7%) | 0 (0.0%) | 2 (33.3%) |
| I was given adequate preparation and support before the transition to modular learning. | 0 (0.0%) | 0 (0.0%) | 2 (33.3%) | 2 (33.3%) | 2 (33.3%) |
| The six-week block format provides sufficient time to cover the required course content. | 0 (0.0%) | 2 (33.3%) | 0 (0.0%) | 1 (16.7%) | 3 (50.0%) |
| I have been able to redesign my course materials effectively for the modular format. | 0 (0.0%) | 4 (66.7%) | 1 (16.7%) | 1 (16.7%) | 0 (0.0%) |
| Students engage more meaningfully with learning under the modular system. | 0 (0.0%) | 2 (33.3%) | 1 (16.7%) | 0 (0.0%) | 3 (50.0%) |
| The modular system has improved the quality of teaching in my courses. | 0 (0.0%) | 1 (16.7%) | 2 (33.3%) | 0 (0.0%) | 3 (50.0%) |
| The compressed block format supports deep learning in environmental science subjects. | 0 (0.0%) | 2 (33.3%) | 0 (0.0%) | 1 (16.7%) | 3 (50.0%) |
| I would prefer to return to the semesterised system of delivery. | 4 (80.0%) | 1 (20.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) |
| My institution consulted me meaningfully before implementing the modular system. | 0 (0.0%) | 0 (0.0%) | 2 (28.6%) | 1 (14.3%) | 4 (57.1%) |
| The modular system aligns well with the pedagogical demands of environmental science. | 0 (0.0%) | 1 (14.3%) | 2 (28.6%) | 2 (28.6%) | 2 (28.6%) |

Staff perceptions of the modular system's suitability for teaching were predominantly negative. Only three of six respondents (50%) agreed that the modular system allows teaching with sufficient depth, while two (33.3%) strongly disagreed. The near-unanimous finding was that staff had not been adequately prepared for the transition, with four respondents (66.7%)

disagreeing or strongly disagreeing that adequate support was provided. The six-week block format was viewed by five respondents (83.3%) as insufficient to cover required content, with three strongly disagreeing. Institutional consultation before implementation was rejected outright: five respondents (83.3%) disagreed or strongly disagreed that they had been meaningfully consulted. The clearest and most decisive result in this section was the statement on preference for semesterisation, which attracted strong agreement from four respondents (80%) and agreement from one (20%) — a unanimous preference among those who responded to this item for a return to the previous delivery model. Only one of six respondents agreed that the modular system aligns well with the pedagogical demands of environmental science.

### 4.3.3 Section C: Staff Perceptions of Workload and Assessment

Table 4.7 presents staff perceptions of workload and assessment under the modular system.

**Table 4.7: Staff Perceptions of Workload and Assessment (n=6)**

| | | | | | |
|---|---|---|---|---|---|
| The modular system has increased my overall workload compared to semesterisation. | 4 (66.7%) | 0 (0.0%) | 1 (16.7%) | 1 (16.7%) | 0 (0.0%) |
| The frequency of assessment marking and feedback under the modular system is manageable. | 0 (0.0%) | 3 (50.0%) | 0 (0.0%) | 0 (0.0%) | 3 (50.0%) |
| The rapid cycling of teaching blocks makes it difficult to provide quality formative feedback. | 3 (50.0%) | 2 (33.3%) | 0 (0.0%) | 0 (0.0%) | 1 (16.7%) |
| I have sufficient time to supervise practical and field-based work within each six-week block. | 0 (0.0%) | 1 (16.7%) | 0 (0.0%) | 1 (16.7%) | 4 (66.7%) |
| The modular system creates an unsustainable workload rhythm for academic staff. | 4 (66.7%) | 1 (16.7%) | 0 (0.0%) | 1 (16.7%) | 0 (0.0%) |
| Assessment design under the modular system encourages deeper learning outcomes. | 0 (0.0%) | 1 (16.7%) | 1 (16.7%) | 1 (16.7%) | 3 (50.0%) |
| The modular format allows adequate time for student consultation and academic support. | 0 (0.0%) | 1 (16.7%) | 1 (16.7%) | 1 (16.7%) | 3 (50.0%) |

| | | | | | |
|---|---|---|---|---|---|
| Staff workloads associated with the modular system are fairly recognized by management. | 0 (0.0%) | 1 (16.7%) | 0 (0.0%) | 2 (33.3%) | 3 (50.0%) |

Workload was the most forcefully criticized dimension of the modular system among staff. Four respondents (66.7%) strongly agreed that the modular system has increased their overall workload, and the same number strongly agreed that it creates an unsustainable workload rhythm — the strongest consensus recorded across any statement in the entire staff questionnaire. Five respondents (83.3%) agreed or strongly agreed that the rapid cycling of teaching blocks makes it difficult to provide quality formative feedback to students. Five respondents (83.3%) disagreed or strongly disagreed that they have sufficient time to supervise practical and field-based work within each block. The majority also felt that their workloads were not fairly recognized by management, with five respondents (83.3%) disagreeing or strongly disagreeing with that statement. Assessment design under the modular format was viewed negatively in terms of promoting deeper learning outcomes, with three respondents (50%) strongly disagreeing and one disagreeing.

### 4.3.4 Section D: Staff Perceptions of Modular Learning and Education 5.0

Table 4.8 presents staff perceptions of whether modular learning advances Zimbabwe's Education 5.0 philosophy.

**Table 4.8: Staff Perceptions of Modular Learning and Education 5.0 (n=6)**

| | | | | | |
|---|---|---|---|---|---|
| Modular learning facilitates the integration of innovation into my teaching. | 0 (0.0%) | 1 (16.7%) | 1 (16.7%) | 1 (16.7%) | 3 (50.0%) |
| The modular format creates meaningful opportunities for community engagement projects. | 0 (0.0%) | 0 (0.0%) | 1 (16.7%) | 2 (33.3%) | 3 (50.0%) |
| Students can apply modular content to real Zimbabwean environmental challenges within each block. | 0 (0.0%) | 1 (16.7%) | 0 (0.0%) | 3 (50.0%) | 2 (33.3%) |
| The modular system advances the industrialization pillar of Education 5.0 in practice. | 1 (16.7%) | 0 (0.0%) | 1 (16.7%) | 2 (33.3%) | 2 (33.3%) |

| | | | | | |
|---|---|---|---|---|---|
| The university provides adequate infrastructure and resources to support Education 5.0 under modular delivery. | 0 (0.0%) | 0 (0.0%) | 2 (33.3%) | 1 (16.7%) | 3 (50.0%) |
| Modular learning enables students to develop the practical competencies required by Education 5.0. | 0 (0.0%) | 0 (0.0%) | 3 (50.0%) | 1 (16.7%) | 2 (33.3%) |
| The transition to modular learning has genuinely advanced BUSE's Education 5.0 agenda. | 0 (0.0%) | 1 (16.7%) | 2 (33.3%) | 0 (0.0%) | 3 (50.0%) |
| Research activities are integrated effectively into the modular curriculum. | 0 (0.0%) | 2 (33.3%) | 1 (16.7%) | 0 (0.0%) | 3 (50.0%) |

Staff perceptions of Education 5.0 alignment were largely negative across all eight items. Three respondents (50%) strongly disagreed that modular learning facilitates the integration of innovation into teaching. Community engagement opportunities were rated negatively by five respondents (83.3%), who disagreed or strongly disagreed that the modular format creates meaningful opportunities for such work. The majority of staff (83.3%) disagreed or strongly disagreed that students can meaningfully apply modular content to real Zimbabwean environmental challenges within each block's constraints. Resource adequacy was rated poorly, with three respondents (50%) strongly disagreeing that the university provides adequate infrastructure to support Education 5.0. Only one respondent agreed that the transition has genuinely advanced BUSE's Education 5.0 agenda, with three (50%) strongly disagreeing. These findings indicate that, from the perspective of experienced academic staff, modular delivery as currently implemented falls substantially short of supporting the innovation, industrialization, community service, and research pillars of Education 5.0 in practice.

### 4.3.5 Section E: Staff Qualitative Findings

Thematic analysis of staff open-ended responses identified three dominant themes.

***Theme 1: Limited Pedagogical Advantages and a Strong Preference for Semesterisation***

When asked about the advantages of modular learning for teaching environmental science, the majority of staff who responded to the open-ended question perceived no significant pedagogical benefit. One respondent stated directly: there is no advantage. Another described the system as a crash system with no time to effectively teach and grasp concepts, including

no time for field visits. One respondent acknowledged a limited operational benefit: if a lecturer is not teaching both block sessions, they have more time available for research and community engagement. This was framed as incidental rather than by design. Multiple staff explicitly recommended reverting to semesterisation as the preferred solution.

***Theme 2: Unsustainable Workload and Perpetual Examination Mode***

Staff consistently described an institutional culture of near-perpetual examination and marking. One respondent captured this as: the university is always in exam mode. The rapid turnover of blocks means staff must simultaneously prepare for incoming modules while marking results from those just completed. Processing of results and completion of module administration were also identified as significant challenges, with errors in results uploading adding to the administrative burden. One respondent noted that the system really strains both learners and lecturers because of the pressure to cover large volumes of subject matter within a short period. The absence of time for student consultation, mentoring, and reflective teaching practice was a recurring and strongly felt grievance.

***Theme 3: Financial Benefit to the Institution as the Primary Driver of Modular Adoption***

A striking finding was the explicit staff perception that the primary beneficiary of the modular system is the institution itself rather than students or lecturers. One staff member stated: it is cheaper for the University but taxing to the students and lecturers. This reflects the financial logic of modular delivery whereby part-time lecturers are compensated on a per-block basis rather than for a full semester, reducing salary commitments when particular modules are not running. Staff framed this as a cost-cutting rationale implemented at the expense of teaching quality, rather than a pedagogically motivated reform — representing a perceived misalignment between institutional financial interests and academic professional values that was felt strongly across the staff sample.

## 4.4 Summary of Chapter Four

The findings presented in this chapter reveal both points of convergence and significant divergence between student and staff perceptions of the modular learning transition at BUSE. Students identified focused, concentrated study as the central benefit and recorded broadly positive perceptions across Sections B and D, particularly regarding Education 5.0 alignment.

However, majority student responses confirmed excessive examination pressure, insufficient time for practical and laboratory work, and significant administrative challenges including results processing errors linked to late registration and system capacity. Staff perceptions were considerably more critical: unanimous preference for a return to semesterisation, near-unanimous rejection of adequate preparation and consultation, and strong consensus that modular delivery creates an unsustainable workload that undermines teaching quality, formative feedback, and the practical teaching demands of environmental science. Both groups independently identified the financial benefit to the institution, specifically per-block payment of part-time lecturers as a key driver of the modular system's adoption. These findings are discussed consistent with existing literature and study's research questions in Chapter Five.

# CHAPTER FIVE

# DISCUSSION OF RESULTS

## 5.1 Introduction

This chapter discusses the Chapter Four findings in relation to the literature reviewed in Chapter Two and the study's five research questions. The discussion is structured thematically to address student perceptions, staff perceptions, the alignment of modular learning with Education 5.0, and the key challenges and opportunities identified by both groups. Where findings confirm, contradict, or extend existing literature, this is noted explicitly.

## 5.2 Student Perceptions of the Modular Learning System

The dominant positive perception among students was the benefit of studying fewer subjects simultaneously, with 67.9% strongly agreeing or agreeing that modular learning allows deeper focus on each subject. This finding aligns closely with Scott (2016), who reported that students in intensive block formats demonstrated higher rates of content mastery per unit, attributing this to reduced cognitive fragmentation and a heightened sense of focus. Similarly, Henebry (2017) noted improved student engagement in block-scheduled courses, and the present study's student data supports this observation, particularly for the cohorts who experienced semesterisation and could make a direct comparison. The 59.6% combined preference for the modular system over semesterisation also corroborates findings from international literature that students generally appreciate the focused, progressive structure of block delivery (Scott, 2016).

However, the study reveals important nuances. Perceptions of pace manageability were more divided, with nearly 30% disagreeing that the block pace is manageable — consistent with Hlalele and Khumalo's (2019) finding that students in block-scheduled programmes frequently reported feeling rushed and underprepared for assessments. The 52.8% who agreed they feel under excessive examination pressure confirms what Kember (2016) identified as the paradox of modular systems: high assessment frequency can paradoxically push students toward surface strategies rather than the deep engagement that modular delivery theoretically promises. This tension was clearly captured in qualitative responses, where students described

cramming and forgetting as the dominant pattern of modular study. Chikwature and Oyedele (2017) noted similar surface-learning patterns in Zimbabwean semesterised programmes, suggesting that the problem of surface learning is systemic rather than unique to either delivery model, and may be particularly acute in resource-constrained institutional contexts.

### 5.3Staff Perceptions of the Modular Learning System

Staff perceptions were substantially more critical than those of students, reflecting the distinct professional vantage point of lecturers who must implement the system and who carry the weight of its workload implications. The unanimous preference for a return to semesterisation among the five staff who answered the preference question, and the strong agreement (83.3%) that the modular system creates an unsustainable workload rhythm, are findings of significant concern. These results align closely with Hlalele and Khumalo (2019), who found that science staff in block-scheduled South African institutions described the workload rhythm as relentless and professionally unsustainable. The present study adds to this finding by confirming the pattern in the Zimbabwean higher education context at BUSE.

The near-unanimous rejection of adequate institutional consultation before implementation (83.3% disagreeing) is consistent with Cummings et al. (2016), who argue that reforms introduced without meaningful stakeholder consultation tend to produce resistance and lower implementation fidelity. Vongalis-Macrow (2016) makes the important observation that academic staff are not passive recipients of change but bring professional identities and disciplinary expertise to every reform process; when those are overridden, resistance is a reasoned professional response rather than stubbornness. The staff data from this study strongly supports this theoretical position: the absence of consultation, combined with the perceived mismatch between the modular system and the demands of environmental science teaching, has produced a staff cohort that is openly and uniformly resistant to the reform.

The finding that five of six staff (83.3%) disagreed or strongly disagreed that they have sufficient time to supervise practical and field-based work within each block is particularly significant for a Faculty of Agriculture and Environmental Science, where field investigations, laboratory analysis, and the gradual development of practical competencies are central to programme delivery. Hlalele and Khumalo (2019) found precisely this pattern in their South

African study, noting that science staff expressed particular concern about the adequacy of time for laboratory sequences and fieldwork within compressed blocks.

### 5.4 Perceptions of Education 5.0 Alignment

The study reveals a notable divergence between student and staff perceptions of Education 5.0 alignment. Students recorded broadly positive responses in Section D, with majorities agreeing across most Education 5.0 items, including support for innovation (60.4%), community engagement (60.8%), and application to Zimbabwean environmental challenges (61.5%). Staff, however, recorded predominantly negative responses across all eight Education 5.0 items, with particular disagreement on community engagement opportunities (83.3% disagree/strongly disagree) and the genuine advancement of BUSE's Education 5.0 agenda (50% strongly disagree).

This divergence may reflect different levels of exposure to and understanding of what Education 5.0 implementation demands in practice. Students may interpret the focused nature of modular delivery as inherently aligned with practical, applied education — the spirit of Education 5.0 — while staff, with professional responsibility for curriculum design and delivery, are more acutely aware of the gap between the policy's ambitions and what is actually achievable within six-week blocks. This interpretation is consistent with Muzvidziwa and Muzvidziwa's (2018) observation that Zimbabwean curriculum reform has historically been shaped by top-down policy directives without sufficient attention to institutional readiness or evidence-based planning, and with Teferra and Altbacker's (2016) broader finding that ambitious African higher education reform frameworks tend to produce uneven and superficial implementation when not accompanied by commensurate investment in staff development and infrastructure.

Resource adequacy was the Education 5.0 item that received the most convergent negative response across both groups. Among students, 26.4% disagreed or strongly disagreed that adequate resources are provided, and among staff, five of six (83.3%) disagreed or strongly disagreed. This aligns with Muzvidziwa and Muzvidziwa's (2018) observation that underfunding and inadequate laboratory and digital infrastructure across Zimbabwean state universities are conditions fundamentally at odds with the innovation-driven learning that Education 5.0 envisions.

## 5.5 Key Challenges Identified

Three cross-cutting challenges emerged from the combined student and staff findings that go beyond the Likert data and are supported by both quantitative patterns and qualitative evidence.

The first is the institutional administrative burden of high-frequency modular assessment. Both students and staff identified results processing errors and system limitations as significant operational failures. The student portal at BUSE was not designed for the frequency of uploads required by the modular system, and late registration in particular creates a structural barrier to marks being recorded correctly. This is a direct operational consequence of implementing a high-frequency assessment model without upgrading the supporting administrative infrastructure. No comparable finding was identified in the literature reviewed, making this an original contribution of the study to the understanding of modular implementation challenges in the Zimbabwean context.

The second challenge is the financial driver of modular adoption. The finding that staff explicitly identified the per-block payment of part-time lecturers as the primary institutional benefit of the modular system and that this was experienced as a cost-cutting measure rather than a pedagogical improvement raises important questions about institutional governance and the transparency of reform rationales. While no international study reviewed in Chapter Two explicitly addressed this dimension, it resonates with Muzvidziwa and Muzvidziwa's (2018) critique that Zimbabwean curriculum transformation has been shaped more by political and administrative priorities than by evidence-based pedagogical planning.

The third challenge is laboratory and field resource adequacy. Qualitative data from both students and staff confirms that reagent shortages, limited field equipment, and compressed practical schedules are preventing the quality of hands-on learning that environmental science programmes require. This finding is consistent with Hlalele and Khumalo (2019) and Kember (2016), and reinforces the argument that modular block delivery requires substantial investment in consumable laboratory resources and procurement efficiency to function effectively in science disciplines.

## 5.6 Summary of Chapter Five

This chapter has interpreted the study's findings in light of existing literature and research questions. Student perceptions broadly confirm international findings on the focusing benefits

of modular delivery while also revealing the pressure, surface learning, and resource challenges identified in the literature. Staff perceptions are considerably more critical, consistent with findings on workload unsustainability and the consequences of top-down implementation without meaningful consultation. The divergence in Education 5.0 alignment perceptions between students and staff suggests a significant gap between policy aspiration and implementation reality that is most visible to those with professional responsibility for curriculum delivery. Three original findings that is the administrative burden of results management, the financial driver of modular adoption, and the specific laboratory resourcing failures, add to the existing literature on modular implementation challenges. Chapter Six presents the study's conclusions and recommendations.

# CHAPTER SIX

# CONCLUSION AND RECOMMENDATIONS

## 6.1 Introduction

Conclusions drawn from the study's findings and discussion, followed by evidence-based recommendations for improving the implementation of modular learning at BUSE's Faculty of Agriculture and Environmental Science are presented in this chapter. Additionally it presents the study's contributions to knowledge, its limitations, and suggestions for future research.

## 6.2 Conclusions

This project investigated staff and student perceptions of the transition from semesterisation to modular learning at Bindura University of Science Education, within the framework of Zimbabwe's Education 5.0 philosophy. Data were collected from 54 student respondents across the graduating classes of 2023 to 2026, and from 6 academic staff, of whom 3 had direct experience of teaching under both systems. Five main conclusions are drawn from the findings.

First, students value the focusing benefit of modular delivery but experience significant examination pressure and surface-learning tendencies. The majority of students affirm that studying fewer subjects at a time improves concentration and reduces cognitive fragmentation. However, the same majority confirm that block examinations generate excessive pressure, and qualitative evidence strongly suggests that the dominant academic strategy under the modular system is cramming rather than deep engagement with content. The modular system, as currently structured, has not resolved the surface-learning problem that semesterisation was criticized for producing.

Second, academic staff who experienced both delivery systems are uniformly critical of the modular model and unanimously prefer a return to semesterisation. Their criticisms centre on insufficient time to cover content in depth, unsustainable workload rhythms, the impossibility of providing quality practical supervision and formative feedback within six-week blocks, and the complete absence of meaningful institutional consultation before implementation. These are serious professional concerns that the institution cannot responsibly ignore.

Third, the modular system as implemented at BUSE does not adequately support the goals of Zimbabwe's Education 5.0 philosophy, particularly from the staff perspective. While students

recorded moderate positive perceptions of Education 5.0 alignment, the staff data indicates that the innovation, community service, industrialization, and research pillars of Education 5.0 are not being meaningfully advanced by the current modular structure. Inadequate laboratory resources, compressed practical schedules, and the relentless pace of block delivery all work against the deep, applied, innovation-oriented learning that Education 5.0 envisions.

Fourth, the administrative infrastructure of BUSE has not kept pace with the demands of high-frequency modular assessment. Results processing errors, student portal limitations, and the exclusion of late-registered students from marks uploads are operational failures that generate significant student anxiety and erode trust in the system. These failures are a direct and predictable consequence of implementing a high-frequency assessment model without upgrading the institutional systems required to support it.

Fifth, the primary beneficiary of the modular system, as perceived by staff, is the institution itself through the reduced salary costs of per-block payment for part-time lecturers. This perception — that the modular transition was driven by financial rather than pedagogical rationale — has significantly undermined staff trust in and commitment to the reform. A reform that is not trusted by those responsible for implementing it cannot be expected to achieve its stated aims.

### 6.3 Recommendations

Based on the findings and conclusions of this study, the following recommendations are made.

#### 6.3.1 To BUSE Management

The institution should urgently convene a formal, structured review of the modular system involving academic staff, student representatives, and faculty leadership. This review should be genuinely consultative, producing evidence-based decisions about whether to retain, modify, or phase out the current block structure. The absence of consultation before implementation has been the single most damaging aspect of the transition for staff trust, and any further changes must correct this.

The student results management portal should be upgraded or replaced with a system capable of handling multiple block uploads simultaneously without generating errors. A clear policy on late registration and its implications for marks processing should be communicated to all

students before each block commences, and a dedicated administrative officer should be appointed to manage results processing under the modular calendar.

The per-block remuneration model for part-time lecturers should be reviewed. If the financial savings of block-based payment are retained, a portion of those savings should be reinvested in the department in the form of laboratory consumables, field equipment, and support for practical teaching — thereby addressing the resource constraints that both students and staff identified as a critical barrier to quality modular delivery.

### 6.3.2 To the Faculty of Agriculture and Environmental Science

The Faculty should develop a dedicated practical teaching strategy for modular delivery in environmental science. This should include advance procurement of laboratory reagents and consumables timed to the modular calendar, a timetabling approach that concentrates field trips and laboratory sessions at optimal points within each block, and clear standards for what constitutes adequate practical assessment under the modular format.

Block workload should be distributed more equitably across the two blocks of each semester. Student qualitative data identified a pattern of one very light first block followed by a dramatically heavier second block, which compounds examination pressure. Heads of department should audit block loading annually and adjust course allocation accordingly.

### 6.3.3 To Academic Staff

Academic staff are encouraged to actively document and formally report the specific impacts of the modular system on teaching quality and student learning outcomes through departmental channels, faculty boards, and the Senate. The evidence generated by this study can serve as a baseline for ongoing monitoring. Staff should also explore collaborative strategies for sharing course materials and assessment resources within the modular format, in order to reduce individual workload where possible.

### 6.3.4 To National Policy Makers

The Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development should commission a national evidence-based review of modular learning implementation across all Zimbabwean state universities. The findings of studies such as this one indicate that the modular transition has been implemented broadly without adequate

attention to institutional readiness, staff capacity, or the specific demands of different disciplines. Education 5.0 goals will not be achieved through structural reform alone; they require sustained investment in laboratory infrastructure, digital resources, and academic staff development that enables universities to deliver on the philosophy's ambitious practical and innovative mandate.

### 6.4 Limitations of the Study

This study was limited to one faculty at one institution, which constrains the generalizability of the findings. The staff sample size of six respondents, of whom only three had experience of both systems, is small, and findings should be interpreted accordingly. The use of self-reported questionnaire data means that responses reflect perceptions rather than measured learning outcomes. Some respondents in the student sample may not have directly experienced semesterisation, limiting the comparative basis of some responses. These limitations notwithstanding, the mixed methods design, the use of both Likert-scale and qualitative data, and the alignment of findings with established international literature provide reasonable confidence in the study's credibility and trustworthiness.

### 6.5 Suggestions for Future Research

Future research should extend this investigation to other faculties at BUSE and to other Zimbabwean universities that have adopted modular learning, in order to test whether the patterns identified here are specific to the Faculty of Agriculture and Environmental Science or represent a broader institutional and national trend. Longitudinal studies tracking student academic performance data before and after the modular transition would provide objective evidence to complement the perception data generated by this study. Research specifically examining the administrative systems and results management infrastructure of Zimbabwean universities under modular delivery would address the operational challenges identified in this study more directly. Finally, comparative studies examining student and staff perceptions across different disciplines — particularly comparing science-based and humanities-based programmes — would clarify whether the challenges identified here are discipline-specific or systemic.

### 6.6 Summary

This study has produced the first systematic empirical investigation of staff and student perceptions of the transition from semesterisation to modular learning at BUSE's Faculty of Agriculture and Environmental Science. The findings confirm that while modular delivery offers real benefits for focused learning, the current implementation at BUSE is experiencing serious and well-documented challenges in workload management, practical teaching adequacy, administrative infrastructure, and genuine Education 5.0 alignment. The study's recommendations are grounded in the evidence generated and are intended to support the institution in making informed, stakeholder-driven improvements to the modular system. Whether the system is retained, modified, or reconsidered, the voices of the staff and students who must live within it — as represented by this study — should be central to that decision.

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# APPENDICES

## ACADEMIC STAFF QUESTIONNAIRE

### FROM SEMESTERISATION TO MODULAR LEARNING: STAFF AND STUDENT PERCEPTIONS OF THE TRANSITION AT BINDURA UNIVERSITY OF SCIENCE EDUCATION

**Dear Colleague,**

You are invited to participate in this academic research investigating staff and student perceptions of the transition from semesterisation to modular learning at BUSE since 2022. As an academic staff member in the Faculty of Environmental Science, your perspective is central to this study.

Your participation is entirely voluntary and your responses will remain strictly confidential. No information that could identify you will be shared in any report or publication arising from this research. The questionnaire should take approximately 20–25 minutes to complete.

Please answer all questions as honestly and completely as possible. Your expert experience is invaluable to this study.

**SECTION A: DEMOGRAPHIC INFORMATION**

*Please tick (✓) the appropriate box or fill in the space provided.*

**A1. Gender:**

☐ Male

☐ Female

☐ Prefer not to say

**A2. Age group:**

☐ 25–34 years

☐ 35–44 years

☐ 45–54 years

☐ 55 years and above

**A3. Highest academic qualification:**

☐ Bachelor's Degree

☐ Postgraduate Diploma

☐ Master's Degree

☐ Doctoral Degree (PhD)

**A4. Years of teaching experience at BUSE:**

☐ Less than 2 years

☐ 2–5 years

☐ 6–10 years

☐ More than 10 years

**A5. Academic rank:**

☐ Lecturer

☐ Senior Lecturer

☐ Associate Professor

☐ Professor

☐ Other (please specify): _____

**A6. Did you teach under the semesterised system before the transition to modular learning at BUSE?**

☐ Yes

☐ No

**SECTION B: PERCEPTIONS OF MODULAR LEARNING AND TEACHING PRACTICE**

*Please indicate your level of agreement with each statement by ticking (✓) the appropriate box.*
*Scale: SA = Strongly Agree | A = Agree | N = Neutral | D = Disagree | SD = Strongly Disagree*

| Statement | SA | A | N | D | SD |
|---|---|---|---|---|---|
| 1. The modular system allows me to teach course content with sufficient depth. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 2. I was given adequate preparation and support before the transition to modular learning. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 3. The six-week block format provides sufficient time to cover the required course content. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 4. I have been able to redesign my course materials effectively for the modular format. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 5. Students engage more meaningfully with learning under the modular system. | ☐ | ☐ | ☐ | ☐ | ☐ |

| | | | | | |
|---|---|---|---|---|---|
| 6. The modular system has improved the quality of teaching in my courses. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 7. The compressed block format supports deep learning in environmental science subjects. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 8. I would prefer to return to the semesterised system of delivery. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 9. My institution consulted me meaningfully before implementing the modular system. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 10. The modular system aligns well with the pedagogical demands of environmental science. | ☐ | ☐ | ☐ | ☐ | ☐ |

**SECTION C: WORKLOAD AND ASSESSMENT**

*Please indicate your level of agreement with each statement.*

*Scale: SA = Strongly Agree | A = Agree | N = Neutral | D = Disagree | SD = Strongly Disagree*

| Statement | SA | A | N | D | SD |
|---|---|---|---|---|---|
| 1. The modular system has increased my overall workload compared to semesterisation. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 2. The frequency of assessment marking and feedback under the modular system is manageable. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 3. The rapid cycling of teaching blocks makes it difficult to provide quality formative feedback. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 4. I have sufficient time to supervise practical and field-based work within each six-week block. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 5. The modular system creates an unsustainable workload rhythm for academic staff. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 6. Assessment design under the modular system encourages deeper learning outcomes. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 7. The modular format allows adequate time for student consultation and academic support. | ☐ | ☐ | ☐ | ☐ | ☐ |

| | | | | | |
|---|---|---|---|---|---|
| 8. Staff workloads associated with the modular system are fairly recognized by management. | ☐ | ☐ | ☐ | ☐ | ☐ |

**SECTION D: MODULAR LEARNING AND EDUCATION 5.0**

*Please indicate your level of agreement with each statement.*

*Scale: SA = Strongly Agree | A = Agree | N = Neutral | D = Disagree | SD = Strongly Disagree*

| Statement | SA | A | N | D | SD |
|---|---|---|---|---|---|
| 1. Modular learning facilitates the integration of innovation into my teaching. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 2. The modular format creates meaningful opportunities for community engagement projects. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 3. Students can apply modular content to real Zimbabwean environmental challenges within each block. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 4. The modular system advances the industrialization pillar of Education 5.0 in practice. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 5. The university provides adequate infrastructure and resources to support Education 5.0 under modular delivery. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 6. Modular learning enables students to develop the practical competencies required by Education 5.0. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 7. The transition to modular learning has genuinely advanced BUSE's Education 5.0 agenda. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 8. Research activities are integrated effectively into the modular curriculum. | ☐ | ☐ | ☐ | ☐ | ☐ |

**SECTION E: OPEN-ENDED QUESTIONS**

*Please provide detailed responses to the following questions. Your expert insight is highly valued.*

**E1. What, in your professional view, are the key ADVANTAGES of the modular learning system for teaching environmental science at BUSE?**

**E2. What are the most significant CHALLENGES you have encountered as a lecturer under the modular system?**

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**E3. How has the transition to modular learning affected your ability to deliver quality practical and laboratory-based teaching in environmental science?**

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**E4. To what extent do you believe the current modular system at BUSE genuinely advances the five pillars of Zimbabwe's Education 5.0 philosophy? Please elaborate.**

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**E5. What specific policy or institutional changes would you recommend to improve the implementation of modular learning at BUSE in alignment with Education 5.0?**

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**E6. Is there any other observation or experience regarding the modular learning transition that you would like to share?**

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**Thank you sincerely for your time and contribution to this research. Your expertise is invaluable.**

# STUDENT QUESTIONNAIRE

## FROM SEMESTERISATION TO MODULAR LEARNING: STAFF AND STUDENT PERCEPTIONS OF THE TRANSITION AT BINDURA UNIVERSITY OF SCIENCE EDUCATION

**Dear Student,**

You are kindly invited to participate in this research study which aims to investigate perceptions of academic staff and students regarding the transition from semesterisation to modular learning at BUSE since 2022, within the context of Zimbabwe's Education 5.0 philosophy. Your honest and thoughtful responses are essential to producing credible findings.

Participation is entirely voluntary and anonymous. No identifying information will be collected. All responses will be treated with strict confidentiality and used solely for academic purposes. There are no right or wrong answers — your personal experience and opinion are what matter.

The questionnaire has five sections and should take approximately 15–20 minutes to complete. Please answer ALL questions.

**SECTION A: DEMOGRAPHIC INFORMATION**

*Please tick (✓) the appropriate box or fill in the space provided.*

**A1. Class of:**

☐ 2023

☐ 2024

☐ 2025

☐ 2026

**A2. Gender:**

☐ Male

☐ Female

☐ Prefer not to say

**A3. Age group:**

☐ 18–21 years

☐ 22–25 years

☐ 26–29 years

☐ 30 years and above

**A4. Programme of study:**

☐ BSc Safety, Health and Environmental Management

☐ Crop Science

☐ BSc Natural Resources Management

☐ Other (please specify): _____

**A5. Did you study under the semesterised system before the transition to modular learning at BUSE?**

☐ Yes

☐ No

☐ Not sure

**SECTION B: PERCEPTIONS OF THE MODULAR LEARNING SYSTEM**

*Please indicate your level of agreement with each statement by ticking (✓) the appropriate box.*
*Scale: SA = Strongly Agree | A = Agree | N = Neutral | D = Disagree | SD = Strongly Disagree*

| Statement | SA | A | N | D | SD |
|---|---|---|---|---|---|
| 1. Modular learning allows me to focus more deeply on each subject. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 2. Studying fewer subjects at a time in each block is beneficial to my learning. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 3. The six-week block format gives me enough time to understand course content. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 4. I feel more prepared for examinations under the modular system than I did under semesterisation. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 5. The modular system has improved my overall academic performance. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 6. The pace of teaching within each block is manageable. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 7. Modular learning reduces the stress of studying many subjects at the same time. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 8. I prefer the modular system to the semesterised system I previously experienced. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 9. The modular system makes it easier to balance my studies with other commitments. | ☐ | ☐ | ☐ | ☐ | ☐ |

| | | | | | |
|---|---|---|---|---|---|
| 10. I feel that modular learning prepares me well for professional practice. | ☐ | ☐ | ☐ | ☐ | ☐ |

**SECTION C: ASSESSMENT AND WORKLOAD**

*Please indicate your level of agreement with each statement.*

*Scale: SA = Strongly Agree | A = Agree | N = Neutral | D = Disagree | SD = Strongly Disagree*

| Statement | SA | A | N | D | SD |
|---|---|---|---|---|---|
| 1. The frequency of examinations (at the end of each six-week block) is manageable. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 2. The assessment load under the modular system is heavier than under semesterisation. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 3. I have sufficient time to revise adequately before block examinations. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 4. Modular assessments encourage deep learning rather than surface memorization. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 5. I feel under excessive pressure during the examination period of each block. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 6. The short blocks leave enough time for practical and laboratory work in environmental science. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 7. The volume of coursework within each block is appropriate. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 8. I am able to recover academically if I perform poorly in one block. | ☐ | ☐ | ☐ | ☐ | ☐ |

**SECTION D: MODULAR LEARNING AND EDUCATION 5.0**

*Please indicate your level of agreement with each statement.*

*Scale: SA = Strongly Agree | A = Agree | N = Neutral | D = Disagree | SD = Strongly Disagree*

| Statement | SA | A | N | D | SD |
|---|---|---|---|---|---|
| 1. Modular learning supports innovation and practical problem-solving in my studies. | ☐ | ☐ | ☐ | ☐ | ☐ |

| | | | | | |
|---|---|---|---|---|---|
| 2. The modular system creates opportunities for community engagement and service. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 3. I am able to apply what I learn in each module to real Zimbabwean environmental challenges. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 4. Modular learning aligns with Zimbabwe's Education 5.0 goals of industrialization and innovation. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 5. My lecturers link modular content to practical, industry-relevant projects. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 6. The university provides adequate resources (library, laboratory, field equipment) to support modular learning. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 7. Modular learning encourages me to develop entrepreneurial and innovative skills. | ☐ | ☐ | ☐ | ☐ | ☐ |
| 8. I feel that modular learning at BUSE contributes to Zimbabwe's national development goals. | ☐ | ☐ | ☐ | ☐ | ☐ |

**SECTION E: OPEN-ENDED QUESTIONS**

*Please answer the following questions in the spaces provided. Your detailed responses are highly valued.*

**E1. In your experience, what are the main ADVANTAGES of the modular learning system at BUSE compared to semesterisation?**

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**E2. What are the main CHALLENGES or difficulties you have experienced under the modular learning system?**

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**E3. How has the transition to modular learning affected your practical and laboratory work in your environmental science programme?**

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**E4. In your view, to what extent does modular learning at BUSE support the goals of Zimbabwe's Education 5.0 philosophy (teaching, research, community service, innovation, industrialization)?**

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**E5. What specific improvements would you recommend to make the modular learning system at BUSE more effective for students?**

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**Thank you sincerely for completing this questionnaire. Your contribution is greatly appreciated.**